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CONCRETIZATION OF THE COLLECTIVITY AND INDIVIDUALIZING THE COMMUNICATION LANGUAGE IN A SYSTEM FOR INFORMATION SERVICING OF COLLECTIVITIES*

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The paper treats some features of the communication language (CL) in a system for information servicing of collectivities (SISC). The proposed mechanism for concretization of a collectivity for a specific application of SISC is discussed. A model of the mechanism permitting the adaptation of a SISC to the individual user's needs is discused. This mechanism is a tool for individualization of the communication language.

1. Introduction. The present paper is based on the formulations in [1] and is in a certain sense partially detailed discussion of some of the problems treated there. Figs. 9, 11 and 12 from [1] illustrate:

— the functional categories of the members of the collectivity;

— their basic activities regarding the information base (IB) entities;

— the overall structure of the communication language (CL).

The concepts of complete and restricted language are discussed as well. All these concepts are used as basic further in this paper in the sense of their treatment in [1].

The paper treats problems concerning the requests sublanguage of the CL of a SISC. The individual categories of users are discussed as well as the problem of the concretization of the collectivity. This is carried out together with the concretization of the abstract system for a given application. It implies the determining for each existing user the individual category to which he belongs, the linguistic tools available to him, the IB entities which he is entitled to access.

In the process of operation the users modify the tools used by them. Some of the tools are fundamentally changed, others are improved with the purpose to make them more convenient for use. This process is referred to as individualization of the CL. This paper discusses the general principal scheme of the mechanism for concretization of the collectivity and individualizing the CL.

2. Basic concepts of the CL. The request is a set of entity notations and operations on the entities, satisfying certain syntactical and semantical restrictions. The request is an elementary portion of information submitted by the members of the collectivity (MC) to which the SISC must respond by one of the ways illustrated of Fig. 8 of [1]. The requests are executed sequentially. Whenever a request is being executed, the execution of another request by the same MC cannot be initiated. It is possible, however, to formulate a request

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Fig. 1

with the assistance of the SISC. The formulation of a request could be a consequence of the execution of other requests.

The structure of the request is illustated in Fig. 1. The heading includes the name of the specific MC, the name of the temporary base used and possibly other entity names. The heading is intended to restrict the request within a subset of entities that are quoted in the request body. The body describes the desired servicing. The request components can be supplied by using keywords, positional or mixed specification. The subset of the IB entities, denoted by the request heading, is propagated by default to the next request unless other entities are explicitly specified in its heading.

In order to carry out some service functions necessary for successful interaction with the system, the following facilities are included in the requests sublanguage:

— correcton of requests;
— subscription;
— operations with programs and procedures.

A *session* is a process of active interaction between a given MC and the system, whereby the specific informafion needs of the user are satisfied. A session can be performed within one or several time intervals, i. e. it can be interrupted and restarted.

A *procedure* is a named set of requests, stored in the IB and accessible through its name.

The *subscription* is a tool for describing the response of the system, which is received without submission of a request.

The *correction operations* are deletion, insertion and replacement of portions of text from the requests in the session.

The *operations on procedures* are inclusion in the IB, calling, temporary or permanent modification, execution.

The *subscription operations* are inclusion (subscribing), cancelation, modification, preliminary execution.

The complete CL [1] permits the use of programs, procedures, requests with complex conditions and subscriptions. The complete CL can be used only by the expert users and by the maintenance personnel.

The restricted CL permits the use of requests for input of primary information, and the receipt of information by subscription or by simple requests.

The system can generate names of new entities, whenever this is more convenient for the corresponding MC. The descriptions of the information entities can include default options which may be specified as a result of the modification of some standard descriptions.

A subset of the CL is permitted for each functional category. This is the concrete CL of the category (Fig. 2).

3. Facilities for concretization of the collectivity and individualizing the CL. Each member of the collectivity can be treated in two aspects:

— as a representative (occurrence) of one of the functional categories;
— as an individual, bearing the properties of several functional categories

Linguistic tools \ Functional categories of users	Ordinary suppliers	Expert suppliers	Ordinary recipients	Expert recipients	Personnel
Requests for input of primary information	YES	YES	NO	NO	YES
Requests for receival of primary information	NO	NO	YES	YES	YES
Requests for receival of secondary information	NO	NO	NO	YES	YES
Input of primary information	YES	YES	NO	NO	YES
Messages	YES	YES	YES	YES	YES
Receival of primary information	YES	YES	YES	YES	YES
Receival of secondary information	NO	YES	YES	YES	YES

Fig. 2

Functional categories of users \ Number of individual type	1	2	3	4	5	6	7	8	9	10
Personnel	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
Expert recipients	YES	YES	NO	NO	YES	YES	NO	NO	NO	NO
Ordinary recipients								YES	YES	NO
Expert suppliers	YES	NO	YES	NO	YES	NO	YES	NO	NO	NO
Ordinary suppliers								YES	NO	YES

Fig. 3

The various individual types of users are illustrated by Fig. 3. A smaller number of individual types corresponds to greater rights of the individual.

