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Contributions to Defining the Integrated Information-Decisional System as an Element of Management

1. ECONOMIC INFORMATION SYSTEM, INFORMATICS AND INFORMATIC SYSTEM

The information system has actually existed for a long time. It has appeared with the necessity of leading an activity and has acquired proportions with the development of the productive forces.

For the notion of *system*, we find in the literature of speciality definitions, such as "a set of identifiable and interdependent components and connections developing according to some laws and(or plans and)or given purposes [18]; "a set made up of parts each having its own partial independence and laws" [6].

In connection with *the economic information system*, we shall dwell only on two definitions, namely: "By information system we mean the totality of methods and means used in the information process, considered as a set organized and integrated into an organic whole of data collection, transmission and processing operations and of data systematization, analysis, storage and use..." [36]; "The economic information system is thus a component part of the scientific organization and management of economy and production dealing in an organized way with the collection, transmission, selection, storage and processing of data on the economic means and of their sources of formation, on the economic processes and phenomena, data expressed in value or natural units, on the whole scale of the national economy". [32]

Informatics has appeared after 1950, in close connection with the development of the automatic computing technics. Yet, it acquired the name of informatics only a few years ago, in France. *)

*) The French Academy adopted this term in April 1966, after Philippe Dreyfus, at a session of the French Association for Data Collection and Processing, proposed for the first time the use of the word "informatique". Before the French, the Anglo-Saxons had called it Computer Science and later on, they also adopted the expression "Informatics" [6].

Its definition was formulated later. A first attempt at defining the notion of informatics was made by the French Association of Normalization "ANFOR:" "a set of scientific disciplines and specific techniques applicable to data processing, especially by automatic means".

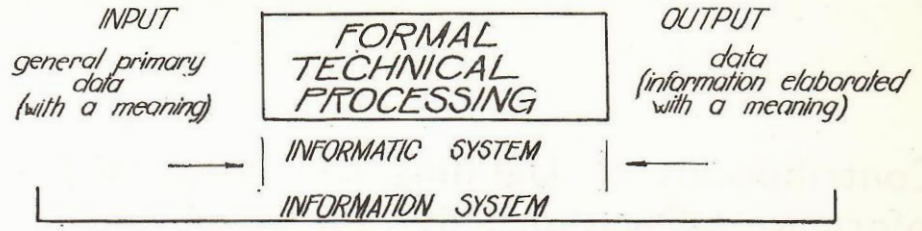


Fig. 1. *Integration of an informatic system into the information system*

The definition adopted by most specialists is that given by the French Academy, namely: "*The science of rational processing of data by automatic machines, considered as a support for human knowledge and for communications in the technical, economic and social fields*".

Informatics is not the science of data processing nor is it the science of computers as it was affirmed at a given moment. "Informatics-Professor J. Arsac of the Paris Faculty of Sciences points out referring to the definition given by the French Academy-was revealed by the computers, but data processing existed long before the end of the 19th century". [6].

What defines informatics is the processing of data "especially by automatic machines".

Data processing in the acceptation of informatics "never tackles the plane of significances, always remaining at a formal level" [6].

Approaching the information through its formal structure "informatics is an *instrument* always grafted on an organism or a field of activity serving it. *The materialization of the informatic instrument on a certain organism or domain represents the informatic system* [23] *or the informatic systems represent the impact between the traditional economic information systems and the electronic computer*" [8]. In essence, "the informatic systems must become the technical-material basis of the information systems" [35].

Schematically, the inclusion of an informatic system in the informational system to which it belongs [32] may be represented as in Figure 1.

Hence the conclusion that the economic information system has a sphere of operations including also the informatic system as a materialization of informatics on the information system. Consequently, the latter is part of a unitary whole which is called information system.

2. THE PYRAMID OF DATA

The organization of an economic information system must take into consideration the volume of data necessary on the different stages of mana-

gement in an enterprise and on various organizational stages, on a vertical line, up to the central leading organ.

In this conception, the well known diagram in the form of the pyramid of data is valid. Considering the case of an enterprise, schematically, this pyramid appears as in Figure 2, [25].

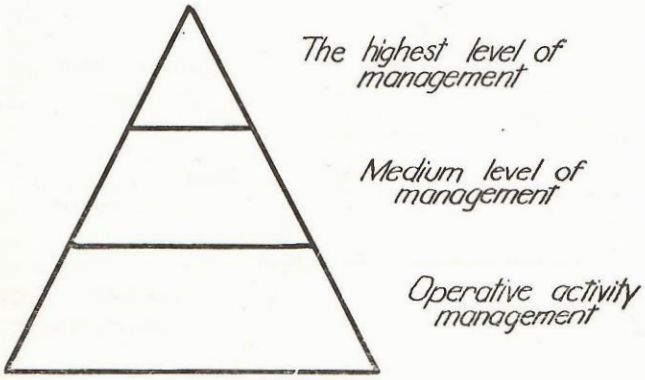


Fig. 2. *Information pyramid*

This diagram expresses one of the principles which must be at the basis of the organization of an economic information system, namely, the decrease in the number of data as the level of management increases. The decrease of the number of data at the superior decision levels, however, does not mean their more reduced information. This is understood to the effect that "compressed", respectively aggregated, processed data reach the higher levels of management.

The decrease in the number of data does not take place lineary but gradually. This is illustrated in Fig. 3, where a certain amount of data corresponds to each stage.

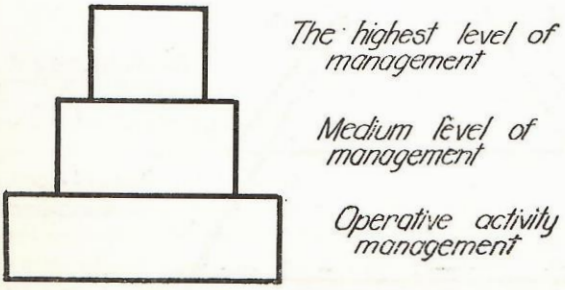


Fig. 3. *Information pyramid in a step form*

But, if we take into consideration the way of obtaining the data characteristic for each stage, the representation acquires the shape in Figure 4.

According to this representation, all data from all inferior levels would independently reach the highest level, a fact which is incorrect because if

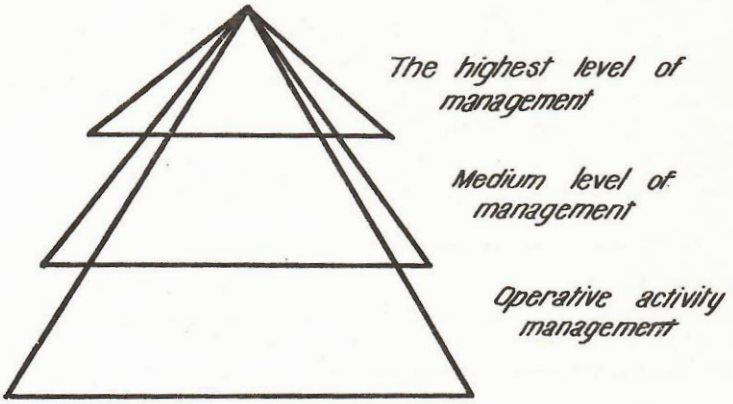


Fig. 4. *Modified information pyramid, respectively the arborescent structure of information*

one proceeded in this way, things would become most difficult. Of course, it may happen in some cases that the highest level should obtain data separately from the other levels too, besides the next inferior one.

Considering those shown above, the adequate representation acquires the shape in Figure 5, which is usually called the arborescent structure of data.

