ORGANIZATION- AND INFORMATION MANAGEMENT

by

HEINRICH REINERMANN

POST-GRADUATE SCHOOL OF ADMINISTRATIVE SCIENCES SPEYER

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1 Information Management as Integrative Component of Executive Functions

The term "Information Management" is one of today's fashionable words. Moreover, it is used in very different ways, and of course it can't be said, which is the correct or incorrect way to use it.

A brief definition of what is understood by Information Management, should therefore be put at the beginning. This concept and its implications are going to be dealt with in a more detailed way later. The fact that the field of public administration is used as background, does not mean, that principally, problems in other institutions, e.g. business enterprises, are comparable.

The underlying ideas here are[1], that Information Management is not at all limited to new figures on organization charts, whose main tasks are

- to bring order into information technology and
- to bring order into information processing.

Both of this is, as a rule, necessary and is a consequence of the progress of information technology, which has taken place within the last years. It is known that it has caused that, at this stage, the information and communication system "public administration" can - for the first time - be portrayed technologically as well. Especially by user-oriented computers and the ability to connect them. It is possible, on principle, to link each place of work within the administrations, electronically with others. There is no doubt about the fact, that this new situation makes holistic approaches necessary, and that system analysis (already renounced by some) has its renaissance. Therefore it is absolutely correct that

- beyond the conventional data processing, all information and communication technologies have to be regarded as one unit and have to be co-ordinated (systemizing of the application of information technology)
- and that information is on the one hand considered as being a resource, and on the other hand as a product of public administration, which lead to organizing functions as well (systemizing of information processing).

To rest with a "better, well-organized EDP", however, and with a systematized information processing, would mean, that Information Management is restricted to a mainly technological-organizational approach. In that way, however, one could only partially cope with the

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1 See Reinermann 1981.

potential of modern information technologies, which are much more far-reaching. The approach of Information Management, i.e. to design all of the electronic equipment and its products is necessary but not sufficient.

The actual challenge of today's information technology seems to be the fact that it has the potential to re-influence the user-field, and that it may be able to change its appearance considerably. In addition to the questions which are concerned with the technological-organizational systemizing of information processing we find ourselves confronted with a thrust of changes within our public administrations, which has to be based on corresponding state and administrative policies. This, of course, can't be the responsibility of the experts concerned with information technology and information processing. This is why Information Management is to be regarded as an integrative component of the functions of each member of public management, whereby the hierarchical level on which the member is located, doesn't matter.

Given the knowledge of the potential of information technology and information processing, Information Management means consideration, analysis and organization of any public manager's sphere of responsibility. Information Management means that each public manager assumes personal responsibility not only for traditional subjects of control but also for information and information technology.

This meaning of Information Management differs in its basic approach from some equivalent efforts in the U.S. and in this country. In order to solve various problems which occur in connection with planning and introduction of information technologies, the concept of "Information Management" (Information Resources Management) has been introduced in the U.S. federal authorities and some federal states, and responsibility for information technology has been concentrated in one place[2]. The Paperwork Reduction Act dated 1980, which requires not only an Office of Information above the department level, but also the installation of Information Resources Managers in the departments, serves as basis for the federal administration.

German-language publications, too, associate with Information Management "the evolutionary development of the data processing department"[3] or a cross-sectional task like "finance-, personnel- and organizational planning"[4]. In case cross-sectional tasks are expected to get integrated and executed in a goal-oriented way, all of them have to reappear combined within the functions of line management. The

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2 See Gesellschaft für Information und Dokumentation 1985.

3 See Hübner 1984.

4 See Lenk 1985.

responsibility for finances, personnel and organization isn't taken off the management by supporting measures in cross-sectional units.

If the wish for improvement in management is concentrated upon new organizations and terms, there will be a diversion away from the matters which are actually concerned. Information Management is, in fact, a matter of heightening the awareness of information and information technology in the mind of each member of public management and of transforming such awareness into daily management affairs[5]. This means that, if Information Management is understood by the managers in this way, it is the deciding factor - but it makes complementary institutional support nevertheless indispensible.

The following three sections will try to

- explain why the outlined understanding of Information Management might be advisable today as well as in the future
- illustrate Information Management in view of this understanding and, above all, set it in contrast to supporting measures
- cast a brief glance upon such supporting measures.

2 The Potential of Information Technology for Administrative Reforms

Information Management can't be discussed in the sense of a function which is integrated into general executive duties without mentioning at least the conceptional background in a loose fashion.

