

U2
7 64

IMAEM'87

BSHC  **Varna**

4th INTERNATIONAL CONGRESS

May 1987 Varna

Volume 2

DIALOGUE INFORMATION SYSTEM OF A SHIPYARD

O. Marinov,¹ K. Tsankov²

Computer Station, Iliia Dimitrov Shipyard
Rousse, Bulgaria

SUMMARY

The necessity, approach, structure and realization of dialogue information system of a shipyard is the theme of this report. It is presented the object of management - shipyard "Iv. Dimitrov" and experience of using computer in batch processing.

The conception is built up on the base analysis of information flows after methods BSP and the interview.

Were examined the basic conventions and requirements in building up the dialogue information system and the factors that affiliate the user with system.

The realized in the shipyard dialogue system is presented through it's range of actions and tasks, the functions of everyone, what type of questions are decided, what type of information is proposed and connections with tasks working in batch processing and those from CAD/CAM system.

In conclusion are presented the requirements to technical and program insurance and also result of using similar systems.

INTRODUCTION

Shipbuilding and shiprepairing yard "Ivan Dimitrov" - Russe is specialized in building river self-propelled and non-propelled ships for mixed floating with capacity up to 5 000 t.

The use of computer in the action of yard dated 12 years ago when in computer centre of shipbuilding in Varna was installed computer IBM 370/145. Since then are used in batch processing program products, developed as independent subsystems. We use them for processing data about movement and presence of personnel, salaries, technological preparation of production, movement and availability of material resources etc.

Independent of rich output information, which of course helped and still help to improvement the quality of managing process, we understood that it is impossible to reach an essential advance for the following reasons:

- geographical distance to host computer (distance between Russe and Varna is 200 km.);
- considerable in volume and in its greater part doubled input information for batch processing;
- mountly data processing does not reflect dynamical change of information in this period.

For more operative preparation and inserting input data and taking out output data it was delivered in the shipyard in 1982 mini-computer PDP 11/34 trough which using model IBM was realized teleprocessing with the new host computer IBM 4331 fig.1 in regime Remote Job Entry with emulator 2780.

But in that case very soon was clear that preparing the input information on time and corectly was not achieved. We tried to find the response in system working in a real time and inserting the input data to be made from direct user.

CONCEPTION

Realization of over mentioned approach should be realized only on the way of creating dialogue information system with high degree of data integrity and direct access of user to them in real time.

It was made a basic analysis of information flows in the object of management taking into account the experience and recommendations in (1) and mostly the method BSP. By the help of this method were separated and defined the purposes of a socialist organization and the factors it depends in its economic activity.

Development and instilment of information system followed its natural way of building the ship - from technological preparation to delivering it to client. It was necessary its compliance with CAD/CAM systems FORAN and HICAS'P.

Investigation of object and subject of management besides to the method of BSP was made accounting the method for analysis of information units and method of interview developed by the autors.

Result of these investigations permitted determination the range og system and its structure, shown on fig.2.

The purpose of dialogue information system was organizing of three groups data that we accept as determining the success of a shipyard - technological preparation movement and condition of material sources and codition of production. It is impossible to deny that system range was conformed with the possibilities of computer.

DESCRIPTION OF SYSTEM

Creation of a dialogue information system, it's functioning and "friendly" opinion to user is possible if it correspond to some conventions and optimal distribution of outlet information on listings or screens.

Accounting the system character was envisaged considerable part from analitical refrence information, to be shown on a screen on the base of dialogue type "menu" on two levels:

- action;
- tasks.

Form and content of screens are conformed with the requiremen for conducting normal dialogue aided from co-siderable in volume aid information.

¹ Head of Station

² System Programmer

To the system, with purpose of approaching it to user, were imposed a lot of requirements for example:

- each field, if it is possible, when inserting data, to be filled with information by defaulting, and such that is simple defined from the right of access of user;
- diagnostic messages to contain information, how to act, what to insert, from where to take data, but not messages of type "mistake...";
- use of information fields, that in logical connection with the others clear the intention of user;

- when canceling information to be used repeated questions of type: "Are you sure...";

- give the chance to user to "look through" the information forward, backward etc.

Total coordination the movement of information in the system and also subordination of separate programs to accepted conventions is made of programs, gathered under joint name "monitor". Through monitor is carried out also:

- inlet and outlet of information for operating clerks and fixing their access to data;
- information for current and every day of month condition of system, degree of using tasks and loading of jobs, equipped with videoterminals.