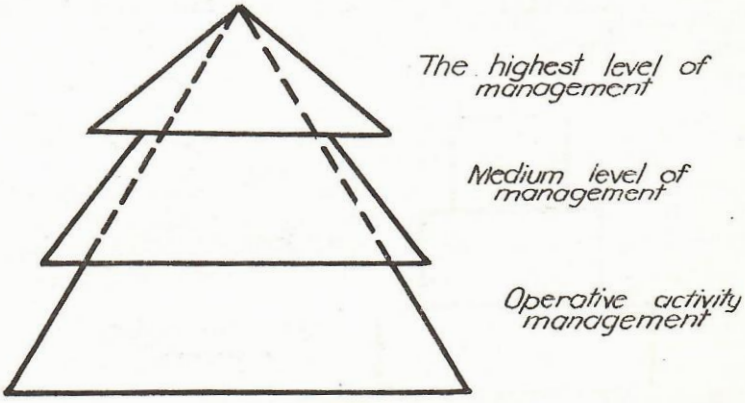


Fig. 5. *Completed information pyramid*

3. DATA FLOWS WITHIN THE ECONOMIC INFORMATION SYSTEM

Within the information system, we shall first deal with an upward flow of data.

The *upward flow* is closely linked with what is called data aggregation, that is as the management level increases, the volume of data decreases, the latter however being richer in content. By the concentration and assemblage of an ever bigger number of individual data, aggregated (synthetical) data with a great capacity of generalization are obtained. By this, the qualitative level of these data is improved and the transmission of too many individual data to the higher management levels is avoided within the pyramid of data. An ever greater abstracting of all that is necessary is obtained in this way.

In practice, this principle is often disconsidered in the organization of the economic information systems, so that certain leading bodies require non-aggregated data also in situations in which they do not need them, a fact which entails an additional and useless consumption of work and time from the subordinated compartments.

There is also a *downward flow* of data. This flow is linked with the disaggregation of data. The laying out of the plan indices which have to be ever more detailed as the management level is lower represents an example of data disaggregation.

Finally, apart from the *two vertical flows* there are also *horizontal data flows*, in both directions, between compartments, enterprises and, generally, between units with a similar organizational structure.

All these four flows coexist in time and space within the pyramid of data, from bottom to top.

Some authors [38] define these flows as follows:

— ascending — from the controlled bodies to the control bodies; it can also be found as state data, because they refer to the stage of the fulfilment of orders, tasks, etc;

— descending — from the control to the controlled bodies; in the literature of speciality, it can also be found as control data;

— colateral — between the enterprise subunits;

— external — between the enterprise and the units outside it, with which it has relations.

4. DECISION

The *decision* [11], [24] is the concrete expression of the functions of the activity within which it is taken, of the objective of the respective economic activity, it is the means by which this objective is carried out. It is thus subordinated to the objective. Decision means the act by which a certain line of behaviour is decided upon for attaining the respective objective, an act which comprises the action, the ways, and means for attaining the objective. In essence, the decisions are but an uninterrupted development of the economic activity within which these decisions are taken.

In a restricted sense, the decision represents the act by which one of the functions of management, the control function respectively, is fulfilled.

The decisional process, however, has a much wider sense than the proper adoption of the decision. It comprises both the preparation of the decision variants, their substantiation, the selection and adoption of the best variant and the organization of its application and the control of its carrying out.

Being a continuous process representing, as shown above, the uninterrupted development of activity, the decisional process implies the knowing of the effects of the taken and applied decisions, this enabling the continuity of the decisional process.

The decisional process involves to an ever greater extent all the functions of management, it represents the main content of scientific management.

5. INFORMATION-DECISIONAL SYSTEM

An economic information system is not organized and does not function for itself, but, it must represent the basis for the substantiation of decisions and meet the necessities for the taking of the decision. Referring to this problem, academician Manea Mănescu [28] points out: "The information system is playing an essential part in the adoption of decisions on the whole scale of economy, from enterprise to branch, or at the general level of the country's economy ... Undoubtedly, the information system holds a main place in the management of the national economy as a whole, but, at the same time it must ensure through its component elements the capacity of the necessary decision at the level of the constitutive compartments of the economy: enterprises, economic groups, local bodies, ministries, central economic institutions".

Fully subscribing to this way of considering the economic information system, we add that at given moment the information and decision overlaps one another. As we showed before, the decisional process implies the preparation of the decision, a fact which is done with the aid of information. The decision is prepared with the aid of information beginning with the lowest level, its share constantly increasing to the highest levels. Consequently the information and the decision coexist together.

It should also be pointed out that the process of taking decisions does not exclusively belong to the highest management level. The hierarchization of decisions intervenes here, meaning by this that the decisions, in relation to the hierarchical level, are of greater or smaller scope. Decision exists at all management levels. Of course, the strategical decision which decides upon the general activity of the enterprise is placed at the highest management level; but, below this decision, at lower levels, a whole number of decisions are taken, obviously all of them being subordinated to and in close concordance with the decision at the highest level; usually, these are called derivative decisions.

Unfortunately, it happens several times in practice that the derivative decisions are taken also at the highest level. Very often, those taking decisions at a medium level and even at the level of operative management do not take certain decisions lieing within their competence, these being incumbent on the higher level.

This happens for several reasons, such as:

— Those who should take these decisions, at a medium level or at the level of operative activity, do not have the necessary training;

— due competence is not granted for the lack of confidence and for fear of mistakes;

— those taking decisions at lower management levels "run away from responsibility" and push these decisions to higher levels;

— the highest level takes over these decisions for "knowing everything", for appearing "indispensible" in all problems of decision, from the smallest to the biggest, for "nothing to be done without its decision".

Each of these situations represents a mistake of management, one more serious than the other. Upon a more careful analysis of an enterprise in which we find such situations, we shall notice that its activity is unsatisfactory, because the highest management level being too much occupied with derivative decisions overlooks the big problems. At the same time, we cannot blame those taking decisions at the highest management level for not working, because we shall see that they are in the unit from morning til night. Sometimes, such a "style of work" conceals the incompetence of the respective management level.

A suggestive representation of the sharing out of decision on management levels seemed to us that worked out by professor Constantin Florescu [24], which we reproduce in Figure 6.

As a matter of fact, this sharing out can be integrated also in the changed pyramid of data — in Figure 5 — and it might be represented as in Figure 7 [28], which we call *the information-decisional pyramid.*

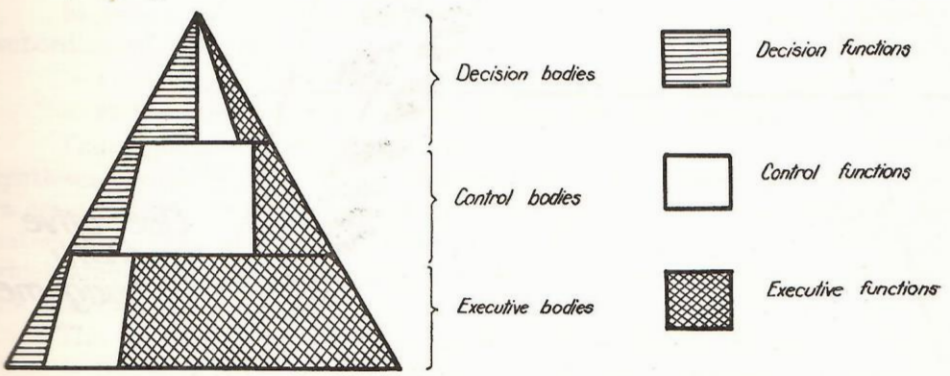


Fig. 6. *Decision distribution on management levels*

The conclusion is drawn from the representation reproduced in Figure 7 that at all management levels data and decisions exist together, so that these two make up a unitary whole. Therefore, *the information system is also deci-*