2.1 Technical and Social Innovations

Regarding the efforts concerning the support for public administrations through automation, we find ourselves right in the middle of a transition from the first broad stage of development to a second stage. The object of the first stage - and here, no doubt, a lot has been achieved - had been the computerization of existing administrative processes. This was difficult enough, because it was necessary to have the work of intelligent human beings carried out by machines. The administrations themselves, however, with their appreciation of the tasks and their organization, served - in a way - as a model. To a large extent they remained unchanged in substance and structure, by data processing. From today's point of view the fact that this first stage of development could absolutely not be omitted is sometimes disregarded.

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5 See also Ufer 1983.

Other examples of technological progress show however, that things must not rest there. As a rule, technological progress is not managed in a way in which the user world itself remains undisturbed, regarding the conception and structure. On the contrary. Technological progress can be used in a way which doesn't just mean the production of mechanical copies of the field of application which already exists, but also its change.

In the year of its 100th anniversary, the automobile may serve as principal witness: it was not sufficient to integrate spark-ignition engines in the traffic system by mounting it on the existing horse-drawn carriage. On the contrary: the inherent potential of this technological innovation could only be realized by transforming the whole traffic system, to be seen in road construction, traffic law, insurance, car registration, technical control associations, and of course, by our increasing mobility as such.

Such alterations of the user world should be characterized by the term "social innovation" in order to differentiate clearly from the term "technical innovation". Technical innovation provides the initiation for social innovation only but is on its own not sufficient. Technical and social innovation complement each other, like two sides of a coin.

The second broad development stage of administrative automation which lies ahead of us, will - with technological progress still increasing - possibly be marked by social innovation within the field of administrative processes themselves. Whether this takes place depends to a high degree on Information Management, as it is understood here. Information Management is necessary in order to launch and control social innovation which follows microelectronical progress.

2.2 Some Social Innovations in the Public Sector caused by Information Technology

In order to make the background for the comprehension of Information Management more apparent some of the possible repercussions of information-technological progress - which are possible and which have to some extent already been tackled - as far as public administrations are concerned, must be pointed out. This can be done here only in rough outlines[6].

(1) New types of organizational structures and processes of public administrations can be formed, and agency structures, working processes and job descriptions can be modified by re-evaluation of organizational criteria. The possibility to integrate (which is given by information technology) principally any place of work to information of other offices or agencies - which is now technically possible - a part of

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6 In more detail see Reinermann 1987.

the tasks formerly charged to the "owner" of those data, can now be carried out on the spot. Therefore, the division of labor existing within and amongst agencies, can be reconsidered. It can fundamentally decrease, to be more precise. Up to the present, technological progress has often been associated with "Taylorization", but now there is a possibility of changing the trend: a holistic execution of tasks can be increasingly taken into account, job descriptions can be augmented, qualification standards raised, and "alienation" reduced. The extend of communication, vulnerability to errors and handling time of administrative processes can, in some cases, be cut down drastically by such a change in the division of work. Or functions can be transferred to field offices for the purpose of closer citizen relations, and can sometimes compensate in this way the deficiencies caused by territorial reforms.

(2) It is possible to reach a new quality of the citizen-administration relationship by means of modern information technology ("citizen" to be understood in a broad sense as client, incl. business). The progress of information technology could in time to come be the cause to put questions of a more fundamental kind to citizen-related tasks of the administration - far beyond the well-known subjects (e.g. the readability of computer printouts). The technology potential can be used for a new quality of public relations and citizens' participation. The distance between citizens and administration might thus be put up for discussion again, at least in the following dimensions[7]:

- intellectually, by reducing the administration's advantage of information
- socio-psychologically, by decreasing communication-barriers
- and politically, by better examination of public action.

(3) It is possible to widen the freedom of movement of the employees by more delegation. Since the super-fast technology on the one hand and a time-consuming co-ordination on several hierarchical levels on the other hand hinder each other. "Management with a slack rein" will be facilitated by better management information for superiors as well as through selective and immediate informing of the employee on the scope of his job and on the ideas and goals of management. Thus, heightened efficiency control for employees - often suspect - is not at all immanent to information technology.

(4) The objective of a "cybernetic management" as was propagated in the sixties and seventies can, in view of today's potential of information technology, be approached again. Management information systems, namely externally oriented ones (concentrated on the supply of society) as well as internally oriented ones (concentrated on improvement of the

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7 See Wellar 1983.

administration itself) do have a new chance. Cybernetic management will be among the typical administrative functions in an "information society", by using information as a resource as well as citizens' information by providing information as product.

