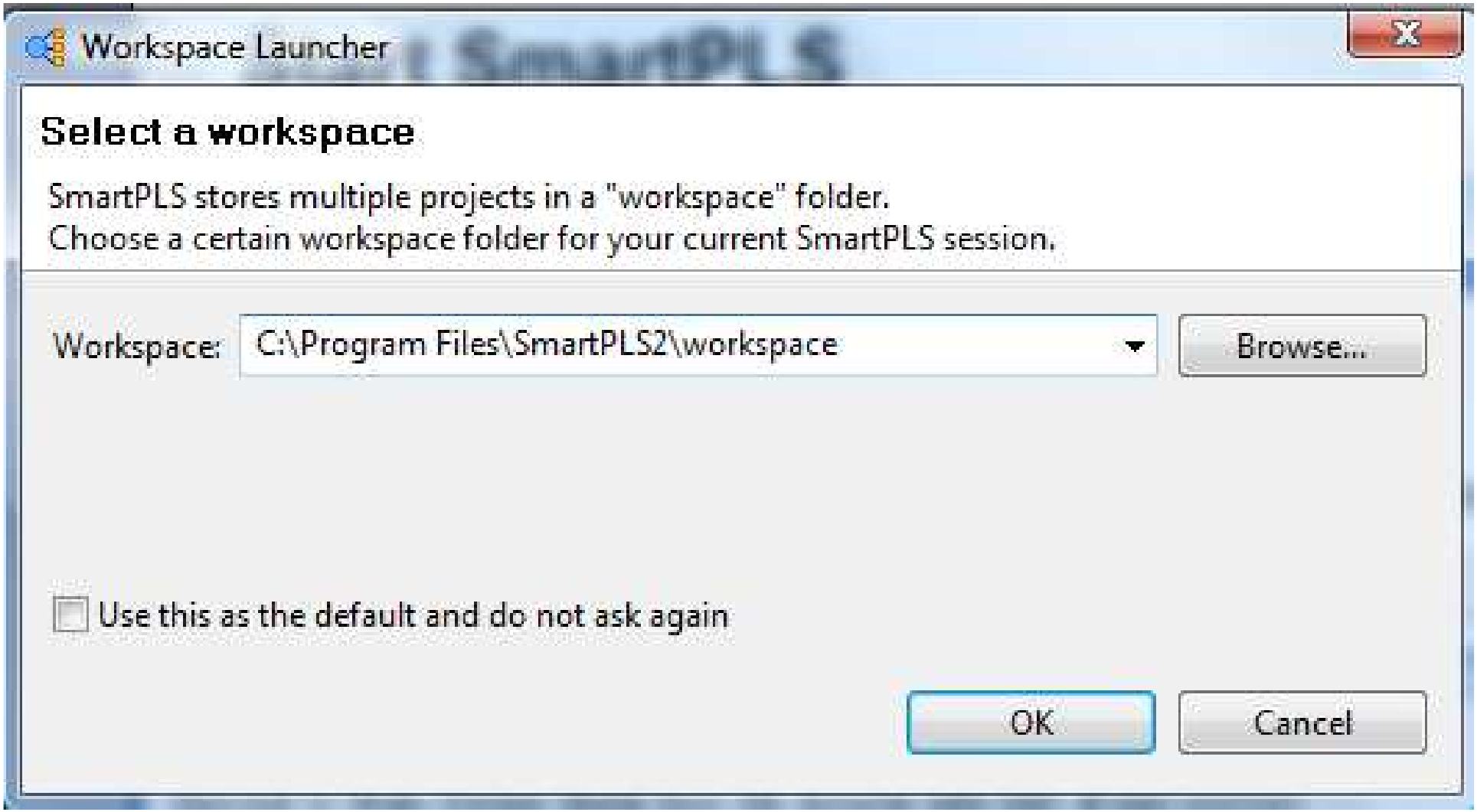
Basic Path Modeling with SmartPLS