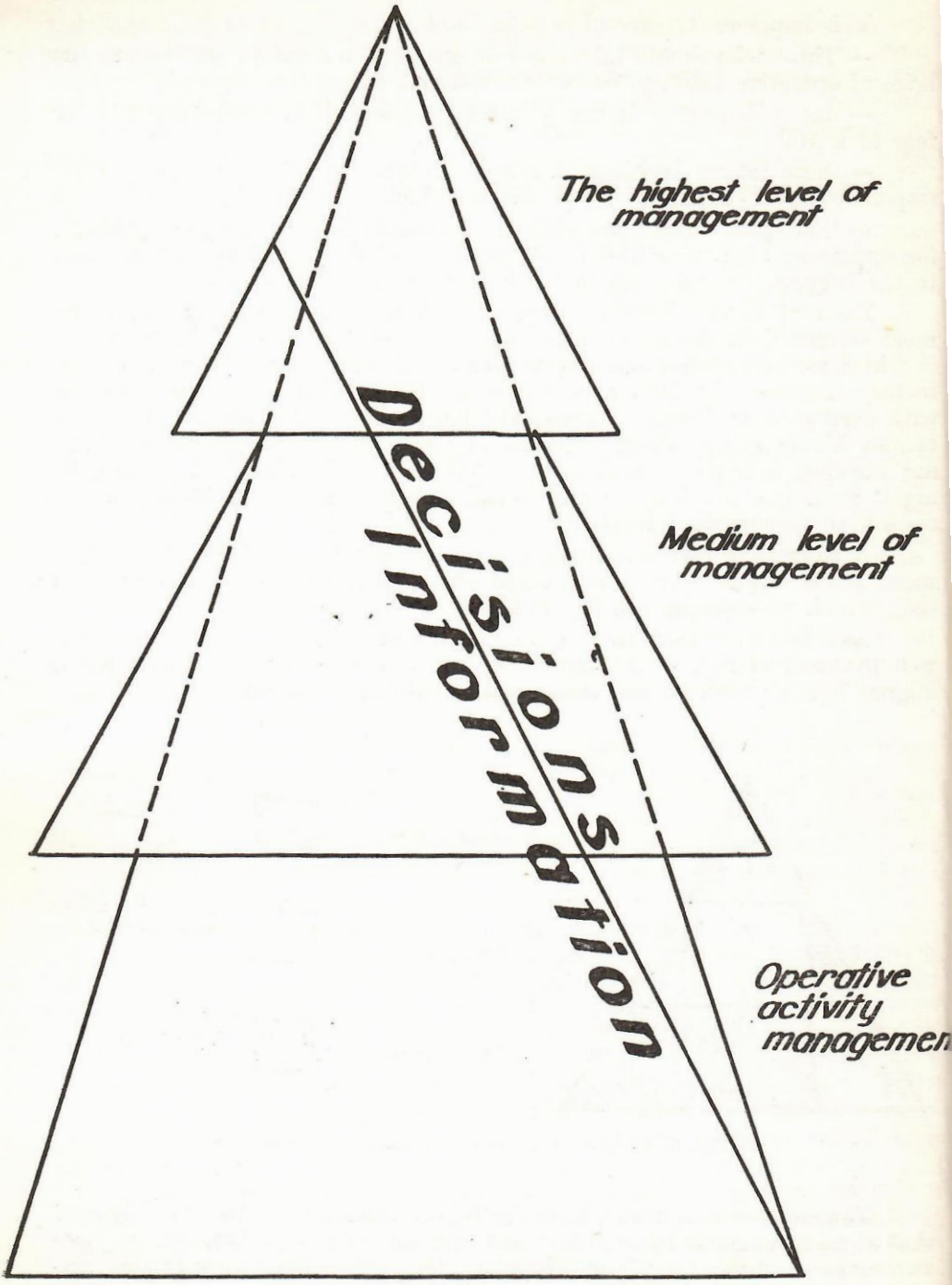


Fig. 7. *The information-decisional pyramid*

From what the author of this work knows, other specialists too consider that the economic information system is, at the same time, decisional [20], [34], [38], in some cases, definitions being also formulated, such as this one: "... a set of compartments connected by informational links ensuring the taking of decisions in view of the implementation of the objectives" ... [11]

As seen in Figure 7, the part meant for decision, on management levels is in inverse ratio to the part meant for information, namely: as the management level is on a higher stage, the part meant for decision increases, whereas the part meant for information decreases.

The information-decisional pyramid is valid not only for the hierarchical levels within an enterprise but also for the hierarchical levels within the organizational links superior to it. The information-decisional pyramid is thus applicable both to each group and to each ministry, taken, only as independent units. We emphasize that this pyramid is applied both for the groups and ministries taken separately, but, together with the units subordinated to them: the groups together with the enterprises coordinated by them (this category also includes the groups organized on the structure of some enterprises) and the ministries together with the groups (the latter with the subordinated enterprises).

In this way, as results from Figure 8, we shall have the following information-decisional pyramids:

a) pyramids on independent units:

— at the enterprise;

— at the group;

— at the ministry.

b) pyramids on coordinating chains taken together with the units subordinated to them:

— at the group (with the subordinated enterprises);

— at the ministry (the subordinated groups and enterprises included).

This representation may be extended up to the level of the central synthesis organs in the economy and even up to the highest decision levels. In essence, from the point of view of the information-decisional system, the national economy may be represented in the form of a huge pyramid, within which other independent pyramids and, at the same time, its component parts are functioning.

The following conclusions result from those shown above:

— the economic information systems are not organized for aims in themselves but they must serve the decisional process; they have to be organized by setting out from the requirements dictated by a thorough substantiation of decisions and by their taking and control;

— if that's the case, it means that the economic information systems are working "hand in hand" with the decision; therefore, we cannot speak about information systems but, about information-decisional systems.

The economic information systems cannot exist and never existed but for the substantiation, taking and control of decisions. First, the necessity of taking decisions has appeared. To take them, the necessity then appeared

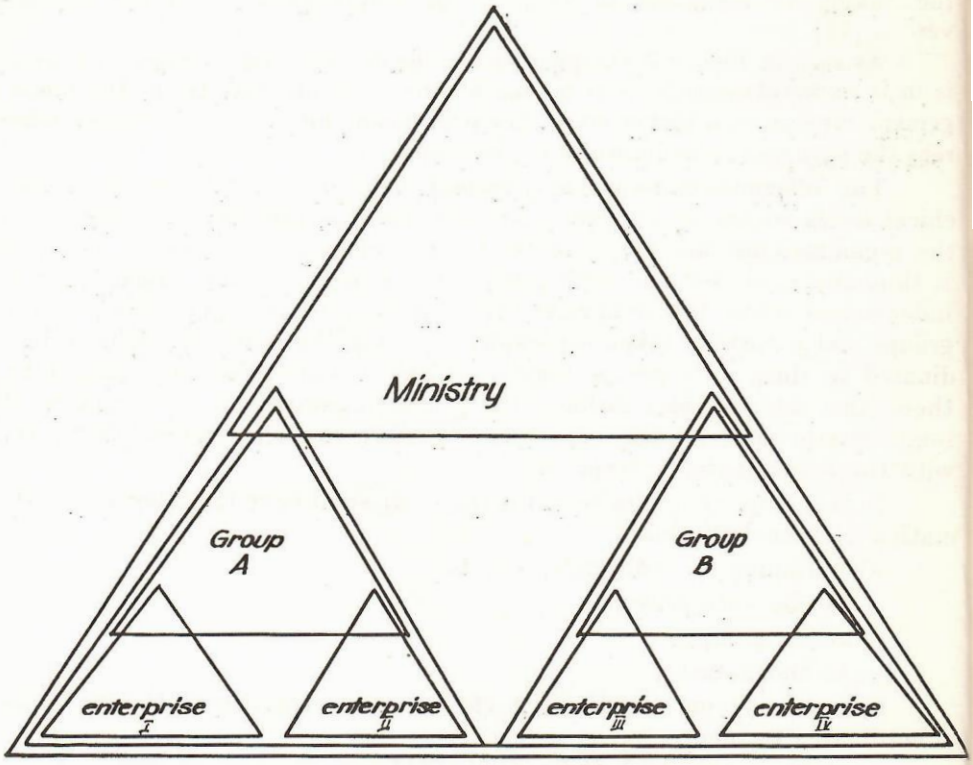


Fig. 8. *Information-decisional pyramid on organizational steps*

of substantiating them with the aid of data and that of controlling the taken decisions. It is the decision which decides on the existence of the economic information system. Therefore, they can exist only together.

