

The MPSIII Optimization and Modeling Library is a powerful set of subroutines that can be incorporated into your applications to give you complete access to and control of your mathematical programming models and the MPSIII mathematical programming system. OML is supplied for specific C and FORTRAN compilers and as a Windows DLL for PC application development tools.

For example, with the functions in the MPSIII Optimization and Modeling Library, it is quite easy to implement the following tasks:

Create a matrix on the model database or input a matrix from a standard MPS format file.

Load one or more matrices into memory from the database and prepare them for optimization.

Optimize any of the matrices that are in memory.

Acquire solution values for selected rows and columns of the models previously optimized.

Modify any of the in-memory matrices and matrices on the model database.

Thus, you can include in your application any use of MPSIII from simply loading and optimizing an LP model to the most complex recursive solution of a set of related models such as found in successive linear programming (SLP) and decomposition.

One of the attractions of the MPSIII Optimization and Modeling Library is that you do not have to learn a new programming language to get all of this functionality. You merely include calls to these functions in your application. Further, there is no need to learn all of the matrix data structures; the OML functions give you easy and efficient access to all model elements as well as the entire model database.

DATAFORM users recognize all of these functions as native to DATAFORM. The Optimization and Modeling Library is fully compatible with DATAFORM on the PC and workstation platforms.

FUNCTIONS The Optimization and Modeling Library supplies functions in three areas: optimization, database access, and name manipulation.

OPTIMIZATION

The unexcelled speed and reliability of the simplex linear programming optimizer, C-WHIZ, is incorporated as a subroutine into your program; optionally, the mixed-integer optimizer, MIPIII, can be included. Other functions are:

- Input matrix from a standard format MPS file
- Load matrices from the database into memory
- Access optimal answers from optimizer's space
- Modify the in-memory matrix (or matrices)

DATABASE ACCESS

All data related to the model can be stored on the model database. This database is identical to the DATAFORM model database, but DATAFORM need not be part of your application. Functions are:

- Generate matrices on the model database using an activity orientation or a constraint orientation
- Input data tables to the model database
- Create, modify, and expand data tables
- Retrieve values from data tables
- Retrieve matrix element values
- Modify matrices that are on the model database
- Access recorded solution values

NAME MANIPULATION

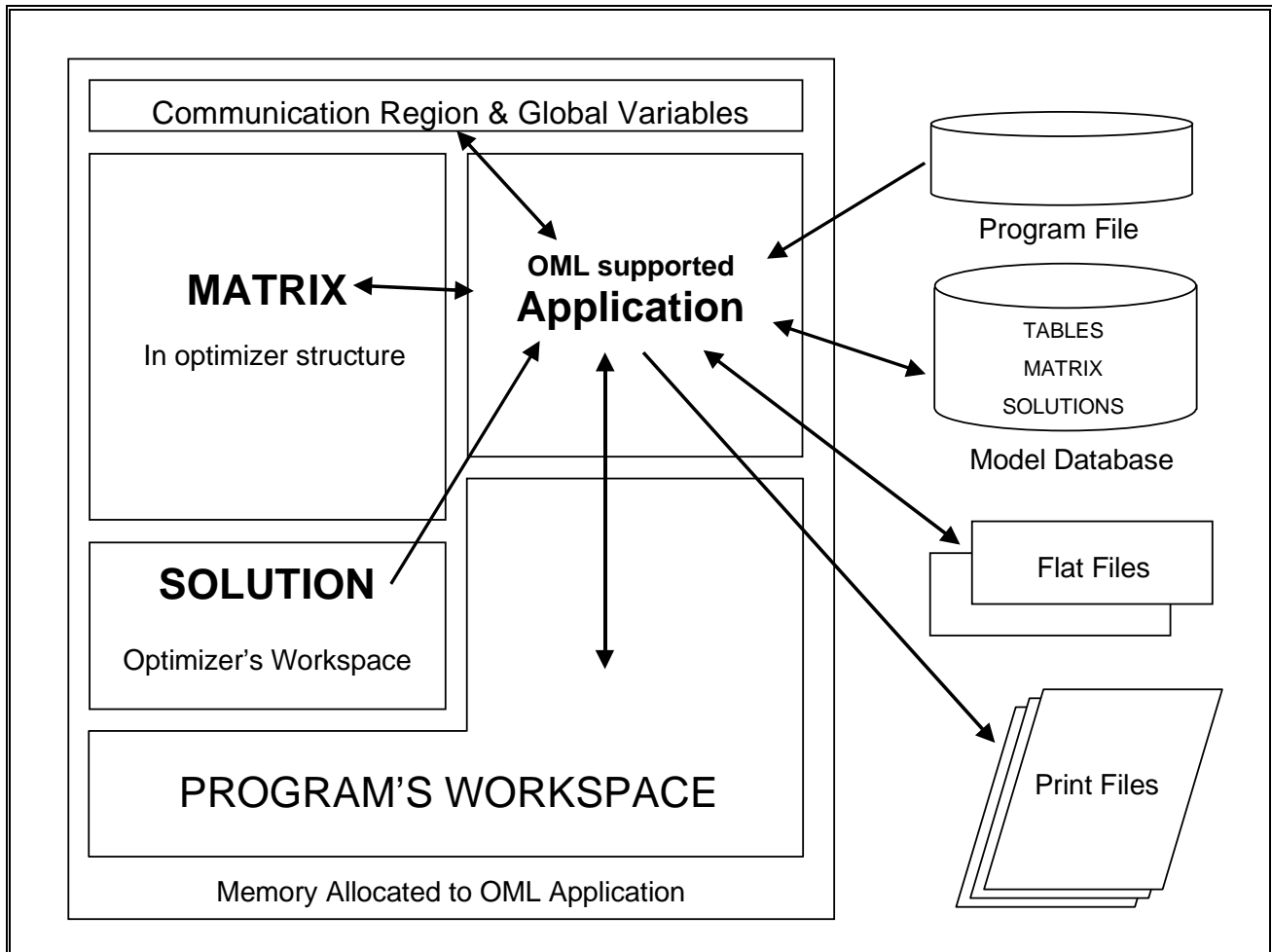
All model elements are named, e.g., matrix rows and columns, data tables, and sets of solution values. To help your application programs create these names as well as decompose them in order to decode optimal solutions, the functions are:

- Concatenation - joins name parts
- Shift - rotates text in a name
- Mask - extracts parts of a name
- Fill - inserts characters into a name
- Justify - left justifies text in a word and removes imbedded blanks

OML, Full Access to and Control of Your Mathematical Programming Model

The MPSIII Optimization and Modeling Library brings together a set of application development tools that goes well beyond the expected optimization. Tools are included for complete scenario management. The DATAFORM compatible model database holds all model related data for a whole family of related models.

SUPPORT: Technical support for MPSIII users includes training, consulting services, and a telephone/email hotline. Consulting services comprise model formulation, prototyping, and development of complete applications.



OML provides access to and control of the entire model environment.

The Optimization and Modeling Library supports matrix creation by several means. You can supply the matrix as a standard MPS format file created any way you know how. Alternatively, the matrix can be generated with DATAFORM or with an application program that uses OML database access, name manipulation and matrix generation features.

OML runs on PC's, workstations, and mainframes.

The Optimization and Modeling Library is continually being enhanced with the addition of new features.

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