# Information Sheet

Vector Psychometric Group, LLC is pleased to introduce flexMIRT® version 3.6, including a completely redesigned and more user-friendly graphical user interface (GUI) and new features based on user feedback. Cutting-edge psychometric research is at the heart of this substantially updated multilevel and multiple group item response theory (IRT) software package. flexMIRT® is unparalleled in its ability to fit a variety of IRT models and its implementation of the latest developments in IRT modeling. For instance, you may:

- Obtain standard IRT models (1-, 2-, & 3-parameter, Graded Response, Nominal, Generalized Partial Credit, Partial Credit, & Rating Scale models)
- Fit multidimensional IRT models and models explicitly accounting for response styles
- Fit multilevel (unidimensional or multidimensional) IRT models to nested and cross-classified data
- Fit diagnostic classification IRT models and models with mixture of discrete and continuous latent variables
- Impose or relax constraints within and across groups and levels for any estimated parameters
- Choose from multiple IRT scoring methods including Maximum Likelihood, Multiple Imputations, Modal *a posteriori (MAPs)*, and Expected *a posteriori (EAPs)*
- Obtain weighted IRT to summed score conversion tables for both unidimensional and select multidimensional models
- Choose from three estimation algorithms: Bock-Aitkin, Metropolis-Hastings Robbins-Monro, or Markov-chain Monte Carlo
- Choose from a number of item parameter standard error estimation methods, including Supplemented EM, Fisher Information Matrix, Empirical Information Matrix, and Forward Difference Method
- Estimate population means and covariance matrices, as well as model non-normality of the population distributions via empirical histograms
- Obtain polychoric correlations among items and item thresholds
- Obtain Classical Test Theory analyses (item frequencies, item-total correlations, alpha, alpha if removed) with the new Mode = CTT; routine
- Conduct exploratory item factor analysis with analytic rotations
- Obtain a wide variety of item and model fit statistics and indices
- Include covariates that predict the latent variable(s) (MH-RM estimation only)
- Simulate data using the built-in Monte Carlo functionality

In addition to the flexibility of modeling, flexMIRT® also offers desirable technical features including:

- A thorough User's Manual and responsive customer support
- May be installed on and run from virtualized servers
- Syntax-based processing with access via command line interface or an available GUI
- A memory allocation enabling calibrations of thousands of items and potentially millions of respondents
- OpenMP-based shared memory parallel processing for faster run times

For additional information, visit the flexMIRT® website: http://www.flexmirt.com or email Vector Psychometric Group, LLC at: Sales@VPGcentral.com

flexMIRT®

# Comparison Sheet

| | flexMIRT | MPLUS | PROC IRT |
|---|---|---|---|
| **IRT Models** | | | |
| 1-parameter, 2-parameter, 3-parameter | ✓ | ✓ | ✓ |
| Graded Response | ✓ | ✓ | ✓ |
| Nominal, Rating Scale | ✓ | | |
| Partial Credit, Generalized Partial Credit | ✓ | ✓ | ✓ |
| Diagnostic classification models | ✓ | ✓ | |
| **IRT Scores** | | | |
| Maximum likelihood (ML) | ✓ | | ✓ |
| Maximum *a posteriori* (MAP) | ✓ | ✓ | ✓ |
| Expected *a posteriori* (EAP) | ✓ | | ✓ |
| Multiple imputation (MI) | ✓ | | |
| Weighted IRT to summed score conversion tables for unidimensional models | ✓ | | |
| Weighted IRT to summed score conversion tables for multidimensional models | ✓ | | |
| **Advanced Modeling Features** | | | |
| Polychoric correlations | ✓ | ✓ | ✓ |
| Convenient Classical Test Theory analyses (alpha, alpha if removed, item-total | ✓ | | ✓ |
| Multidimensional IRT (MIRT) models | ✓ | ✓ | ✓ |
| Alternate algorithms for efficient esitmation of MIRT models | ✓ | | |
| Exploratory factor analysis with analytic rotations | ✓ | ✓ | ✓ |
| Target rotation | ✓ | ✓ | |
| Multi-level IRT models with nested data | ✓ | ✓ | |
| Multi-level hierarchical item factor models | ✓ | ✓ | |
| Impose/remove parameter constraints within/across level-1 groups | ✓ | ✓ | ✓ |
| Impose/remove parameter constraints within/across multiple levels | ✓ | ✓ | |
| Covariates predicting latent variables | ✓ | ✓ | |
| Automated DIF testing | ✓ | | |
| **Standard Error Estimation** | | | |
| Supplemented EM | ✓ | | |
| Fisher (expected) information matrix | ✓ | | |
| Empirical information matrix | ✓ | | |
| Forward difference method | ✓ | | |
| Richardson extrapolation method | ✓ | | |
| Sandwich covariance matrix | ✓ | | |
| **Latent Distributions** | | | |
| Model non-normality via empirical histograms for unimensional models | ✓ | | |
| Model non-normality via empirical histograms for hierarchical (e.g., bifactor) models | ✓ | | |
| **System Capabilities** | | | |
| Dimension reduction for single-level models | ✓ | | |
| Dimension reduction for multi-level models | ✓ | | |
| Can be operated from virtualized servers | ✓ | | ✓ |
| Access via command line interface or an available GUI | ✓ | | ✓ |
| Advanced memory allocation scheme | ✓ | | |
| OpenMP-based shared memory parallel processing | ✓ | ✓ | |

Collaborate. Discover. Apply.