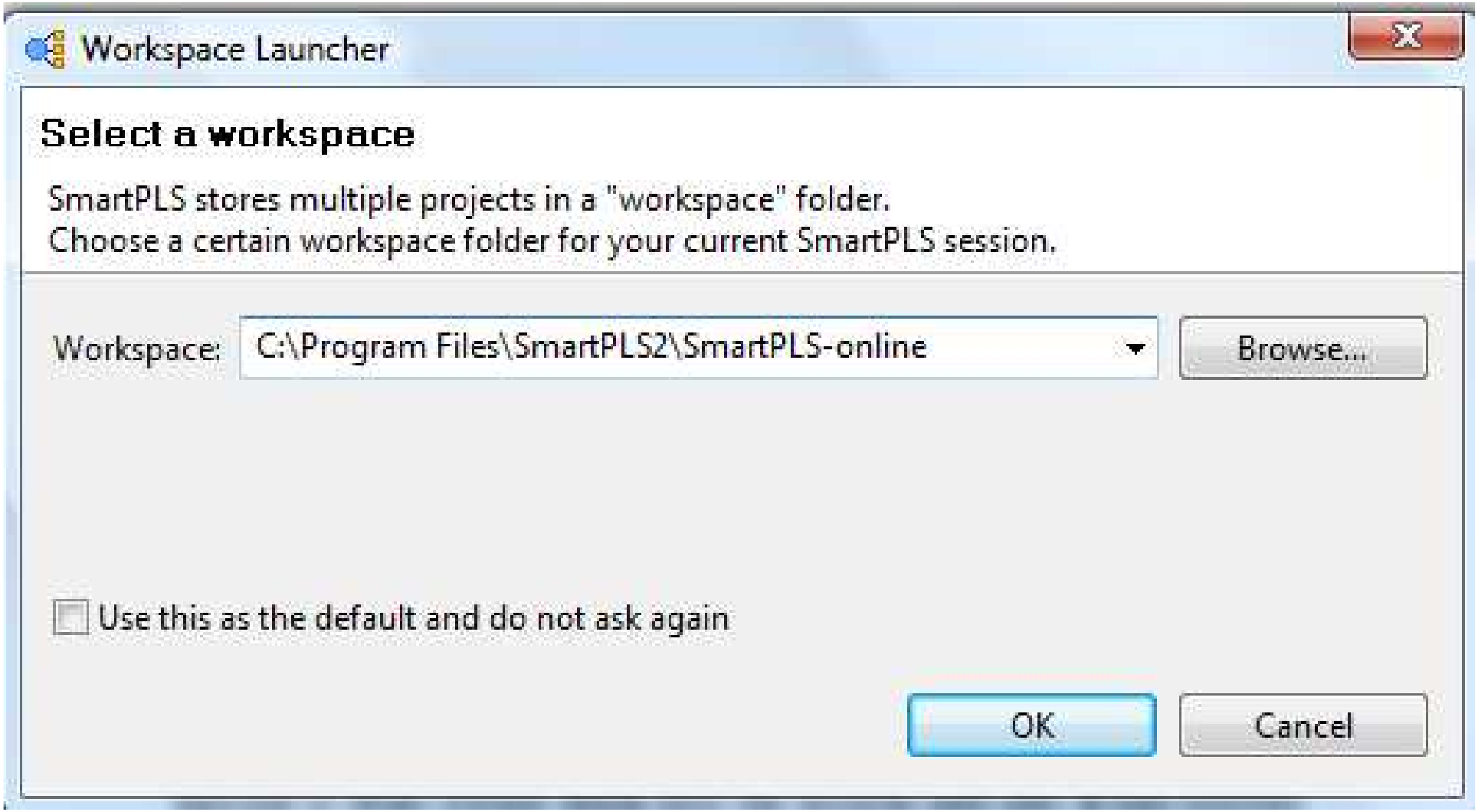
(register and obtain free SmartPLS software at http://www.smartpls.de)

