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PROJEKTMAN - SOFTWARE TOOL FOR PROJECT PLANNING**Contributed paper**Submitted by the Czech Statistical Office¹**I. INTRODUCTION**

1. Progress in information technologies is, on the one hand, making available a broad range of software for application creation and for the applications themselves. On the other hand, however, the rationalization of work requires the creation of specific and unified software tools for the support of individual activities of statisticians. In this area, one of the fields of long-term development in the Czech Statistical Office, is the creation of unified tools for the preparation of technical projects for the content and technological specifications of statistical surveys.

2. Concerning processing technology and presentation of statistical data, tools were proposed and gradually implemented for support of technical projects creation. This paper describes one of these instruments - the software product ProjektMan. ProjektMan is a software which creates a framework and sets up unified rules for controlling the users in the preparation of statistical surveys.

3. ProjektMan prepares the standard technological environment for the design and implementation of statistical tasks (surveys). Its users are all staff who participate in the preparation and implementation of statistical surveys, namely the subject-matter statisticians, designers of the surveys, designers of statistical questionnaires, programmers and processing staff.

4. The technical preparation of surveys covers a sequence of mutually related and linked activities. It has four main stages: (i) technical preparation of the statistical questionnaire (report form); (ii) creation of the technical project; (iii) programme development; and (iv) testing and tuning of individual programmes and the system as a whole. Individual modules of the ProjektMan enable the user to carry out the following functions in an interactive regime:

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- a) design of the statistical questionnaire,
- b) creation and maintenance of technical projects,
- c) generation of the application programmes or of their parts,
- d) generation of the electronic questionnaire,
- e) creation of the processing timetables,
- f) scheduling of the programme of statistical surveys in the current year.

II. DESIGN OF THE STATISTICAL QUESTIONNAIRE

5. The statistical questionnaire design module is based on the principle of a hierarchical structure of the statistical questionnaire (report form). The basic construction element is the questionnaire section (basic building block of the questionnaire). The questionnaire itself is comprised of individual sections defined in advance. Each questionnaire has its unified structure, consisting of: (i) heading, (ii) body, and (iii) explanatory notes to the questionnaire as a whole and to the individual sections.

6. The ProjektMan module for questionnaire design represents a special graphic editor, which enables the easy creation of the graphic form of the statistical sections including description of necessary check procedures inside the section, explanatory notes and corresponding technical attributes of variables within the sections.

7. The statistical questionnaire for the given year and survey periodicity is being completed from predefined statistical sections. An inseparable part of the report forms is a definition of control links inside the questionnaire (among individual sections), the text of explanatory notes to the form, parametric definition of the set of surveyed units and corresponding technical attributes. Once created, the questionnaire and its complete graphical appearance, is stored into the database of the ProjektMan. The user can create three types of outputs: (i) printout of the form at the computer printer; (ii) creation of the matrix for printing the questionnaire in the printing office; and (iii) output to the technical project (see the chapter on technical projects).

III. CREATION OF TECHNICAL PROJECTS

8. Technical projects (TP) (the basic documentation of statistical surveys) are the core of the ProjektMan system. In the course of its creation, the TP module communicates with the other modules, from which information is taken as the basis for the survey itself; for example, the definition of outputs (printed and electronic form), descriptions of checking procedures, timetable of programme development, sample timetable of processing (for one period of processing) etc.

9. The technical project has a prescribed unified structure, which has to be observed by the user in the course of its creation or updating. The system also enables to define the user structure itself. The document itself is broken down into chapters, describing the individual objects. Usually the TP consists of the following description objects:

- a) title page of the technical project - identification of the task (survey) and processing subject;
- b) assignment page - it presents basic information on the person in charge of development of the programmes and about future survey processing subjects;
- c) content of the technical project;
- d) statistical questionnaire(s);
- e) text description of the survey content and processing requirements;
- f) graphical representation of the processing (flowchart);
- g) specification of the reporting duty in a free and formalized form; this part serves as a source of information for generation of the survey units set;
- h) description of checking procedures within the questionnaire or mutually among the questionnaires if the survey contains more types of questionnaires. Part of the checking procedures description originates already in the questionnaire

preparation phase (see paras. 6 and 7), another part when creating the project itself;

i) sample time-table of task processing for the first stage of processing; this information is then the source for the generator of the processing timetables for various time periods, usually for the current quarter and year.

