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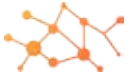
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DATA SHEET

USS SYS[®]

System Dynamics Modeling Suite



PRODUCT BRIEF

USS SYS is designed to help you build transparent models to improve your thinking and decisions, empowered with rich data analysis and modelling in complex systems.

Every time there's a dynamical, detailed problems with multiple stakeholders, the solution would be hard to find. This happens in every area – health, pharma, energy, climate, cities, logistics, projects, manufacturing, technology, no domain is immune from complexity. Even personal finance and health decisions that are organisationally simple involve complex trade-offs over time.

When you understand the structure of the system you live in, you can navigate the present with a strategic vision, to win the long game. We bring Systems Thinking to the world with our innovative solutions and Services. Our Systems Dynamic Modeling Suite is a powerful tool that allows the user to generate system models that can be updated dynamically over time.



Through creating these modeling, users can understand the behaviour of said systems, to identify areas for improvement. USS SYS is designed to help you, through the efficient construction and deep analysis, create transparent models to improve your thinking and decisions, deriving its strength from Omni's decades of experience with data analysis and modelling in complex systems.

A picture of your system is worth a thousand words, both as an aid to thinking and for communication with stakeholders. USS SYS made it easy to create customised causal loop, and stock and flow diagrams. You can customize diagrams with different colors, fonts, symbols, arrows, shapes and pipes. Even create multiple views in one model with each view containing a portion of the total model structure.

"When you're ready to write equations, USS SYS provided a productive environment. It can create and simulate models with just a few variables, or millions. It has many built-in functions including user-defined Lookups, test input patterns, logical operators, random number generators, continuous and discrete delays, smooths and forecasts, scientific functions, and customisable macros and external functions."



Our simulation engine provides fast simulation times and allows storage of huge datasets. compiled in C for even faster simulation. The simulation platform allows the user to step forward make changes to model variables at each step. USS SIM[®] can also be run over a network interact with a single model. USS SIM's speed supports fast, interactive simulations and advanced, computationally intensive algorithms.

Data

USS SYS can use external data series as exogenous inputs to drive a model or to compare against data from simulation runs. You can create external data in text editors, or import from (or export to) database and spreadsheet applications. Many input and output approaches are supported, including ODBC and tabular, relational and tidy data in a variety of file formats. Unlike spreadsheets, USS SYS provides model-data separation, so your experiments can't harm the integrity of your core model.

Optimization and Calibration

Getting the most out of models and data requires a good model and sophisticated algorithms for calibration, and USS SYS provides tools for both. A model can be automatically calibrated to fit historical data series. You load the external data series and specify the parameters to adjust, then USS SYS automatically adjusts these parameters to get the best fit. USS SYS optimising engine searches through complex multi-dimensional surfaces looking for optimal solutions. Payoff functions provide model-data comparison with a variety of error models, including Normal, robust, Poisson and Binomial distributions. Kalman filtering provides state estimation. Markov Chain Monte Carlo permits estimation of confidence bounds and joint (Bayesian) posterior distributions of parameters. USS SYS also provides policy optimization, even for worst-case situations with multiple optima, discrete or rough surfaces, and stochastic objective functions.



Sensitivity Testing

Sensitivity testing involves changing your assumptions about the value of inputs to the model while performing multiple simulations, then examining the uncertainty in selected output variables. USS SYS automates multivariate Monte Carlo simulations, as well as a variety of vector and grid search methods. Output can be displayed as graphs with confidence bounds, individual simulation traces, or histograms.