6. THE PRE-EMINENCE OF THE OBJECTIVES IN ORGANIZING THE INFORMATION-DECISIONAL SYSTEM

The economic information system is subordinated to the decisional process. The quality of the decisions to be taken depends on the quality of data; or, in other words, the quality of decisions decisively depends on the quality of data at the basis of their substantiation. Consequently, the nature of data is determined by the nature of the decision. In its turn, as we have already shown, the decision is determined by the objective which has to be

attained. Thus, it results that "*the information-decisional system is determined by the objective of the activity it must serve*". Therefore, the information-decisional system should always be conceived by setting out from the objectives which are pursued.

Referring to it, A. Delville [20] points out: "the material activities carrying out the objectives of an enterprise represent the basis on which the system of elaboration, transmission and processing of data must be built". He conceives this system in close connection with the decision process, namely as an information-decisional system. Starting from the idea that the objective pursued is at the basis of the organization of the information-decisional system, he has established the so-called "downstream-upstream methodology".

According to this methodology, in establishing the quantity of data, one sets out from the basic processes carrying out "the objectives of the enterprise" (downstream) and one reaches the administrative processes which are but the decisional processes (upstream). He has conceived this process as an information waterfall which seemed very suggestive to us and which we reproduce in Figures 9 and 10.

In this connection, other authors too define the enterprise information system "as a set of means, methods and actions used to ensure the transmission of data for directing the enterprise activity towards the carrying out of the aim for which it was set up ..." [38].

Thus, if we set out from the objective which must be attained, it can be said that it is always necessary to establish which is the input data for its attainment.

Specialists in informatics say that in establishing the volume and structure of the input data in an informatic system, one must necessarily start from the previously established outputs [35]. In our case, the input data for an objective represent the output data for the information-decisional system. The difference consists in the fact that we refer to the information-decisional system and specialists in informatics refer to the informatic system which represents "the materialization of the informatic instrument" on the information-decisional system.

We might put it as follows: for the attainment of an objective it is necessary to set out from the corresponding input information-decision which represents the output for the information-decisional system. If we decompose the information-decisional system into informational and decisional system:

— for the objective, the data-decisions or only the decisions represent inputs and for the information-decisional system outputs;

— for the decision, the data represent input and for the information system output.

As in the case of the informatic system, the input data for the information-decisional system will be determined by the previously established outputs for the attainment of the objective.