More information about SEM seminars at http://www.PLS-SEMinars.com

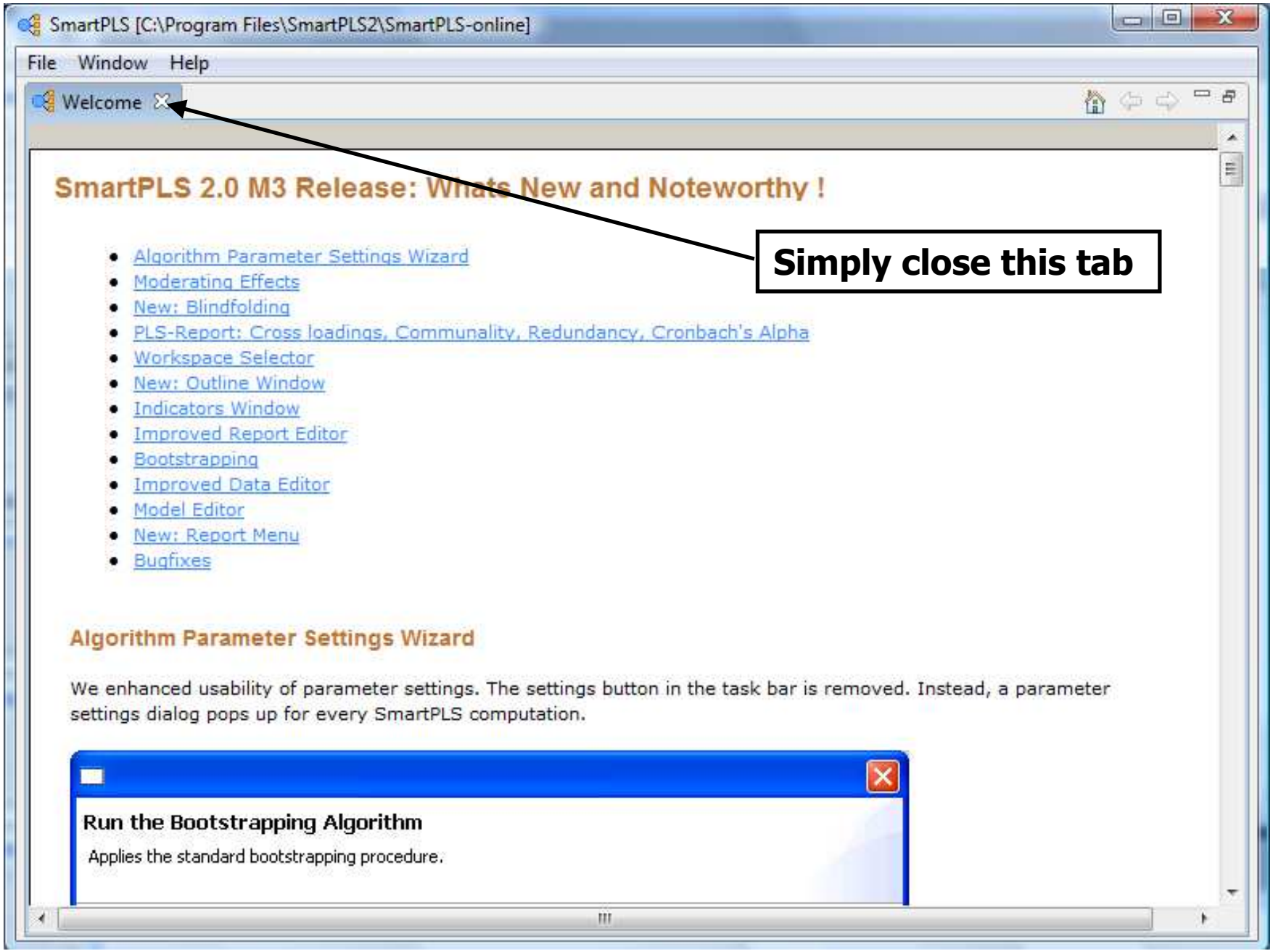
Start SmartPLS



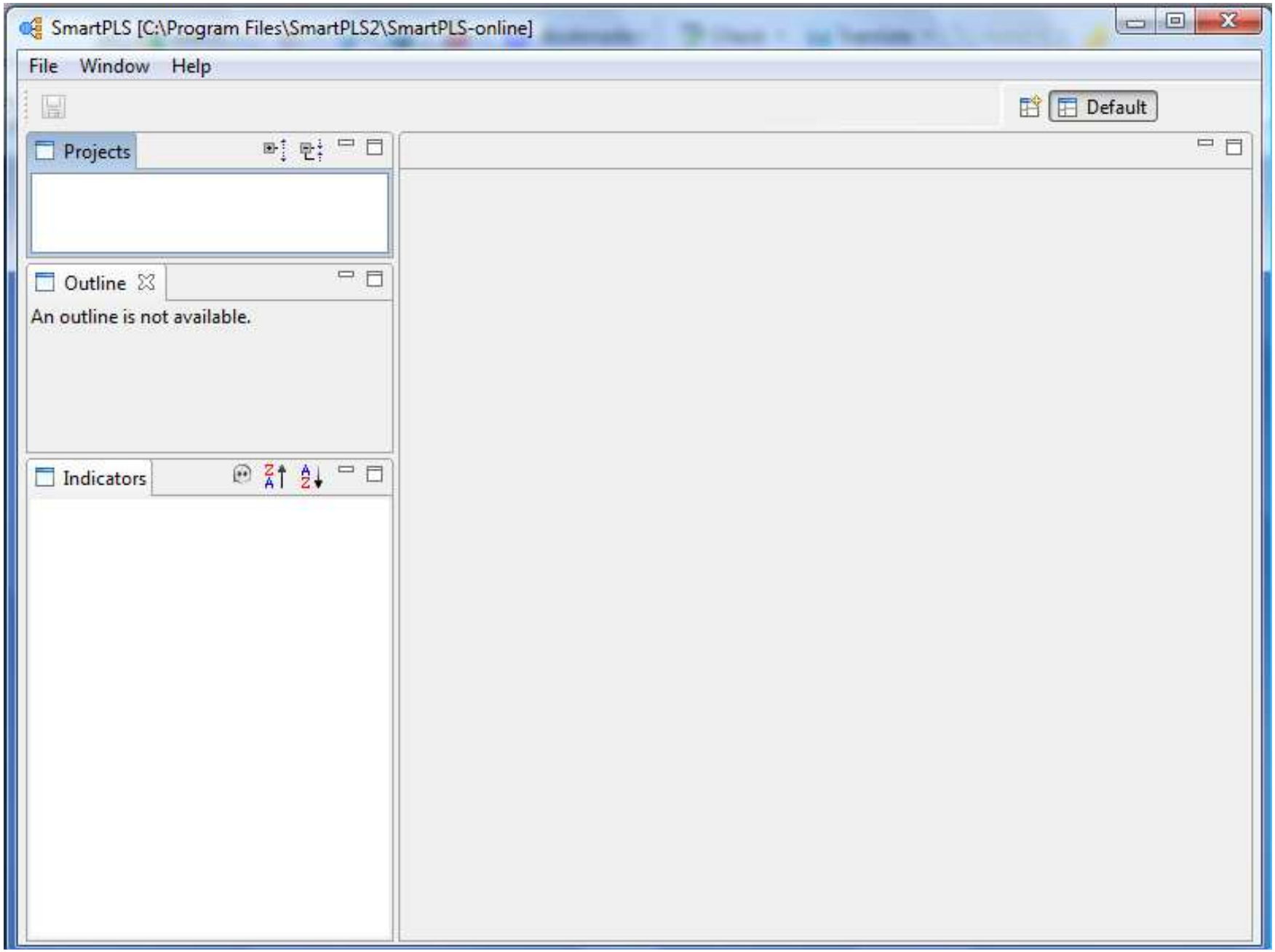