This demand enrichment of normative information base consisting data about:

- nomenclature of material resources;
- index of operations, profiles, constructing groups, typification of drawings and instruments;
- data for tariff networks and tables, ways of paying and rationing;
- data for financial and store operations;
- data concerning to tasks of one activity are grouped in a local base, serving the tasks of this activity.

In forming the activities, concerning the technological preparation of production are used the following two approaches:

- development and inserting technological documentation, drawings concerning only to one design;
- confirmation of inserted in local base documentation for standardized, unified and normalized details.

At the same time is assured interface with embedded CAD systems HICAS'P and FORAN.

In this direction is stored and processed information:

- technological operations;
- sections executor;
- labour - consuming;
- professions;
- route of details and articles;
- applicability of a given material;
- technological structure of article.

The process of ordering, contracting and delivering of material resources is typical with the fact that material is orientated to order. The basic principle is that in the store must not enter material resource that is not ordered and the order is conforming with technological necessity.

In the system is introduced limitation, that prevent from writing the material value for order to which is not oriented material, regardless that there is availability in the store.

Reporting the normative necessity of material resources in designs, the delivered quantity and the inserted in production on the base of building schedules is deduced information for materials in short supply, their normative condition - unsold goods, over normative spares, materials without application and materials with expired guarantee. Additionally is secured information for store amount in hand for given material resource and also comparison of expenditure rate and the actually inserted in a given order.

The overmentioned about dialogue information system can be applied in any plant regardless the

type of production, it is enough to plan and account according to method of ordering, but planning and management of production process shows the complication of ship as article in engineering and organization respect.

In this direction are developed three activities - operative planning, following the course and analysis of production process.

Operative planning is seeking the answer of question "what" should be produced and in "what succession" from designing technology of article and "what kind of materials" from activity delivery of material resources answer the question "when" to be produced.

This answer was achieved at two stages - first, with manual composing of building schedules consisting information about daily type process to be fulfilled. It is composed on the base of experience and suppose good knowing of constructive and technological structure of ship and also the potentialities of production sections. In that way of composing the building schedules are staying open the question for shortening the production cycle, loading of production resources - people and machines, reserve days to every kind of operation or process in relation to actually necessary moment.

These defects are escapes with second method - on base of CPM realized using program package PROJACS, of IBM. Outlet information from PROJACS is the basic inlet information for this activity of dialogue system.

The necessary information, giving the condition of building of every order and also the reached cycles at concrete intensity of building are object of activity "following the course of production process".

Analysis of production process shows mainly consumption of labour in production of any order. This consumption is differentiated - regularly planned labour, defined from the activity "projecting technology of article" and additional labour from not envisaged operations and processes without which is impossible to continue the building, or if it is possible the time will be too long. This peculiarities are result from the accepted in the yard manner of pre-pairing, planning and reporting of production process on the base of normhours.

As we already mention, this range of dialogue system was basically limited by the calculating resources and after their expansion it is not a problem development of peripheral activities - personnel, salaries.

REQUIREMENT TO PROGRAM AND TECHNICAL PROVISION

Investigation of experience of makers of similar systems shows, that with existing resources is not possible to organize more than four jobs with relatively labour consuming adapting of system to steadily changing and increased number demands for information from users.

In this case a good approach could be - using the program complex DIAMS - operational system with supervisor for control of data base and program language. Using DIAMS, distribution of memory is as follows: local on RAM and global on direct access storage device. The high priority of access to storage device, the great number of buffers serving the access to global memory, statute of supervisor for controlling the data base, give a possibility for quick access to data and good characteristics to dialogue system.

The structure of program language give a chance for economic use of memory and making programs permitting simultaneous work of many users (up to 52).

Having in mind that introducing dialogue information system the whole accounts of yard depends on technical reliability, when forming the calculating complex is necessary another approach.

The authors have a respect to producers of com-

puters, especially to some firms, but they consider unacceptable using of only one computer regardless its productivity.

The presence of two computers even with limited possibilities will assure the necessary reliability and could be used dependantly in network or independantly - on the second one are used the necessary for integrating the processes design - production - system CAD/CAM.

The modest exoerience of autors confirm that.