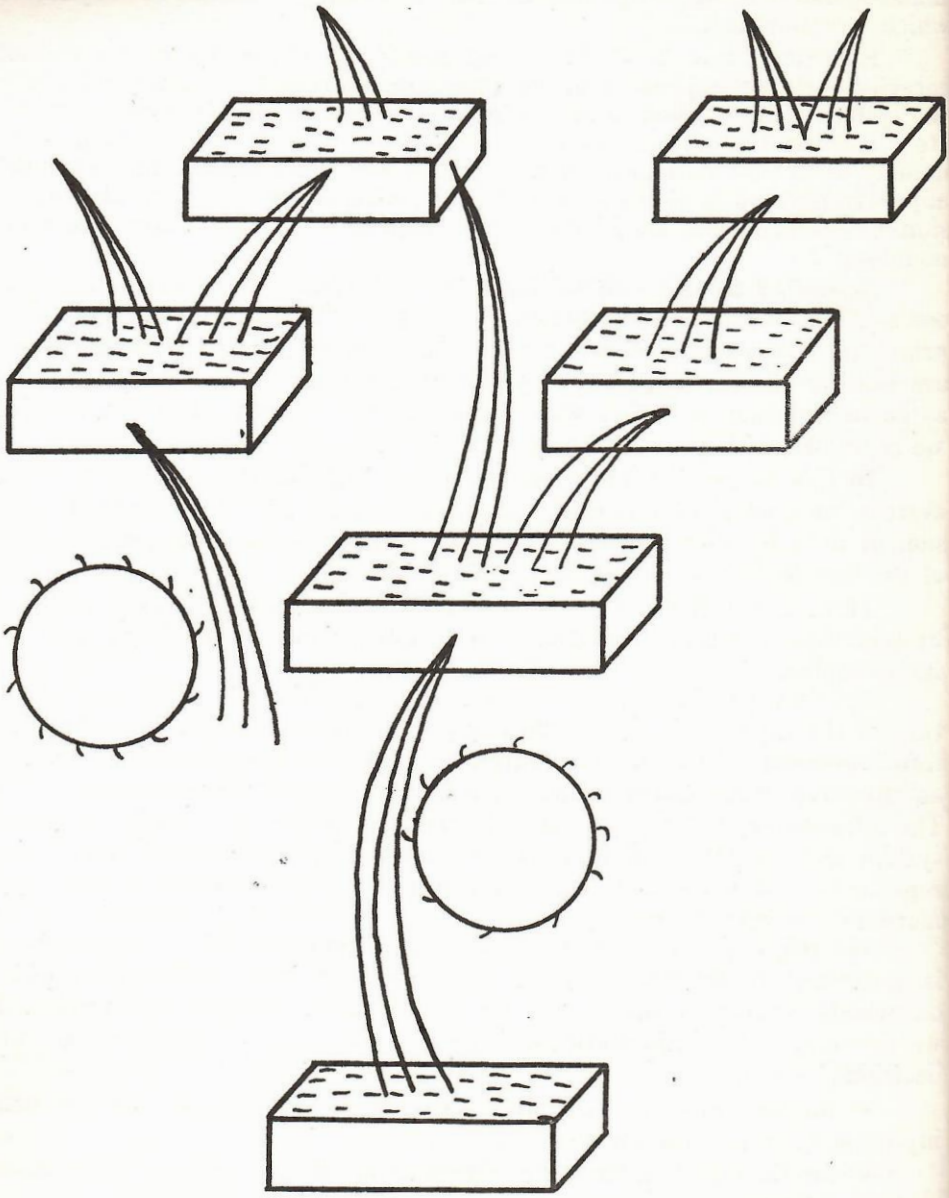


Fig. 9. *Information flow*

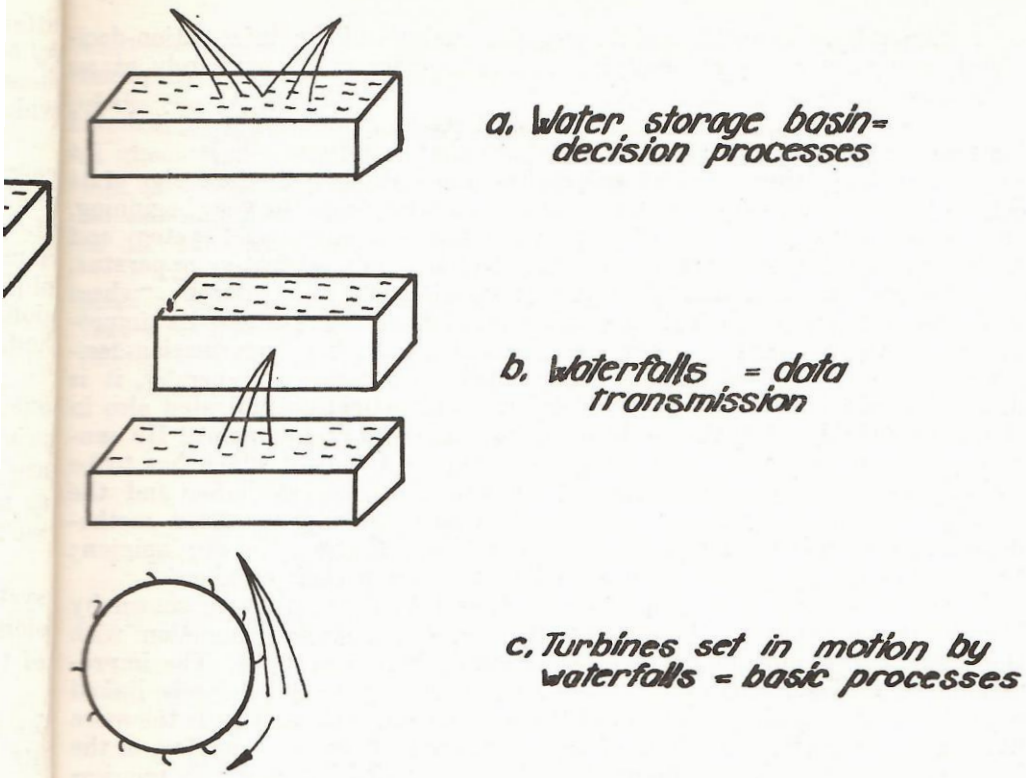


Fig. 10. *Information flow*

7. THE EXTENT IN ORGANIZING THE INFORMATION – DECISIONAL SYSTEM

A. Delville points out that the situations determining the analysis of the information-decisional system existing in an enterprise at a given moment with a view to improving it (he refers to an industrial enterprise) are the following:

a) a technical activity is created or cancelled; a new product is manufactured; a new enterprise is set up; some enterprises are abolished by merging;

b) a technical activity is changed (extension, restriction, etc.);

c) changes in some conditions influencing the organization of the existing information-decisional system appear (new legal dispositions, new conditions as regards organization, sale, etc.);

d) defects are noticed in the organization of the respective information-decisional system (inadequate information at certain management levels, the delayed arrival of data, a swollen administrative apparatus, etc.);

e) a new way of data processing appears;

f) a longer time has elapsed since the past analysis of the respective information-decisional system.

Generally, the author points out, the analysis of the information-decisional system is made at commissioned enterprises and very rarely at an enterprise in the stage of design.

This remark is worth taking into consideration. In our opinion, it should become compulsory that the technical-economic study which is made for approving the setting up of an enterprise should also include the design of its information-decisional system. This would guarantee, from the very beginning, the use in the respective unit of a rational information-decisional system and a thorough substantiation of the necessary technical-administrative apparatus.

Setting out from the above situations, Delville asks himself: "where does the analysis of the existing information-decisional system, its improvement or the planning of a new one begin and end? The information-decisional system is connected with many other problems and, generally, it is difficult to mark the zone to be analysed. Is investigation indicated also in the zones neighbouring the problem proper and up to what point? He enumerates three elements determining the extent of the field which has to be investigated, namely: the number of analysts, the time available and the so-called "taboos" (legal, contractual obligations; some generalized methodologies impossible to change-or which should be changed, in our opinion; the stand of some people or bodies which do not change their opinions).

We consider it very important to take into account those shown by Delville in re-examining the outlook of some specialists in connection with the necessity of improving the information-decisional systems. The improvement of decision making and of scientific management is closely linked with the continuous improvement of the information system. This is the more necessary under the conditions of the stage covered by our country, of the impetuous development of the productive forces, which imperatively requires the "on the fly" improvement of the information-decisional system, because, otherwise, it becomes an obstacle in the way of progress.

Unfortunately, in many cases, in practice, this extremely important problem is dwelt on as a "campaign action", or is on the outskirts of the preoccupations of the responsible factors.

It seems equally important to us to outline the fact underlined by Delville that outdated information-decisional systems are maintained in many cases because of the wrong attitude of some leading bodies which either out of indolence or lack of understanding hardly agree with the idea of the new.

8. INTEGRATED ECONOMIC INFORMATION SYSTEM

In the literature of speciality, the notion "integrated" was used especially in connection with the data processing system which was sometimes called: "a system with a minimum possible redundancy and capable of answers upon request" [19].

Referring to data processing which, as we pointed out, is part of the economic information system, a group of researchers of the Commercial Research Institute shows that "the achievement of a link between various compartments of the enterprise and between them and the higher links can be ensured by an integrated processing of primary data from their appearance

and recording in the primary documents to the obtaining of final data and the taking of decisions which are necessary on various stages of management of the economy" [16].

Speaking about the integration of the information-decisional system, we should not confine it to the phase of data processing. Therefore, we say that an *integrated economic information system is that which allows the use of the same data from their input in a raw form to their output in the form of indices for all information and decision making needs.*

Adapting E. Reblin's diagrams [39], worked out in the idea of a single phase of the economic information system — processing — and which seemed very suggestive to us, an unitegrated information system and an integrated information system might be reproduced as in Figures 11 and 12.