(5) It is possible, with appropriate computer support, to raise the effectiveness of human labor by cutting back routine work to the advantage of those activities which emphasize more our human qualities and abilities, which are not replaceable by machines. Instead of displacing the staff to the periphery of central information systems and thus making them mere slaves of anonymous information systems, automation support can be arranged in a way, that information systems serve the employees as the centers of administration.

(6) It is possible to influence legality of administrative acting in a positive way, e.g. by knowledge-based systems, which bring the respective legal position correctly to the cases being handled. Or by the fact, that by means of information technology, each single job description and the part of the legal data banks which is relevant to the job-description, is correlated more closely, thus allowing information of an employee about changes of the law (specifically the law).

This might be sufficient evidence for the fact that, regarding the level which has meanwhile been reached in the field of information technology, we don't have to be satisfied with the copying of traditional administrative behavior. It is, on the contrary, possible to influence the quality of the execution of public tasks in a considerable way by regarding them in an information-technological oriented way. The results of an authority - and with that the real evaluation scale for public management - are not only being influenced by increased costs (as far as they are justified) for information technology - more wide-spread and used in a more intensive way - but also by the benefits of changes in administrative acting caused.

There should be no deception however, about the fact, that this requires important legal, organizational and technological prerequisites to pave the way. Because a system resting on a network of automatic information flow implies especially:

- that misuse of data is avoided, and norms are made for this, as well as secured, by technological-organizational means
- that data are correct, complete and consistent
- that programs are applied in the right way
- that consequences for the system, which are caused by errors, are taken into account and are kept within limits
- that the various information-technological facilities can communicate with each other

- or that proven methods of administrative control, developed for conventional "paper" administration, are reproduced onto technological-based information and communication systems.

The public administration will therefore need social innovations in order to adapt to the transition into an "information-society", as was the case during the transition from an "agrarian society" to an "industrial society" (then supplementation of sovereign by service administration). Modern information technology obviously implies a lot more than just technical questions. It demands an 'information-oriented view' of public administration instead. Information technology is not 'neutral', like typewriters, which could simply be added to handed-down structures and procedures. Products of information technology cannot be fully finished by their suppliers, because their affective functioning requires integration into the environment of the user, which can only be done by himself. The full exploitation of information technology requires a design which has to include the mutual adaptation of both, information technology and public administration. Thus, those could be right, who claim, that after administrative reforms, which started from public tasks (privatization, de-regulation), personnel (education, leadership), or organization (territorial and functional reforms), the next years will see reforms, which start from the working techniques of administration - most of all from information technology.

This second paragraph was meant to illustrate that the matter cannot rest with procuring and coordinated applying of the manifold information-technological facilities, if the chances of the forthcoming second development stage of administrative automation are not to be lost. Social innovations in the user world which deal with a "new symbiosis" between public administrations and information technology have to be added. The creation of new positions for information technology ("Information Manager" in addition to "Data Processing Manager"), which are once more technological-orientated, must not distract from this.

3 Information Management

Information Management - as a way of thinking, analysis and design of public administrations from the point of view of a reform potential, given by information technology - is apparently confronted by questions in relation to administrative policy. It cannot be the primary business of experts for information technology to answer them, and by the way the latter rarely made use of this role. There is rather a certain vacuum on the part of political leadership as well as public management to be lamented, which is in reality legitimized for administrative reforms.

3.1 Functions and Institutions of Information Management

Each person is here considered to be a member of public management, who - within a field of functions, whether broad or narrow -

- is responsible to get results
- in addition to this, combines resources and
- gives instructions to employees.

If at present and in the future, the interweaving of information technology with the user world is at stake, Information Management has to be integrated into the normal management activities of each superior. Information Management, like conventional executive functions, is part of the daily work.

After the beforesaid it cannot be surprising that Information Management regarded as a function, is similar to customary management descriptions. It consists mainly of

- having a "philosophy" for dealing with information technology or having an automation policy
- establishing technical, organizational and economic conditions and standards
- avoiding mere improvisation (without falling into planning bureaucracy), having an automation plan as a sum of the respective decisions taken, and their background at its disposal, which concerns the application of information technology, as well as the according administrative-political measures
- identifying, making and implementing decisions of administrative-political significance of routine work
- investigating wether goals and restrictions are met or are still appropriate, respectively
- and finally, to represent the points of view, which are held with respect to information technology - not only externally, but also internally - through public relations.

Information Management seen institutionally, that is to say, all customarily known members and groups of management (incl. ministerial council, boards of department-heads, heads of authorities and staff councils, as far as they are integrated into the decision-making process) can be taken into consideration. Accordingly, new positions are not the point.

