

Technical characteristics of MLIS and MNIS IO 2.2

The names of the proposed software products are: **Multilingual local instrumental system of investments optimization**, version 2.2 (MLIS IO 2.2), and **Multilingual network instrumental system of investments optimization**, version 2.2/upc (MNIS IO 2.2/upc).

1. General characteristics of the products

1.1. Business benefits

Provision of opportunity to any potential investors to promptly solve their tasks of effective investing funds in the acquisition of sources of income (SI) of different physical nature from their certain totality with the purpose of subsequent realization of acquired SI (maximization of absolute income) or their exploitation (maximization of relative income, i.e. income per time unit).

1.2. Products positioning

Markets of software and network computing services to solve tasks of optimizing investments.

1.3. Information about users

Potential users of the programs MLIS IO 2.2 and MNIS IO 2.2/upc are: trading companies selling piece goods (stores of household appliances and electronics, car dealerships, boutiques, etc.), brokers on stock exchanges, real estate agencies, construction and industrial enterprises, investment companies and banks, as well as private investors and businessmen.

2. Products overview

Programs **MLIS/MNIS IO 2.2** are designed to solve *seven types* of tasks in finding effective strategies for investing money in the acquisition of different-type sources of income from their certain totality when is reached either the maximum average *absolute* income from the expected realization of these SI or the maximum average *relative* income from their future exploitation. At the same time, there may be various restrictions on the return on investment and its risk.

There are provided *12 modes of programs localization* on investing in SI of the following *five varieties*:

- 1) real properties (RP) - two modes:
 - fixed profitability, realization of RP;
 - fixed profitability, renting of RP;
- 2) shares in construction (SC) - two modes:
 - fixed profitability, realization of construction objects;
 - fixed profitability, renting of such objects;
- 3) piece goods (PG) - two modes:
 - fixed profitability from retail sale of PG;
 - varying profitability from such sale of PG;
- 4) securities (Se) - five modes:
 - fixed profitability, realization of Se;
 - fixed profitability, exploitation of Se;
 - varying profitability, realization of Se on certain profitability;
 - varying profitability, realization of Se via a certain period;
 - varying profitability, exploitation of Se;
- 5) any sources of income (SI) - one mode.

When one of these localization modes is selected, the user interface of the program is automatically configured. The required localization mode you may set permanently or to choose it every time you create a new task.

MLIS/MNIS IO 2.2 are multilingual programs. Alternative languages of their interfaces are stored in separate files, called *language shells*. These programs include two such shells: Russian and English, as well as a special program of version 1.0 called "**Генератор языковых оболочек (ГЯО 1.0)** (Generator of language shells (GLS 1.0))", that allows users themselves to create such shells for any languages in which they usually communicate.

For the acquisition of SI is allowed to use not only investor's own funds, but also credit funds, raised at a specific interest rate. As a result of the task solution are found not only the optimal set and parameters of purchased SI of various types, but in the case of absolute income from their realization - the optimal amount of credit that will be spent in this case.

The program provides a function of statistics that allows you to estimate the effectiveness of an investment taking into account the risk factor, and for SI with a spread of profitability parameters - to automatically find the single best strategy by specifying one of the three possible search criteria.

All information about sources of income is stored in their specialized databases (DBSI), the creation and correction of which are provided in MLIS/MNIS. DBSI can be of two types: *unlimited* (with an unlimited number of SI samples of various types) and *limited* (with a limited number of such numbers). In case of using the DBSI of limited type, its automatic correction is provided at solving the current task.

MLIS IO 2.2 is an offline program, designed for a particular user (the lite version of this program is free).

MNIS IO 2.2/upc is designed to provide network services to many users. This system consists of two parts: one remote module of optimization (MO), which is a part of the Universal processing center (UPC) 9 MNIS 1.0 (that is why the suffix "/upc" is indicated in the name of this MNIS), and numerous automated work places (AWPs) targeted at specific MNIS users. Each such AWP is designed to prepare by a separate user the input data of the tasks to be solved and to output the calculation results, and the synthesis of optimal strategies of SI acquisition takes place in the MO. Information link between AWP and MO can be carried out via the Internet, over the local network or even on the computer bus of a single user of AWP. In the first and second cases MO is located on the network server, and in the third - on the computer of the indicated user. At that, there is ensured the operativeness and full automation of the AWP interaction with this module.