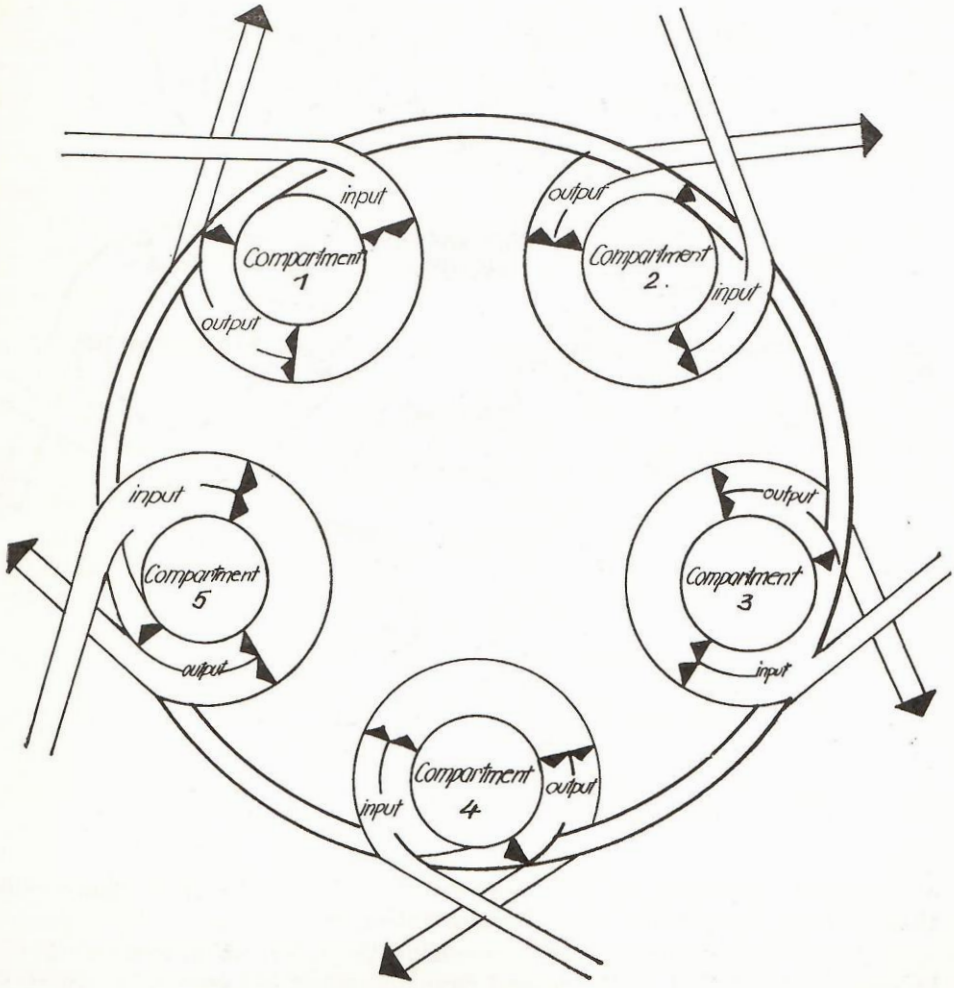


Fig. 11. *Unintegrated information system*

The diagram in Figure 11 renders the fact that each labour compartment of an enterprise has its own information system. In the diagram in Figure 12 there is a single information system for all labour compartments,

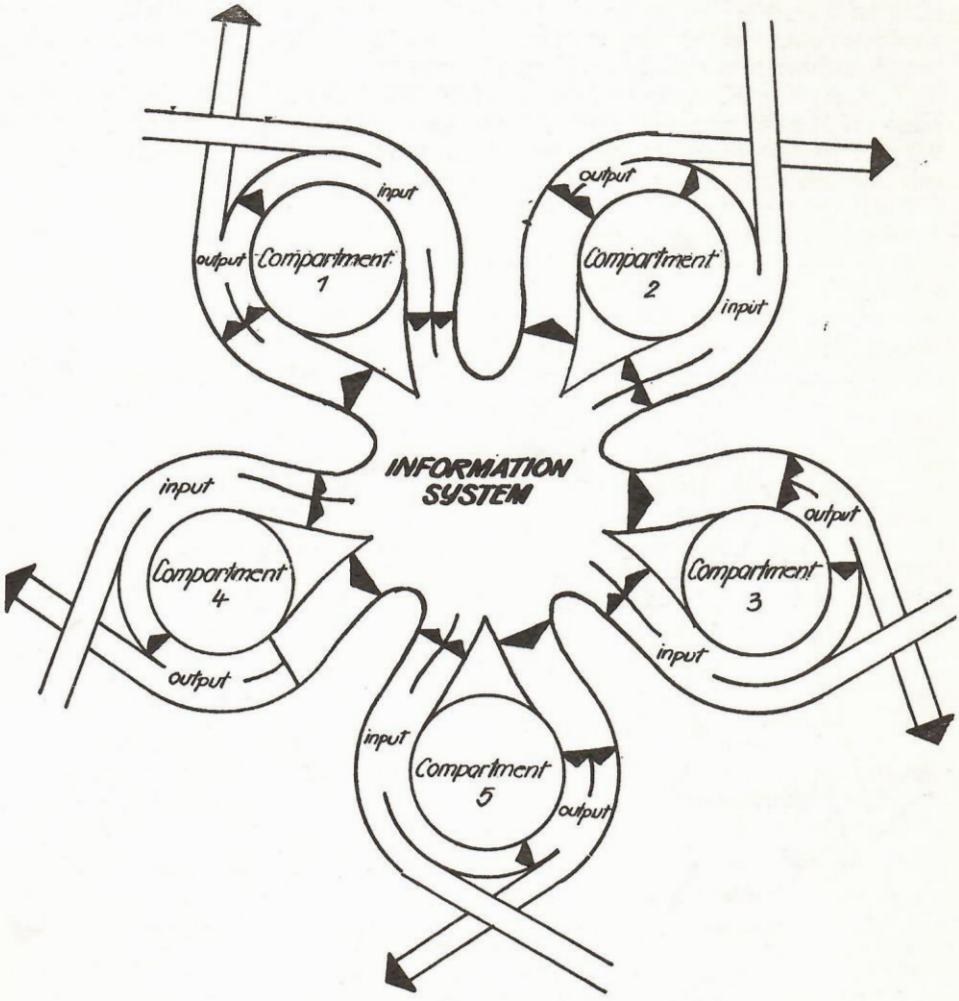


Fig. 12. *Integrated information system*

a fact which allows the use of all data for all information and decision needs; thus, it is an integrated economic information system.

Analysing the two ways of organizing the information system, it can be easily noticed that in the second case, the effect of synergy is important and positive.

9. THE EXTENSION OF THE INTEGRATION OF THE ECONOMIC INFORMATION SYSTEMS

In practice, the economic information systems can be unintegrated or integrated. The unintegrated information systems existed first. The integrated information systems have gradually appeared, aiming at extending and at replacing the unintegrated ones. The scientific management of activity requires that the economic information systems to be integrated information systems.

In our opinion, the integration of the economic information system is indissolubly linked to the use of the means of automatic data processing. It is possible to a smaller extent, under the conditions of the use of classical processing means.

The appearance of the automatic computing means and together with them the possibility of organizing the data banks have thus facilitated the passing to the integration of the economic information systems. Hence, the conclusion that the integrated information systems are replacing the unintegrated ones with the introduction of automatic computing means.

In our opinion, *the area of integration may be extended up to the level of the national economy.* The organization of data banks enables first the integration at the enterprise level and then both vertically between the enterprise and the group, between the group and the ministry, etc. and horizontally, between enterprises, between groups, between ministries, etc.

10. THE REPRESENTATION OF THE INFORMATION-DECISIONAL SYSTEM

According to several authors, the economic information system is made up of five successive operations, namely: issuing, collection, transmission, processing and storage. In a very simple way, this succession can be represented as in Figure 13.

It results from this representation that the economic information system is a static instrument, organized for itself, whose finality is the storing of data.

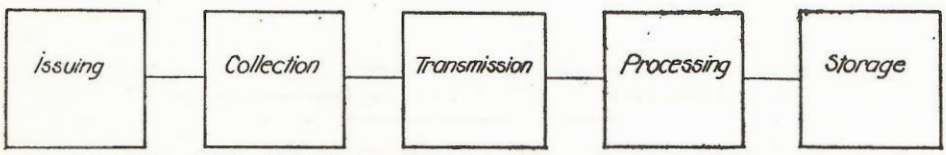


Fig. 13. *Information system*

However, we agreed that it is organized only for the need of decision. It means that the above representation implies its continuation, to the effect of turning to account the results obtained by data processing, the storing operation remaining auxiliary, for data store needs.

We might say that, as reproduced in Figure 13, the information system represents, in essence, the preparation of the decision. For it to become decisional, the phases of analysis, variants and decision proper should be added to the representation in Figure 13.

But, even in this form, the system has not a working character, it is not dynamic, because, for the decisions to be carried out, something "else"

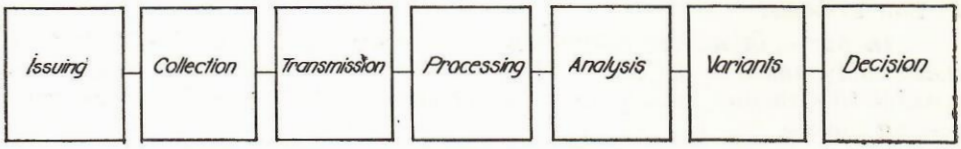


Fig. 14. "*Passive*" *information-decisional system*

is necessary. Therefore, the representation we propose in Figure 14 is conventionally called a "passive" information-decisional system.