10. In general, one can say that the module for preparation of the technical project represents a special text and graphic editor. Part of the editor is a pre-defined (implicit) outline of the technical project. It is possible that the user will define his own lay-out of the technical project, but it will mean that not all system functions may be utilized. Besides that, the user can create in advance a number of standardized texts, which then could be taken (copied) into the new created technical project. It means first of all considerable pressure on the unification of documentation and also on the processing technologies themselves.

11. The created technical project is being stored in the database of technical projects. This database is accessible via the network for all users, who are either taking part in the project preparation or in its implementation. The ProjektMan system enables to reflect changes into technical projects and provide the users always with an updated version of the technical projects.

IV. GENERATION OF APPLICATION PROGRAMMES

12. The technical projects represent an exhaustive description of the content of the statistical surveys and requirements for their processing and presentation of results. An overwhelming part is written in a free text format. Certain parts also include formalized description according to the prescribed syntax and they serve as a source for other ProjektMan functions as a generator of selected parts of application programmes of the statistical tasks.

13. Based on the technical project specifications it is possible to generate automatically application programmes (or their parts) for:

- a) the acquisition and interactive checking procedures of entry data,
- b) the creation (generation) of the set of survey units,
- c) batch processed checking procedures,
- d) storing data into the database under RDMS Oracle,
- e) the electronic questionnaire.

V. GENERATION OF ELECTRONIC QUESTIONNAIRE

14. Programme generation for the electronic questionnaire (EQ) is one of the most important functions of the ProjektMan. Based on the specification in the technical project, this function generates necessary programmes for the acquisition and checking of entry data. This application with some additional tools is provided to the respondent of the statistical survey as an alternative to filling in the statistical questionnaire instead on paper.

15. EQ represents a set of programmes, which the user (respondent) can install on his/her PC. The software provides the user with a complete picture of the statistical questionnaire including content-based explanatory notes and necessary code-lists. The user can then fill in the questionnaire on the PC to create the necessary output (printout of the questionnaire, output file on diskette, output file for mailing by e-mail) and send it back to the Czech Statistical Office for processing. Part of the provided software comprises detailed instructions for work with this special application software.

16. In practice, the chosen procedure for EQ preparation and use has brought the following two advantages. On the one hand, it rationalizes (and in large part it automates) and unifies software preparation for EQ. On the other hand, it brings closer checking procedures of the entry data to the place of origin and contributes to improving quality of the processed statistical data.

VI. CREATION OF THE PROCESSING TIMETABLES

17. As mentioned in paragraph 9, part of the description of each statistical survey comprises a sample (prototype) processing timetable for one period (month, quarter or year). This information is utilized by the generation function for a timetable of real processing of the statistical survey. A sample timetable is automatically transferred to concrete calendar dates for the current year. The output from this function may be the processing timetable in the text form (sequence of individual activities and deadlines) or timetable in graphic form as a picture of individual processing stages in the time axis. These documents are used in controlling progress of processing in the units which are responsible for carrying out the processing.

VII. PLANNING OF THE STATISTICAL SURVEY PROGRAMME

18. This module covers a relatively independent part of the ProjektMan product. It serves for designing the content of the programme of statistical surveys in the current (calendar) year. When the list of statistical surveys is completed, it is then used for: (i) control of survey programme completeness; (ii) for generation of a set of directories and subdirectories for storing descriptions of individual objects (within the ProjektMan); and (iii) for generation of the list and description of statistical surveys for presentation in the Collection of Laws (duty of the Czech Statistical Office as a result of the Act on Statistical Service).

VII. CONCLUSION

19. The application of the ProjektMan software product as a tool for computer aided support and unification of the preparation of technical projects represents considerable rationalization of CSO practices. In addition to the standardization of procedures in the preparation of surveys, it has contributed to the fact that users (statisticians and programmers) have been able to cope with a huge number of changes in statistical surveys and their implementation as application programmes under the existing capacities of programmers. At the same time, it enables to create and to maintain up-to-date documentation of technical projects in electronic form and is available for all users of the network. In the past few years, the ProjektMan has demonstrated its efficiency for the coordination and unification of content and technical preparation of statistical surveys.