

Recall that the properties of the types of IN under consideration were described and analyzed in the Chapter 2. POIN is characterized by the following set of properties (we will call them attributes):

1. The thematical limits of POIN are not well defined.
2. The request, as a rule, does not represent the POIN exactly.
3. POIN, as a rule, cannot be satisfied even with every pertinent¹ document existing in the system.
4. The thematical limits of POIN may change over time, and the POIN itself lasts for a long time.

For an IN of the CIN type, the following attributes were identified:

1. The thematical limits of CIN are defined exactly.
2. The request is expressed exactly, that is, it strictly corresponds to the thematical limits of the CIN.
3. For satisfaction of a CIN, as a rule, one pertinent document is sufficient.
4. After the pertinent document is found, the CIN "disappears."

We will begin our consideration of the differences in IR systems satisfying these types of IN by examining attributes 3 and 4. From these attributes for POIN, it follows that with the appearance of new information in the IR system, it is necessary to continue servicing the user, that is, to specify a cycle of reporting for each user. (It is not important what the intervals between cycles are.) Therefore, in an IR system intended for satisfaction of a POIN, the necessity arises for storage (for subsequent searches) of information about the POIN (for example, requests or their translations into the retrieval language) of each user. Such cyclic service is usually called *selective dissemination of information (SDI)*. From these attributes (3 and 4) for a CIN, it follows that it is not necessary to have several cycles of reporting to the user when an IR system is intended for satisfaction of the CIN. Consequently, in such a system it is not necessary to store the information about the CIN and to organize SDI. From attribute 3 it also follows that IR systems intended for satisfaction of a CIN may provide the users with only one document for each given request. However, in an IR system created for satisfaction of a POIN, it is necessary to give users all documents found.

Perhaps more essential differences between systems follow from consideration of attributes 2 and 4. Taking into account only these attributes signifies that in systems designed to satisfy POIN, we need some mechanism that will permit the decrease of discrepancy between the POIN and its representation in

¹ A document is called pertinent if from the point of view of the user it satisfies (partially or completely) his or her information need. For more details on pertinence, see Chapter 5.

the system, whereas in an IR system satisfying a CIN, such a mechanism is not necessary. We will establish in more detail why attributes 2 and 4 require the existence of a special mechanism (for the case of POIN).

From the analysis of attribute 2, as indicated in the Chapter 2, various relations between a request and a need are known. This means that, as a rule, information about a POIN introduced into the system does not exactly represent it, since the request is simply some information about the POIN, somehow (possibly successfully) reflecting the POIN. Because IR systems are created with the purpose of satisfying an IN, and in this case the POIN, it is possible to make the following plausible assumption: an information retrieval for satisfaction of a POIN will be more successful as it is more precisely represented in the system.

This is only one of the reasons indicating the necessity of the previously mentioned mechanism for taking into account discrepancies in IR systems satisfying POIN. Even when the request ideally reflects the POIN and there is no discrepancy between them, after one iteration in providing the user with results from the search, the need can change somewhat (attribute 4), for example, under the influence of information obtained in the previous iteration. This change could be small enough so that the user does not feel it necessary to reformulate the request. It is obvious that in this case again the necessity arises for a mechanism to decrease the indicated discrepancy, and attribute 4 of POIN creates the need to decrease the discrepancy by a permanent process of iterative character.

The presence or absence of the previously mentioned mechanism in essence means the presence or absence of feedback in the system (which will be considered later in the analysis of the structure of a system), and the above description briefly explains its required use in systems intended for satisfaction of POIN. In systems satisfying CIN, there is no reason to use feedback; consequently, feedback, as a rule, is not used in such systems.

Thus, we have considered some aspects of the influence of types of IN on the construction of IR systems. These aspects indicate the cardinal differences in systems and also the importance of taking into account the properties of distinct types of IN for the construction of effective IR systems created for the satisfaction of different types of IN. We wrote "created for the satisfaction of different types of IN." This statement reflects reality, because in practice, the types of IR systems created for the *satisfaction of CIN* are usually called *factographic*. On the other hand, the types of IR systems created for the *satisfaction of POIN* are called *documentary*. Theoretically it is possible to create a system satisfying all types of IN. It is clear that such systems first must take into consideration the properties (occasionally contradictory) of those types of IN for which they are created and second, must have a mechanism capable of recognizing which type of IN is represented by the request entered into the system.

In this book we will consider only the type of systems intended for satisfaction of POIN: documentary IR systems. Now, after this refinement, we again