We have already shown that the information system is organized for the needs of decision substantiation, making and control.

The decision is a dynamic notion and, therefore, in our opinion, it contains that "something", namely the action, as we have already shown before. In its turn, the action generates the result as a natural effect of action. Finally, the result engenders the information, so that the cycle *information-analysis-variants-decision-action-result-information* [9], [32] of the management process concludes.

In a simplified form, this cycle is reproduced by some authors [32] as in Figure 15.

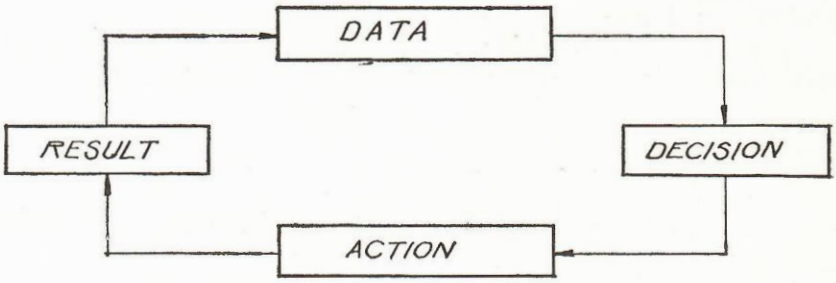


Fig. 15. *Plotting the information-decision-action-result-information cycle*

Linearly, in the succession of all phases, it can be represented as in Figure 16, conventionally called an "active" information-decisional system, to distinguish it from that in figure 14. In our opinion, this is in fact the *information-decisional system.*

11. THE INFORMATION-DECISIONAL SYSTEM — A CYBERNETIC SYSTEM

Academician Manea Mănescu, promoter of the Romanian school of cybernetics, points out: "... in the economy, the set of existing activities and of feed-back leads to the idea that any economic organism-either we refer to an enterprise or to a branch, to a sector or to the entire economy — can be considered a cybernetic complex" [28].

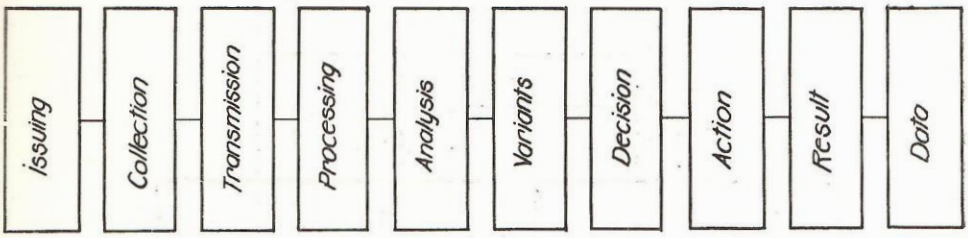


Fig. 16. "*Active*" *information-decisional system = information-decisional system*

Setting out from the general representation of the cybernetic model, a detailed description of the part referring to the management system appears according to this conception [27], as in Figure 17.

Explaining the model, the author points out: "With the aid of the information system, data are received from inside the economy, on the basis of which their processes and trends of development are analysed, a comparison is made with other data and with the previsional model (the plan), *the decisions are elaborated and retransmitted in the economy, the feed-back being thus achieved*". The emphasis belongs to us and we made it because it suggests the idea that in this way, the cycle of the process of management we mentioned before is achieved, in fact. *As this cycle, the information-decisional system respectively, as we called it, overlaps the managed economic system, which is cybernetic, it results that the information-decisional system is cybernetic too.* We add, even if we repeat ourselves that we have conceived the information-decisional system as a set made up both of data of condition and of control.

In our opinion, the representation of the information-decisional system corresponds to the chart drawn up by Eugeniu Niculescu-Mizil, which we reproduce in Figure 18.

12. THE PRINCIPLES WHICH MUST LIE AT THE BASIS OF THE ORGANIZATION OF AN INTEGRATED INFORMATION-DECISIONAL SYSTEM

In our opinion, the following principles [8], [15], [31] should be taken into consideration in the organization of an integrated information-decisional system:

a) *The precise and clear determination of the objective of the activity* for which the respective integrated information-decisional system is organized. We have shown that any economic information system must answer the needs of the substantiation and making of decisions for the implemen-