Start SmartPLS



Welcome Screen



Main Window


SmartPLS [C:\Program Files\SmartPLS2\SmartPLS-online]
File
Window
Help
Default
Projects
Outline
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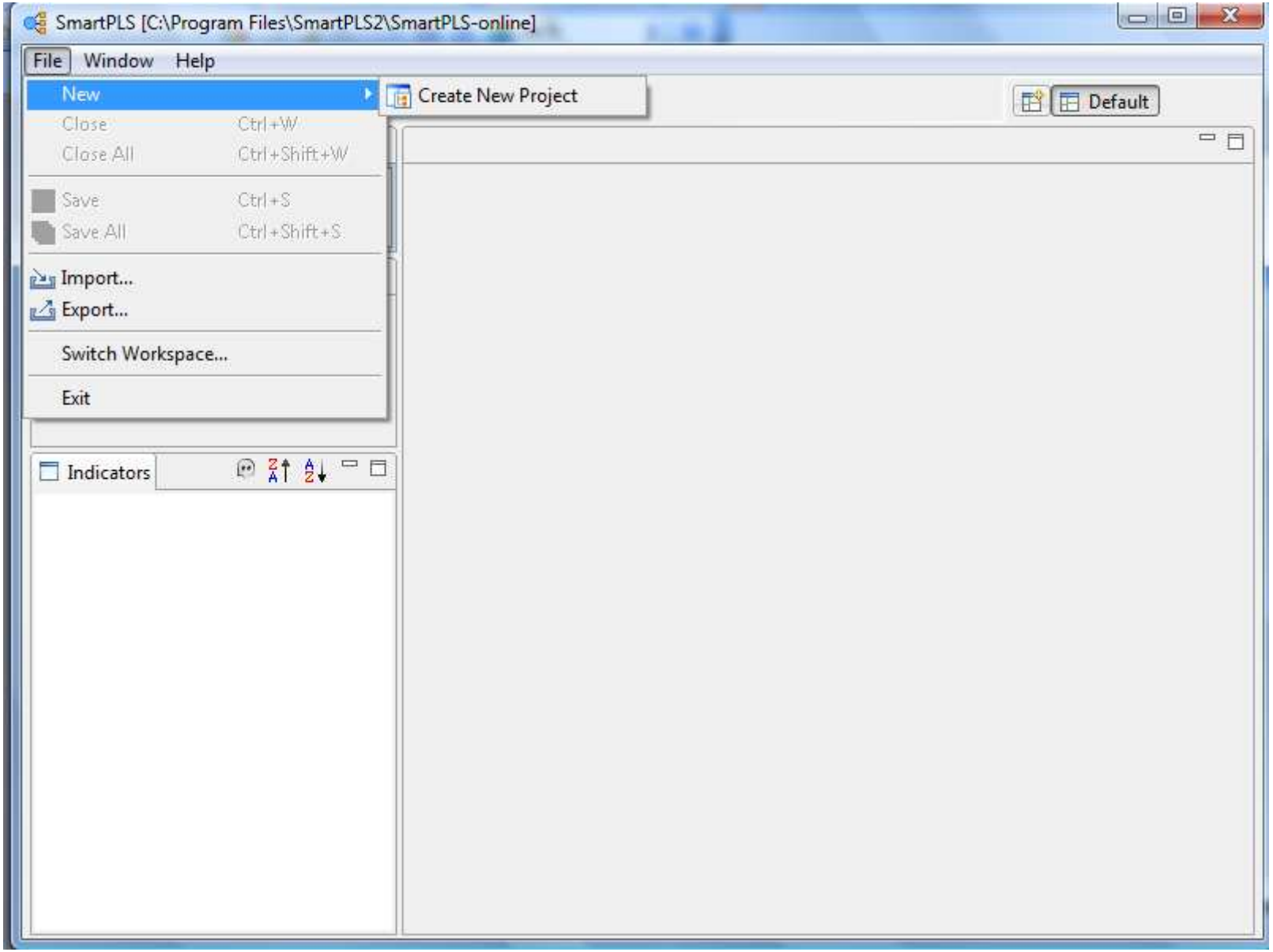
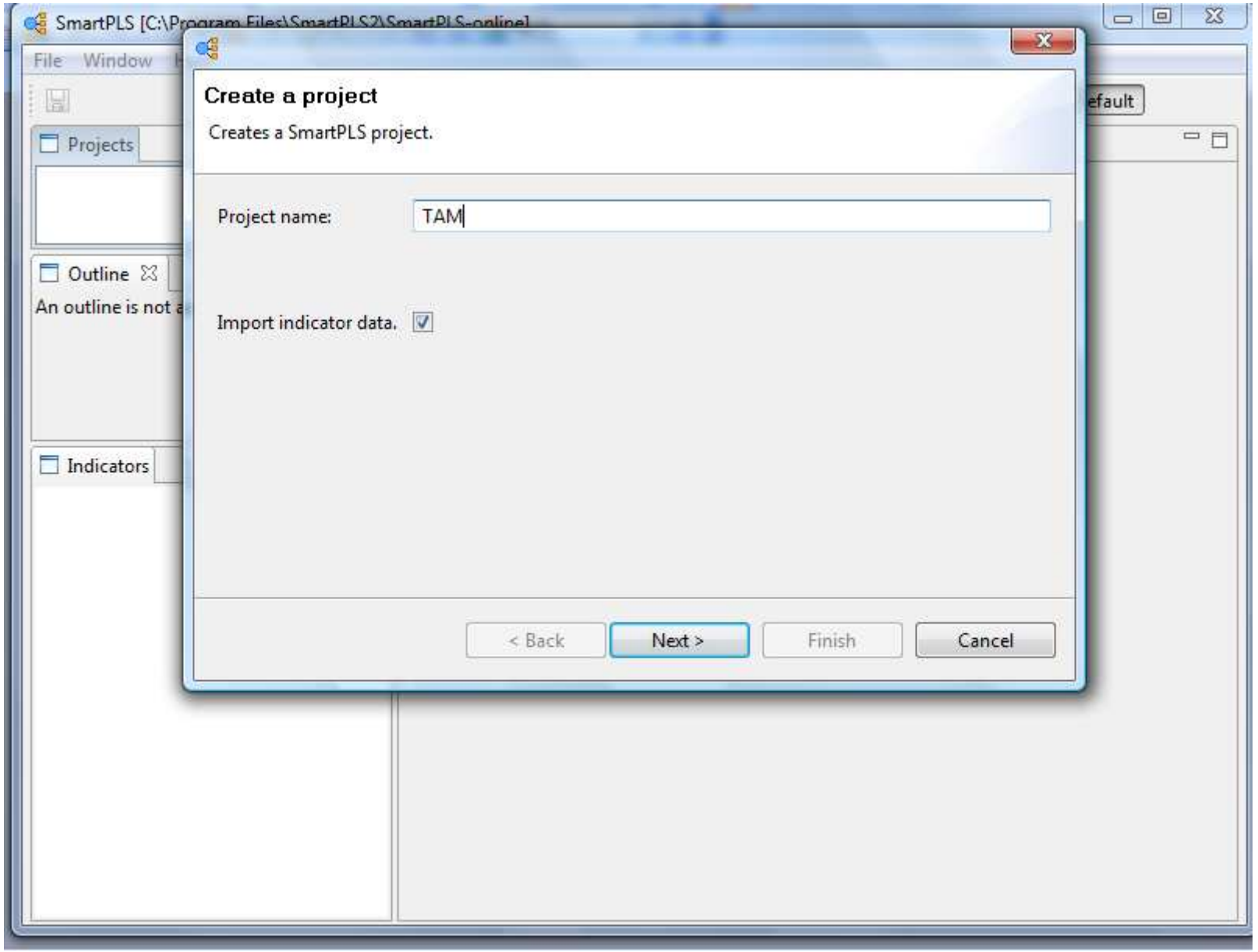
Indicators

