



# Top 10 Reasons to Purchase Phoenix NLME

## 1. What Phoenix NLME is:

- a. Phoenix NLME is a state of the art population modeling software system for pharmacodynamic (PK/PD) scientists who need powerful modeling capabilities in a system that is easy to learn, use, and support. With a visual workflow engine, high quality graphics, and an easy to use graphical user interface, population PK/PD modeling has never been this accessible, flexible, and powerful.

## 2. Phoenix NLME is the one system for novice and pro alike

- a. Provides state of the art modeling capabilities for advanced modeling scientists
- b. Reduces the learning curve for novice pop PK modelers

## 3. A robust set of optimization engines for nonlinear mixed effects modeling including:

- a. Naïve Pooled for Gaussian and non-Gaussian responses
- b. Iterated Two-Stage (IT2S-EM)
- c. First Order (FO)
- d. First Order with Condition Estimates and Interaction (FOCEI)
- e. Lindstrom-Bates FOCE
- f. Extended Least Squares FOCE
- g. Adaptive Gaussian Quadrature (AGC)
- h. Laplacian for Gaussian and non- Gaussian responses
- i. Non-parametric which makes no assumptions regarding the random effects distribution

## 4. Phoenix NLME is as fast as or faster than competing solutions.

- a. Runtimes of course vary between different software systems depending on the data used, model selected, and the hardware environment that the models are being run on but Phoenix NLME is typically as fast as or faster than competing solutions
- b. It is designed from the bottom up to support parallel execution on multiple processors within a single run. NLME uses the Argonne MPICH2 which allows optimizations to be run on multiple processors on the same computer simultaneously taking advantage of modern dual- or quad-core processors and resulting in significant speed gains
- c. A new and easy to configure Job Management System frees up the user's computer by allowing the execution of Phoenix jobs (including entire workflows) remotely on Windows servers.

## 5. Multiple modeling methods

- a. Model from a built-in library
- b. Create models using a graphical model tool
- c. Code your own with using Pharsight Modeling Language (PML)
- d. Begin with a library model and switch to graphical and/or PML modeling methods for fast starts to customized

**6. Powerful standard graphics automatically generated with each model execution with user-definable customizations available**

- a. Latticed population and individual prediction with observations vs time
- b. Goodness of Fit plots: CWRES, WRES, PCWRES vs. independent, predicted, and time after dose
- c. Individual and overall predictive check
- d. Dependent variable vs. population and individual predictions and time after dose
- e. Quantile-Quantile plots for random effects
- f. Random effect vs. covariate
- g. Random effect correlation plot

**7. Compare models within and outside of NLME**

- a. Users can compare various NLME population models within Phoenix NLME with the Model Compare Tool
- b. Using Phoenix Connect™, users can and compare Nonmem models to other Nonmem models within Phoenix

**8. A reduced IT ecosystem makes deployment, support, and extension more simple**

- a. A Nonmem population modeling solution may contain many different software packages that must be installed, licensed, and configured properly to in order to interoperate (e.g.: NONMEM, SPlus, ADAPT, Monolix, and Winbugs)
- b. Phoenix NLME installs as a single executable and contains sophisticated tools for pre-processing data, creating preliminary plots, determining a base model, doing covariate analysis, developing a final model, evaluating the final model, post-processing of results for reporting, running simulations on new datasets, and communicating the results of the analysis

**9. Superior pre- and post-processing of data**

- a. Import almost any dataset including data from PKS
- b. If needed, use Phoenix Data management tools to filter data, calculate relative actual times, pivot, stack, enter units, rename columns, ect. Changes done to data using Phoenix tools are tracked
- c. Data processing steps can be saved into a template and template can be reused with other datasets (with similar format) to the pre-processing of data in one quick click
- d. With Phoenix Connect can also interact with other 3rd party software to help with pre-processing while keeping the pre-process steps synchronized and linked within Phoenix
- e. Use Phoenix graphics and reporting tools to create additional graphs beyond the multitude of plots automatically generated in the results of a NLME run
- f. Use data management tools to save data in different formats if desired
- g. Templates of post-processing of results (plots and tables) can be utilized to save time
- h. With Phoenix Connect you can also interact with other 3rd party software to help with post-processing while keeping the analyses steps synchronized, linked, and stored within Phoenix

**10. Share your work conveniently**

- a. As previously mentioned a whole project with all its components can be easily saved as one file in one step by going to File, Save Project or Save Project As.

The extension will be PHXPROJ. All projects from PHX WinNonlin will have this extension and can be shared, reloaded, resaved or saved into PKS as scenarios