Structure of software on graphic data processing for the Exfor data library

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The previous version of InpGraph was designed more than 10 years ago. It was developed for our internal needs only. The main advantage of this version is a special processing procedure that provides compilation of image data of old sources into EXFOR format. But the old version of InpGraph demands additional training of users as a strict order of digitizing operations is needed. This fact decreases the number of its potential users.

Nowadays user's interface requirements have radically changed. So, we decided to follow modern trends and create as friendly interface as possible.

The main idea was to design intuitively understandable interface with convenient tools for data digitizing. We tried to implement an approach "identical user's reactions on identical user's actions".

Also we decided to use Wizard technology as an additional helper function for step instructions and hints during digitizing.

We implemented selection of possible values from lists, automatic searching and automatic input, automatic checking on the input stage to minimize manual data input volume and to decrease possible error quantities.

The work was started two years ago.

We have analyzed different digitizing software (GetData Graph Digitizer, Graph2Digit, G3Date, Grafula) including GSYS and GDgraph.

We took into account the experience of the previous version use, feedbacks and proposals of the users.

We developed a flexible structure of InpGraph new version and its internal data. Improvement and modification of our software are simpler for implementation now

An algorithm of image processing for the EXFOR data base is implemented as a sequence of the following steps:

1. Import image into the program environment;
2. Edit the image if it is necessary;
3. Input service information as the EXFOR format demands;
4. Set axes, their names, units, directions;
5. Digitize data curves;
6. Process data and obtain physical data values;
7. Save compiled data in the EXFOR file.

InpGraph structure makes it possible of coming back at any digitizing stage and then editing of input data. This version of InpGraph does not require a strict order of operations.

We kept all advantages of the previous version of InpGraph in the new one:

− special math software compiles image data form old sources of low quality;

− digitizing and quantization errors are calculated;

− check of scale correctness is provided at the stage of data input and while creating the EXFOR file;

− traditional lens with separate points division is used for digitization:

− consequent creation of service files (AXS, SRC) with a possibility of their correction is supported;

− EXFOR-oriented data treatment including EXFOR format of output file is implemented.

Let's summarize briefly the new features of InpGraph:

− Operation of the initial data image loading is implemented in three ways: open any image format file, paste an image from clipboard or capture a part of screen.

− Input of service information has been optimized: Exfor Dictionaries are used now.

− Procedure of data digitizing has been modified: automatic marking of axes has been implemented, editing of point positions and using of different colors and markers has been provided.

− Strict order of digitization is optional now. User can add any amount of abscissa and ordinate axes at any digitizing stage. Every axis has its own name. While digitizing curves user should select axes for every curve from the list available.

– Results of digitizing are stored in files with EXF extension. Service files with the extensions AXS, SRC are also created during compilation. Special edit windows are provided to make corrections (if necessary) in these files.

So new InpGraph version has all the advantages of the old one. We try to make it more convenient for users. Now we are presenting the beta-version of InpGraph 3.0. We will be grateful for any feedbacks and proposals of the users. They all should be taken into account. We are going to continue this development.