The concretizaton of the collectivity is performed by submitting of an individual description for each user (Fig. 4) during the process of concretizai on of the abstract system.

Each member of the collectivity is characterized by a set of persona entities: units; temporary bases, procedures,programs, documents (formats of input/output information), subscriptions, recipients, uncompleted (interrupted) sessions, etc. (Fig. 4). Common procedures and programs are stored in the

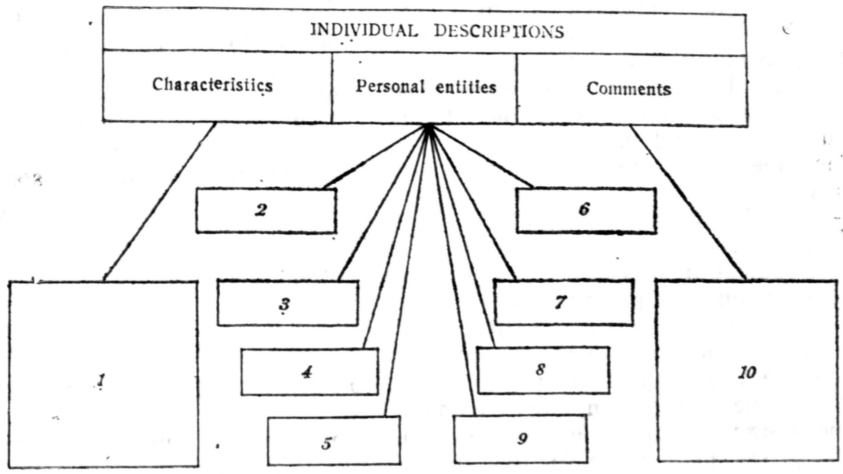

Fig. 4

1 — Name, Individnal type, Priority, Specification ; *2* — Temporary bases ; *3* —'Documents ; *4* — Uncompleted session ; *5* — Programs ;*6* — Procedures ; *7* — Recipients ; *8* — Units ; *9*— Subscriptions ; *10* — Personal name, Subordination links in the collectivity, Address, Post, etc.

system in addition to the personal ones. The common entities are accessible by all members of the collectivity, and the personal — only by their owners. The indices of the personal entities for each member of the collectivity are stored with his individual description (Fig. 4).

The individualization of the CL for a specific MC is carried out by an update of his individual description during the process of the operation of the system.

The personal documents specify which tables in adition to the common ones are accessible for the corresponding user as well as the formats of input or output information. This allows specification of the access to the IB. Each uncompleted session can be restarted at wish.

The indices of the personal programs and procedures reflect the individual functional needs. The index of the personal subscriptions serves the need to free the user of redundant manipulations during the interaction, as well as to ensure in time the necessary information. The set of personal peripherals determines the technical tools available for interaction with the system. The set of recipients determines the links of the individual with the rest of the collectivity. The recipients are entities that receive the appropriate results together with the individual.

The users' priority is a traditional component of the systems for information servicing. The type of the individual determines the subset of the linguistic tools available to him.

The specification of the individual determines the importance of his personal components. This specification provides an ordering on the sets temporary bases, documents, uncompleted sessions, programs, recipients, procedures, units, subscriptions. The default option permits the user to request concisely the corresponding services from the system.

The individual language (IL) of a certain user is a subset of the CL in a SISC. The IL is a set of linguistic tools available to the user and a set of entities (personal and common) that are permitted for reference. Each IL has its own default options. The name of an user for example (regarded as a request) could cause the execution of his first personal procedure. For another user this could mean restarting the last uncompleted session.

The operations concerning the individual description of the specific user are:

— inclusion of a new individual;
— deletion of a new individual;
— modification of characteristics of one individual;
— inclusion of a personal entity;
— deletion of a personal entity;
— modification of a personal entity.

The operations on tables are applicable to each individual description, but this is possible in the complete language only.

The assignment of all values necessary for the description of a single IL could prove an obstacle for the rapid inclusion of a new user in the system. That is why the existence of one special (dummy) user is always assumed on behalf of whom all MC-s may address the system. The options of this user are elementary and limited.

An addition to the above mentioned possibilities for individualization, which is subject to influence by the user, the system can accumulate information for some peculiarities of the user: often encountered errors, duration of faultless operation, etc.

The facilities offered for the use of personal programs, documents, etc. are means for limiting the access to the system entities. These tools, complemented by a convenient language using subscription, procedures, correction facilities and well designed defalut option, could provide the user with possibilities for creation of a convenient individual "work place".

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