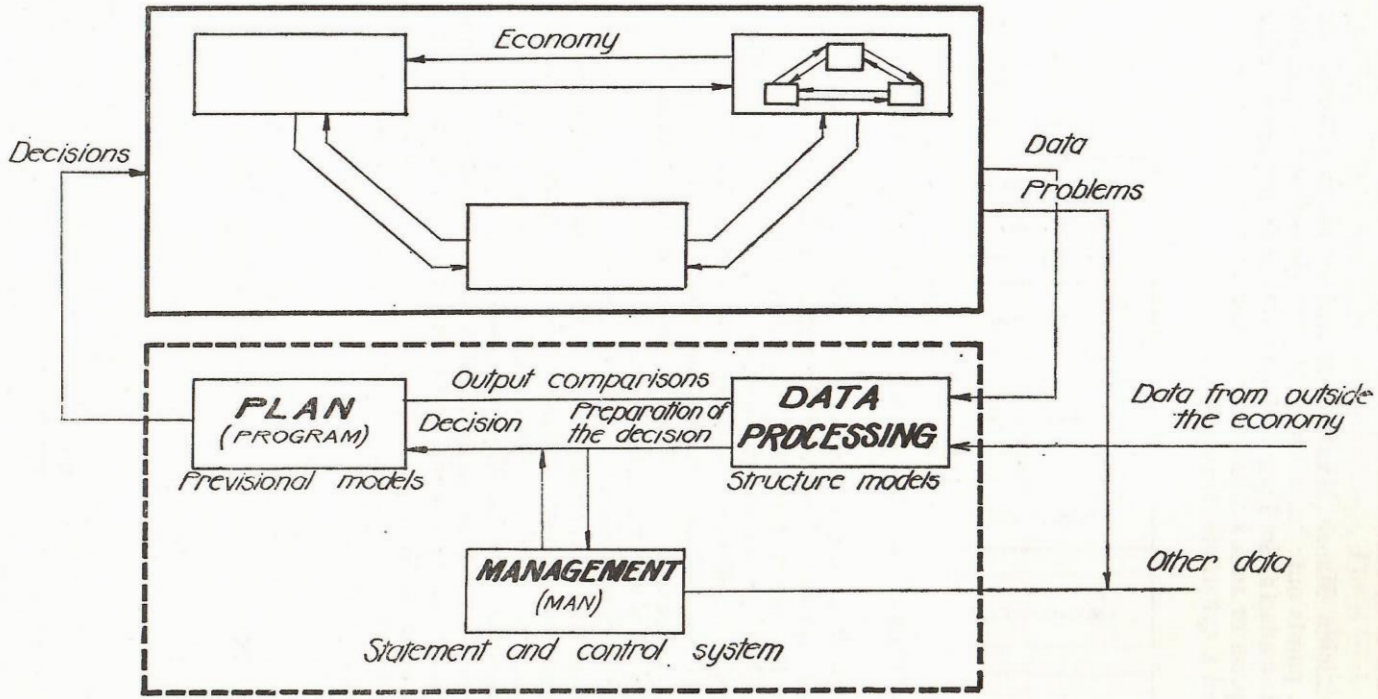


Fig. 17. *Plotting of general model of economy*

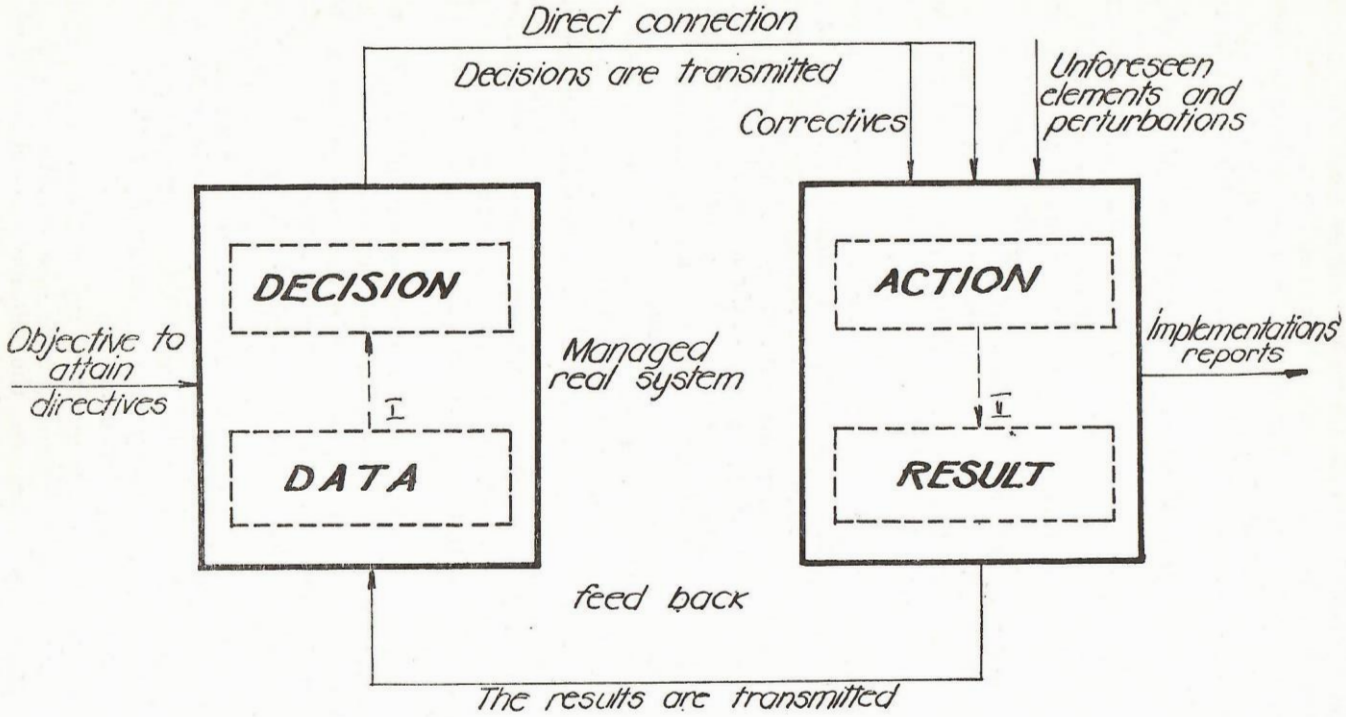


Fig. 18 *Plotting the cybernetic-information-decisional system*

tation of the objective of the respective activity. In our opinion, this is the fundamental principle which should be taken into consideration in the organization of any integrated information-decisional system.

b) *The organization of the integrated information-decisional system* corresponding to the structure of the process which is to be led with the aid of this system represents, in order, the second principle which has to be taken into consideration.

c) *The decrease in the number of data* in the upward flow as the decision level increases.

d) *Efficiency and simplicity.* An integrated information-decisional system must ensure the obtaining and rapid circulation, in the simplest way, of data, which should allow the analysis, elaboration of various solution variants, the selection of the best variant for taking the decision with maximum of efficiency and the control of the decision taken.

e) *Exactitute.* The collection and correct treatment of data as well as the ensurance of correlations between data must provide at all levels, the maintenance of an exactitude of the characteristics of the reflected economic phenomenon.

f) *Hierarchization and organization by stages.* Data are necessary for all hierarchical and organizational stages. To hierarchize the data means to establish precisely what kind of data are necessary for each hierarchical or organizational stage, by taking into consideration the pyramidal organization of data and also the level of aggregation of the respective data. Data are also necessary for the respective hierarchical and organizational stages at certain before established periods of time, both for information and for the substantiation, taking and control of decisions.

g) *Turning to the best account.* The integrated information-decisional system must allow the obtaining of useful data with minimum expenses.

h) *The principle of selection.* A multitude of data and information is obtained in the management process. Practically, it is neither possible nor necessary or rational to use all these data and information; therefore, those data must be selected which ensure the complete, precise and punctual information of all factors as well as the substantiation, taking and control of decisions.

i) *The principle of exception.* For management and for the taking of decisions in due time, the detailed information about all aspects of the respective phenomenon is unnecessary. To apply this principle means to put at the disposal of the decision factors only data representing deviations from the admitted and established normal aspects. This principle is applicable both to written and, especially, oral data, if we take into consideration the necessity of efficiently informing the decision makers for taking decisions which should prevent the negative situations. In connection with the way in which this information is made as well as with the moment when it must be made, we consider that interfering here is the ability both of the decision factors and of the informing factors.

j) *The compatibility of the integrated information-decisional system with informatics.* Under the conditions of the use of automatic computing means, as it has already been underlined, the information-decisional system may be integrated. Therefore, it is a repetition when affirming that the integra-

ted information-decisional system is compatible with informatics. The latter is comprised and implied by the denomination of an integrated information-decisional system.

13. DEFINING THE INTEGRATED INFORMATION-DECISIONAL SYSTEM

As a conclusion of our considerations, we propose the following definition: *The integrated information-decisional system is a pyramidally organized cybernetic system, in reciprocal vertical and horizontal flows on the basis of a unitary mechanism of data collection and processing, from the enterprise to the highest level of management in the economy, allowing the use of the same data in the substantiation, taking and control of the carrying out of the decisions with a view to attaining the objective of the economic activity for which it was set up.*

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CONTRIBUTIONS A LA DEFINITION DU SYSTEME INTEGRE D'INFORMATION ET DE DECISION EN TANT QUE FACTEUR DU PROCESSUS DE DIRECTION

La direction scientifique de l'activité économique et sociale, dans les conditions du développement impétueux des forces productives, a amené au premier plan des préoccupations, les problèmes de l'information et de l'organisation de son obtention. Par conséquant, les systèmes économiques d'information ont acquis une grande ampleur. Sur le même plan furent inscrits, aussi, l'informatique et les systèmes informatiques, dont le développement a pour but d'assurer une justification solide et une prise opérationnelle des décisions intéressant la direction efficace de l'activité économique.

Ce travail constitue une contribution à l'établissement des rapport entre pareils instruments de la direction scientifique de l'activité économique et à la définition du système intégré d'information et de décision en tant que facteur du processus de la direction.

ВКЛАД В ОПРЕДЕЛЕНИЕ ИНТЕГРИРОВАННОЙ СИСТЕМЫ ИНФОРМАЦИИ И ПРИНЯТИЯ РЕШЕНИЙ В КАЧЕСТВЕ ФАКТОРА ПРОЦЕССА РУКОВОДСТВА

Научное руководство экономической и общественной деятельностью в условиях бурного развития производительных сил выдвинуло на первое место заботу о вопросах информации и организации ее получения. В результате этого получили большое развитие экономические информационные системы. Эта забота включает также информатику и информатические системы. Их развитие преследует цель более тщательного обоснования и более оперативного принятия решений, необходимых для эффективного руководства экономической деятельностью.

Настоящая статья представляет собой вклад в установление соотношений, существующих между этими категориями научного руководства экономической деятельностью, и в определение системы информации и принятия решений в качестве фактора процесса руководства.

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