Create New Project



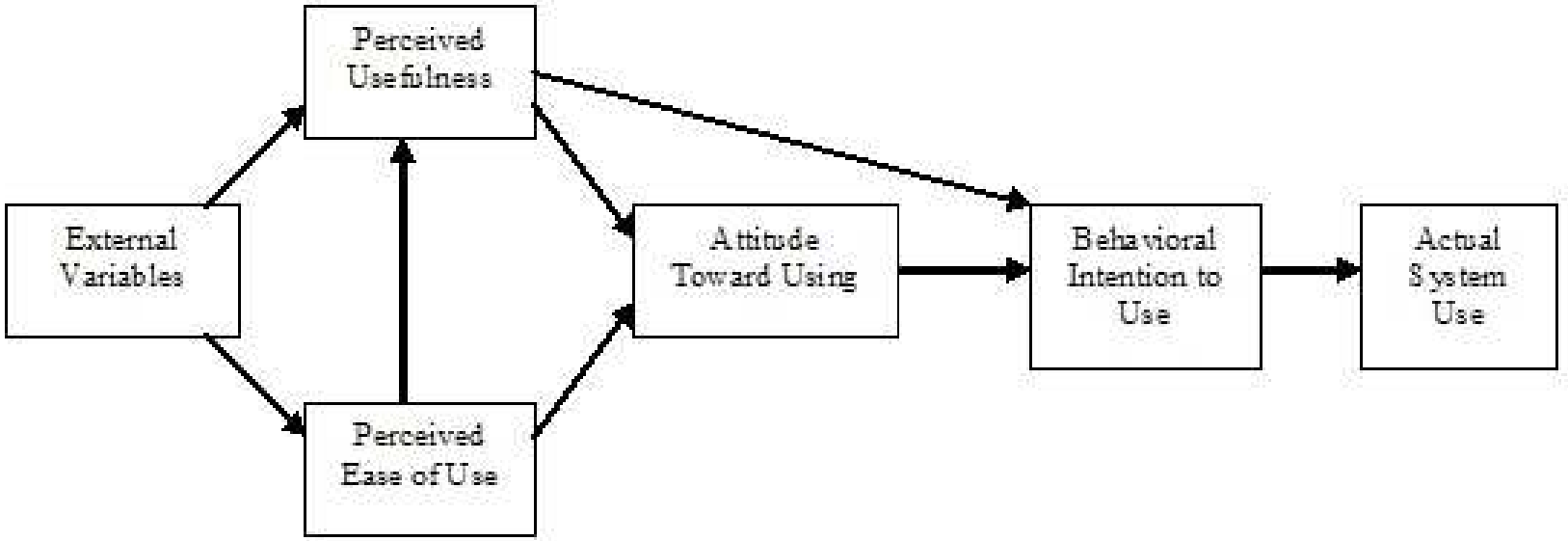
Create TAM Project



Technology Acceptance Model (TAM)

