

Development of Compilation Tools for the EXFOR Library

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We have been working out our version of compilation tools for the EXFOR library for more than ten years. The result of development is a well known software package: EXFOR-Editor with InpGraph. The compilers of CNPD actively use both programs for compilation. The programs are also popular enough among the members of NRDC. This working paper is an attempt to summarize our activity and discuss further trends of software development.

EXFOR-Editor is organized as a structure of independent program modules. The main of them are Text Editor, Dummy Wizard, Data Table, Keywords Dialogs, Help System, EXFOR Dictionaries, ZChex, Trans Checker, ZOrder, X4plusViewer, InpGraph. Victor Zerkov is an author of ZChex, ZOrder, X4plusViewer, who regularly prepares for us new versions of the programs and EXFOR dictionaries in the ACCESS format. Nickolas Sopperra updates Trans Checker.

The verified library of algorithms for data input and processing is the framework of the EXFOR-Editor.

We design the user interface of the EXFOR-Editor to be convenient and simple for data input and editing and try to exclude chores from compilation process where possible. We use the following approaches:

- the user interface should be consistent. The user could expect identical reactions of the program on the identical actions. Such approach reduces the learning period;
- the user interface should be concrete and obvious. Design of dialog windows with special palette, fonts and other visual means is useful here;
- the Wizard technique (a template or add-in) should automatically offer the user a way through a series of steps to create a file or a segment of file;
- the user interface should minimize the volume of manual input by using lists of possible values, automated searching and keep the user from inputting incorrect values and from having to think about where the information is placed in the final document.

Owing to the flexible structure of the package we modify and add new functions and possibilities to the EXFOR-Editor software without its overall rebuilding. We can change separate modules to keep the EXFOR-Editor up-to-date.

It is exactly owing to the module structure that the EXFOR-Editor is still an actual software package. It is actively being developed. The EXFOR-Editor development is an interactive process. Its improvement has the following algorithm:

- we accumulate testing results of the programs and feedbacks of the CNPD members;
- we gather the proposals and feedbacks from compilers of NRDC;
- we study the modern trends of the user interface development;
- we take into account the results of analysis and update the selected module or insert the new one.

This way we have prepared the up-to-date version of InpGraph with modern user interface. The InpGraph extracts numeric data from discrete image and exports them into the EXFOR format.

Our last improvement is the corrected module of DataTable for processing numeric data in the EXFOR format. We solved the problem of processing numeric data arrays containing more than 16 kilobytes of points. Our testing proves the absence of limitation on a number of processing numeric data points now.

We create a version of the package that does not need any installation now. The user has to rewrite the package from NRDC site or our site and unpack it.

So we are moving forward in developing the EXFOR-Editor software package through improving separate program modules and including the new ones, but we keep the basic processing algorithms with the familiar user interface and functions.