MLIS/MNIS IO 2.2 are created on the basis of a new science-intensive information technology of automation of control of discrete technological and information processes (IT AC DTIP), having many uses, the founder of which is the author of these multilingual programs. A set of lite version of MLIS IO 2.2 can be downloaded from any of two websites of the author: "Promotion center of IT AC DTIP" (<http://promo.dtip-optim.com/en>) and "Implement. center of IT AC DTIP" (<http://dtip-optim.com/en/main>). There also the user can solve remotely up to 10 test tasks in MNIS IO 2.2/upc.

Areas of possible using MLIS/MNIS IO 2.2 are **business, finance, trade, construction and production**. Year of release these programs – 2017 (year of MNIS update to version 2.2/upc - 2018). Place of development - Kiev (Ukraine).

3. Products functions

MLIS/MNIS IO 2.2 allow to solve seven types of tasks in finding optimal investment strategies in which is achieved the maximum of absolute or relative income from the acquisition of sources of income of a certain variety from their given totality while ensuring the required investment risk. At the basis of their solution is the method of numerical optimization of discrete service processes, as well as a unique optimization scheme for such processes, developed by the creator of these programs. The properties of these task types are listed below.

Tasks of type 1

- maximized parameter - *absolute income from realizing SI*;
- SI with varying profitability - *are absent*;
- payback factor - *is absent*.

Tasks of type 2

- maximized parameter - *absolute income from realizing SI and their previous exploitation*;
- SI with varying profitability - *are present*;
- option of realizing SI - *via a certain period*;
- payback factor - *is absent*.

Tasks of type 3 (for piece goods)

- maximized parameter - *absolute income from realizing SI*;
- SI with varying profitability - *are present*;

- option of realizing SI - *on their certain profitability*;
- option of accounting realization period SI:
 - *by its limitation*;
 - *by setting its parameters*;
- number of same-type SI, acquired by one request, - *one*;
- payback factor:
 - *is absent*;
 - *return on investment at the absence of initial SI*;
 - *payback of the cost of initial SI at the absence of investment*;

Tasks of type 4 (for securities)

- maximized parameter - *absolute income from realizing SI and their previous exploitation*;
- SI with varying profitability - *are present*;
- option of realizing SI - *on their certain profitability*;
- option of accounting realization period SI:
 - *by its limitation*;
 - *by setting its parameters*;
- number of same-type SI, acquired by one request, - *all*;
- payback factor:
 - *is absent*;
 - *return on investment at the absence of initial SI*;
 - *payback of the cost of initial SI at the absence of investment*;

Tasks of type 5

- maximized parameter - *relative income (per time unit) from exploitation SI*;
- SI with varying profitability - *are present*;
- payback factor - *is absent*.

Tasks of type 6

- maximized parameter - *relative income from exploitation SI*;
- SI with varying profitability - *are absent*;
- payback factor - *is absent*.

Tasks of type 7

- maximized parameter - *relative income from exploitation SI*;
- SI with varying profitability - *are absent*;
- payback factor - *return on investment*;
- option of behavior SI at initial sections of exploitation:
 - *a changing specific income from exploitation*;
 - *random delay of the start of exploitation*.

4. Restrictions

- maximum number of types of sources of income - **1000**;
- allowable number of SI of the same type - **100** (for lite version of MLIS - **10**);
- allowable number of phase states of an optimizable process (it is available for regulation by the user) - **1000000** (for lite version of MLIS IO 2.2 - **20000**).

5. Practical application

MLIS/MNIS IO 2.2 were put into operation in May 2017 (MNIS was updated to version 2.2/upc in July 2018). Now comes the stage of the search for potential dealers and users of these systems.

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