3.2 Data Processing Planning and Information Management

Information Management differs therefore from "Data Processing Planning"[8]. Data processing planning characterizes the conventional procedure of carrying out data processing objects, as it has developed

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8 See Reinermann 1985 in more detail.

and has proven to be useful for converting manual administrative functions to data processing, during the first broad development-phase of administrative automation. DP-planning assumes actually that the existing agency can be regarded as being already organized in an optimal way, in all respects, with the exception of automation which has still to be carried out. The solution is already included in an automation-order - it has just to be distilled by data processing experts. Since the latter have too little knowledge about the special tasks on the one hand, and the administrative staff have too little knowledge about data processing on the other hand, DP-planning has to put a great deal of efforts into transferring specialized knowledge of the administrative staff, to data processing experts. Its methods and tools pay therefore a great deal of attention to stock-taking and the description of organizational structures, work processings, quantity of cases to be handled, and data sets and data flow in the actual state. Readiness and ability of public management for co-operation are already hindered, because of the amount of material collected, and because of its technological representation. And they stay, in any case, unclaimed.

From the view of the administration, which remains to a high degree unchanged regarding its organization-, staff- and function concerns, a design is factually not taking place (certainly from the point of view of technology, to which the agency is converted). The design-phase is skipped over in this respect. DP-planning can therefore be most useful for well-defined problems as they exist to a large degree, when converting manual procedures to computers. If in fact, however, the point today is to understand information technology as provocation and chance to redesign our public administrations according to the potential of the working technique, then exactly those well-defined problems do not exist. An automation problem does not already contain its solution. The cardinal questions are where and how the problem is located, what should be the objectives, restrictions, alternatives of actions and its consequences, and whether it should be accepted or refused. These questions have to be recognized and answered first of all.

This is why we need a process of control, which is able to cope with such problems, and can draw conclusions therefrom - just Information Management. DP-planning is overlapped by and embedded in it.

It is therefore important that management and administrators are not being diverted from essential decisions by too many technical details. They should, on the contrary, already be given a chance in the early stage to enforce their political and professional assessments.

It is sometimes difficult for data processing experts, to understand this approach. They prefer early and clear-cut definitions of data structures and procedures, in order to be able to optimize "their system". The administrative function is the point, as a matter of fact. It must be put precisely into its desired shape, first of all.

3.3 Stages of Information Management in German Administration

Information Management is actually nothing out of the ordinary, as is shown by the description of the functions. To carry it out is what matters. Public administrations in the Federal Republic of Germany have experienced a boom in Information Management indeed, already in the late sixties and early seventies. During that time, structural measures had been discussed and passed by the Federal Government and all federal states (Laender) in order to set up computers within the public sector. Parliaments, cabinets and leading heads of administration, tackled questions concerning data processing.

It is recognizable, by the way, that one of the most essential effects of innovation by computers might be to isolate data processing, which formerly - being an integrated part of office work - had hardly attracted attention.

The fact that this early heyday of Information Management ceased quickly after the developed norms had been passed, has a lot to do with the special authorities for data processing, which were founded at that time: co-operative computer centers, automation commissions, or data processing sections, had a firm hold on things, while public management believed that it would only be necessary to deal with data processing, regarding the setting-up and occasional adaptation of these structures, and nothing more.

Today, in the middle of the eighties, Information Management seems to revive. In some Laender they are reconsidering the established relations of information technology and administration basically[9]. The highest legislative and executive committees attend again information technology and its appropriate use. This time it should be avoided, however, that it rests with a momentary boom again. Information Management has to be perpetuated. In view of the weight of information and information technology within public and professional discussions, the odds are in its favor.

In this context complementary measures too, become of course relevant for implementing, securing and optimizing Information Management which will still have to be discussed later in this paper. A comparison to traditional leadership functions, like personnel management and financial management, with its manifold institutional and legal safeguards, reveals already, how underorganized the Information Management in our administrations still is, as a rule.

One thing should however not be neglected: at times it would already be a considerable step forward, if public management showed a higher interest in questions concerning technology and would not rejected

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9 An example is the new State System Concept ("Landessystemkonzept") of the state Baden-Württemberg; see Glienicke 1985; Greve and Reinermann 1987.

them; if critical questions were put to the data processing section; and if automation problems became included in the administrative-political decisions. In so far as this goes, Information Management can be started on immediately. The management doesn't therefore need to post-pone its required engagement until the setting-up of a special Information Management infrastructure is completed.