CONCLUSION

Directions, that determine economical benefit from dialogue information systems are:

- economy of skilled labour and using it for new treatments, for encreasing organizational, control and analitical functions;
- inserting quality changes in the working process, the way of thinking, in systemising the processes in people's conciousness;
- creating of actual information base;
- correct regulating of material and labour resources;
- possibilities for making CIM systems.

REFERENCES

1. Strategie Data-Planning Methodologies, Prentice-Hall 1982.

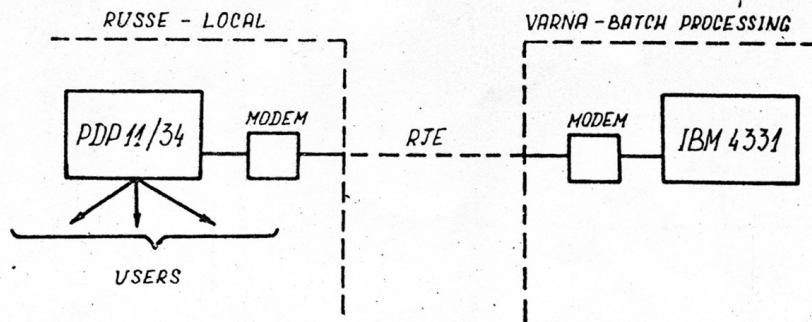


Fig. 1

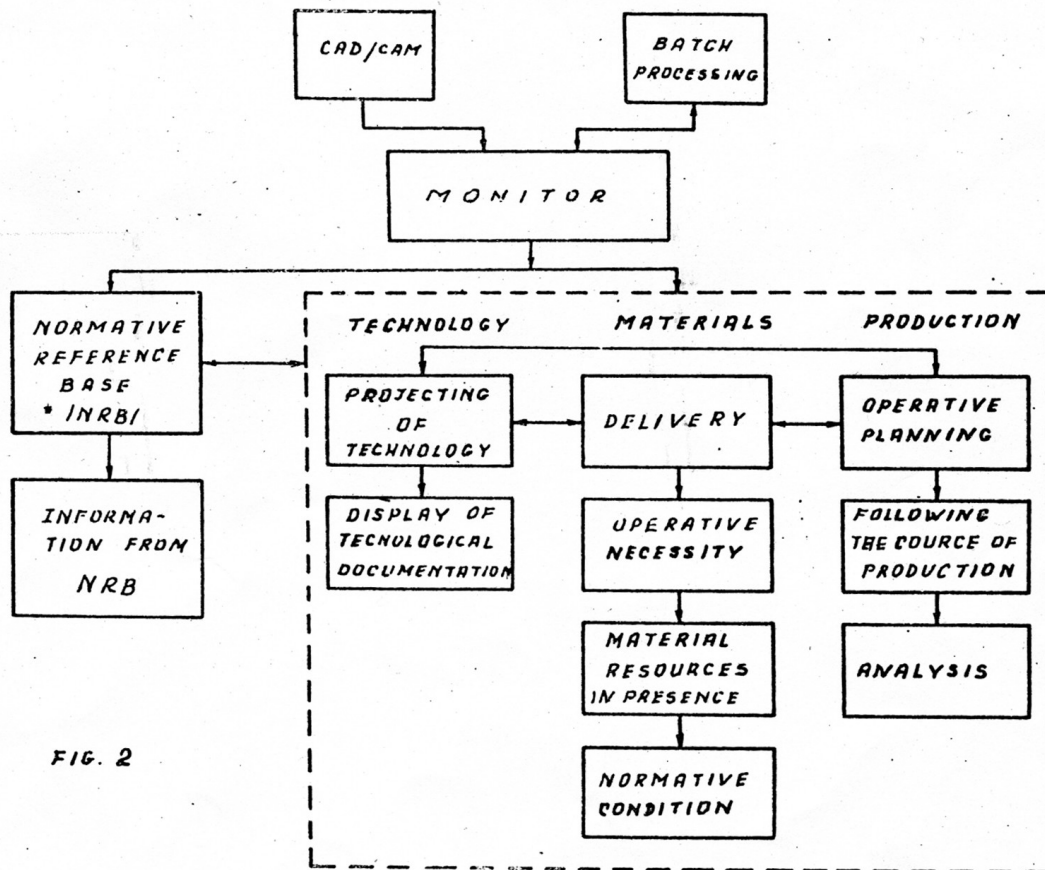


FIG. 2