EcosimPro/PROOSIS SIMULATION TOOL FACTS (October-2018)
www.ecosimpro.com

MODELLING LANGUAGE

- Acausal & causal modelling of equations
- Fully object oriented language
- Components for modelling dynamic systems (converted to a special C++ class)
- Ports for modelling the connections
- Functions for classical functional programming (converted to C++ functions)
- Classes for object-oriented programming (converted to C++ classes)
- Differential Algebraic Equations (DAE) modelling in components and ports
- 1D,2D & 3D tables interpolation
- Multidimensional arrays
- Discrete and time events modelling
- Enumerative types
- Real,Integer,Boolean and String basic types
- Advanced types can be programmed with classes
- Containers(vectors,dictionaries,sets,etc.) based on STL C++ library
- Advanced function pointers based on C++ power
- Writting of derivatives in a natural way (eg. NH', v'') in components and ports
- FORTRAN,C & C++ direct connection
- Linear algebra based on Eigen C++ library
- Root finder class
- Inequalities for equations system
- ASCII & XML parser classes
- Class for producing random values
- Map class for handling multiple tables
- Include & macros files based on C preprocesor
- Reuse any C/C++/FORTRAN library from the components, clases, ports and functions
- Powerful experiment language for creating simple and complex simulations
- Public & private parts for encapsulation
- Powerful input/output functions
- Libraries handling
- Export/import of work spaces

PROGRAM

- Use Microsoft Visual Studio C++ as debugging tool
- Compatible with Windows using Microsoft C++ compilers
- Compatible with Windows using GCC C++ compilers (this compiler is included in default installation)
- Simulation plaforms in Linux using GCC C++ compilers
- Installer is customizable
- Prepared to work with thousands of equations
- Windows 10 compatible
- Linux available for run-time

GRAPHICAL EDITORS

- Source code editors with coloured syntax, autocompletion,…
- Graphical symbol editor
- Intuitive schematics editor
- Powerful graphical object editors in schematics
- Browser for finding items, experiments, etc.
- Handling of workspaces and libraries
- SVN integrated in the tool
- Graphical tool for plotting live simulations
- Mini-scada capability to visualize results
- Many graphical widgets available (plot, bars ,etc)
- Table editor
- Map editor
- Inheritance editor
- Histograms
- Post-process file generation in HDF5 format
- HDF5 editor for comparing binary files

TESTING TOOL

- Automatic testing tool
- User dialog to define items to be tested
- Generation of references for simulation
- Direct link to differences for easy debugging

SOLVERS

ODE solvers (eg. CVODE, Euler,RK4, RK45,etc)
DAE solvers (eg. IDAS, DASSL,etc.)
Fixed and variable step solvers
Dense and sparse solvers (eg. IDAS_SPARSE, CVODE_SPARSE)
Automatic detection of sparse Jacobian
Real-time mechanism for acceleration
Steady solver for complex problems
Solvers settings available

MATH MODELS

Symbolic handling of equations
Multiple math partitions for the same schematic
Algorithms for producing robust models
Detection of algebraics
Detection of high index problems
Minimization of the final model size
Detection and selection of boundaries
Change data to unknows
Wizard to analyze sensitivity and residues of models
Wizard to simplify the creation of the model
Summary of math model in HTML format with links for easy navigation

EXTERNAL CONNECTIONS

Generation and compilation of C++
Generation of a DLL
Export simulation as a deck (black-box)
Export/Import wtth FMI 2.0 for co-simulation
Export as OPC DA standard
Export as OPC UA standard
Export as SAE-ARP4868 & AS4191 standard
Export to Matlab
Export to Simulink as S-Function
Reuse models from C, C++, Visual Basic, C# and VB.Net
Addin for Microsoft Excel to connect with models

ADVANCED WIZARDS

Wizard for transient calculations
Wizard for steady calculations
Wizard for sensitivity calculations
Wizard for multipoint design with constraints
Wizard for parametric studies
Wizard for parameter estimation
Wizard for optimisation
Wizard for co-simulation