4 Measures to Support Information Management

Today the main efforts in the Laender mentioned are made in the field of supporting Information Management through new institutions or through institutions whose functions have been changed. This is necessary but not yet sufficient, as has already been mentioned. Information Management cannot be introduced according to the motto: "As of tomorrow, there will be a new style of management". Besides, nobody can be "detailed" to Information Management. It is counted amongst the genuine functions of line management.

A distinction about Information Management has to be made from the point of view of the respective executives, between delegated measures on the one hand and supporting measures on the other hand. The latter are administrative, service and operating functions of information processing.

Before going into them in detail, it has to be clearly emphasized however that one of the most important supporting measures has to be undertaken by the management itself: it has to be exemplary in the execution of Information Management and willing to really exploit the potential of modern information technology within the daily management tasks; to use management information itself actively; and to instruct and examine the subordinated levels regarding automation planning. A good example is the best master. To be an example in the performance of Information Management will be a more decisive fact, whether this time a lasting amalgam of public management and Information Management can be reached, than the new institutions which are being discussed by some of the Laender.

In-service training of public management in technological matters, might therefore belong to the most important measures in the transition to Information Management. Nobody would like to devalue the existing management hierarchy by waiting for employees to grow up, who hold the respective knowledge from pre-service education. With an understanding of Information Management, as it is assumed here, motivation for in-service training should also be high: it is not an alien matter, which managers would have to deal with besides. It is a question of general leadership knowledge, to which only as much "computer

literacy" has to be added, as to put public management into a position to see its new scope and to communicate with those concerned[10].

The supporting measures of Information Management will only be outlined. At first functionally and afterwards institutionally.

Information Management requires administrative support. Part of it is

- preparation of binding technological, organizational and economic restrictions and standards, of the automation plan, of particular management decisions and of public relations on the one hand,
- and revision within the sphere of responsibility, whether the automation "philosophy", the automation plan and standards released are matched (revision of applications and plans), on the other hand.

Services for information processing also support Information Management, if they are meant for increasing the users' ability for innovation. The following should be emphasized:

- observation of the market for information technology and general development in the field of "administration and automation"
- unselfish, high-quality consultation, regarding organizational, technological, financial, economical or legal questions
- development and maintenance of system software and application software
- model-like presentation of exemplary technical-organizational solutions of the problems
- education and training, as well as practical instruction
- exchange of experience.

The operational functions of information processing should finally be mentioned:

- operation and maintenance of facilities for processing and exchanging data
- collection, modification, analysis, distribution and securement of data.

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10 For curricula considerations see Reinermann 1986.

Several types of institutions can be taken into consideration for carrying out these three sections, which give support to Information Management. Amongst them are:

- the organizer, as expert for the distribution of the tasks amongst the job-carriers (man or machine), who is also responsible for the organizational integration of information technology
- the information adviser (the more transition to an "Information Society" urges to consider information as resource and as a product, the more important it seems to provide for professional knowledge, concerning the location and usage of data collections)
- the commissioner for questions concerning the application of information technology (in the role of a personified impulse generator for Information Management, to be practised by the management)
- a center for administration and automation (as a place for collected expert knowledge, concerning organizational, legal, financial, ergonomical, economical and technological questions of administration and automation
- computing centers (as places for programming and operation of data processing and data exchange systems)
- and administrative informatics (scientific reflection concerning "administration and automation" in the form of descriptive-empirical statements on the one hand, and assistance to administrative action via education and training, publications and participation in projects, on the other hand).

Any one of these institutions can take part in some of the delegatable sectors of information processing, in the same way as a certain sector can conversely be put upon several institutional shoulders. Depending on the size of the administration to be regarded and on its level of knowledge and experience can these institutions finally be organized in a, more or less, decentralized way, and they can be maintained within the administration or made use of as external establishments.

Information Management, as a whole, depends on a complex structure, which partially already exists, and clearly exceeds the conventional data processing department, as a rule. It can certainly be put into operation by order, e.g. administrative decree. However, as has already been mentioned more important is to exemplify its actual use permanently.

5 Conclusions

In their present stage, administration and automation have produced relevant evidence to the fact that technological innovation can be realized and anchored with the user by social innovation only. But technological innovation, in this case microelectronics, is much more fascinating. It has the privilege to basking in the glamour of a wide public interest. Whereas social innovation, which is understood as the many complementary measures of paving the way for an effective use of technology within the field of application, remains disregarded and requires plain daily routine work "only".

At present and in the future, Information Management by public managers is one of the most essential preconditions for the realization of information-technological progress in a useful way by social innovation.