- Predicts Users':
  - Intentions to use technology
  - Intentions predict usage
- Belief Constructs and Attitudes
  - Perceived usefulness
  - Perceived ease of use
  - Attitude towards using

Technology Acceptance Model (TAM) Looks Like

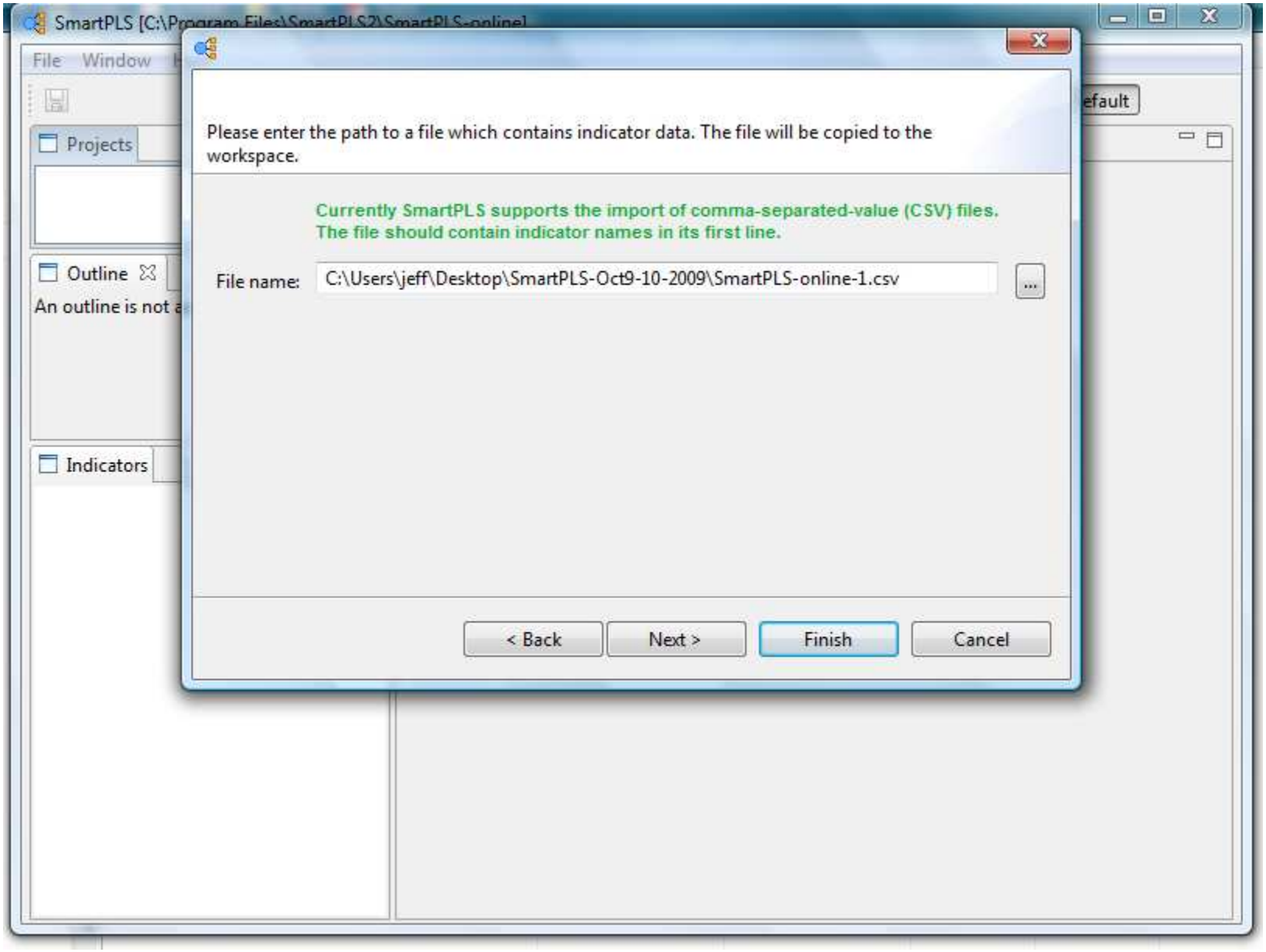


Saudi Arabia Project Data

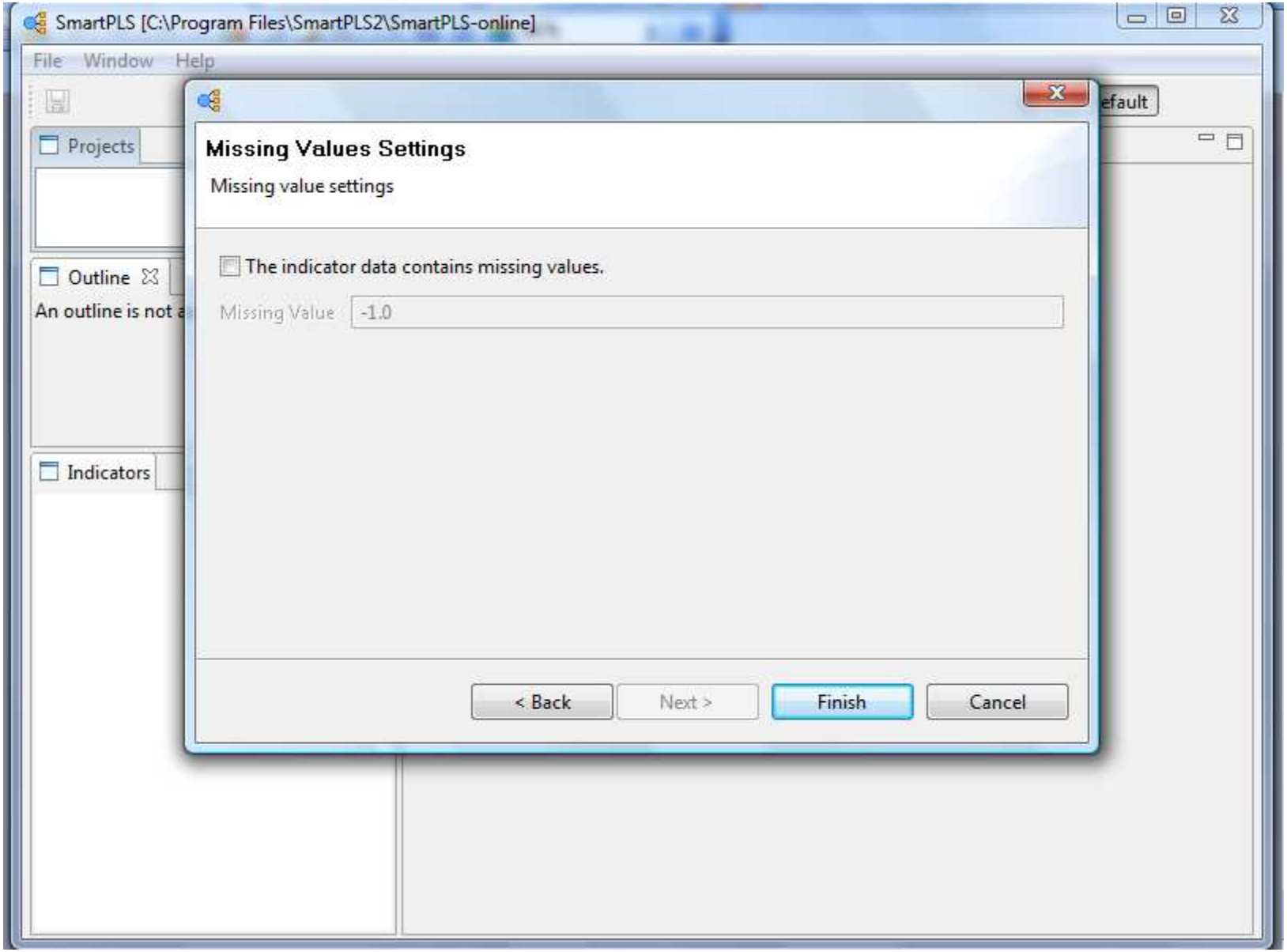
- Comprehensive study of technology usage in Saudi Arabia
  - 1,190 completed surveys - white-collar workers
  - Multiple industries and companies
  - Government (public sector) and Private (corporations)
  - Captured numerous user acceptance constructs
  - Target technology was use of “desktop computers for any work-related purpose”

Smart PLS

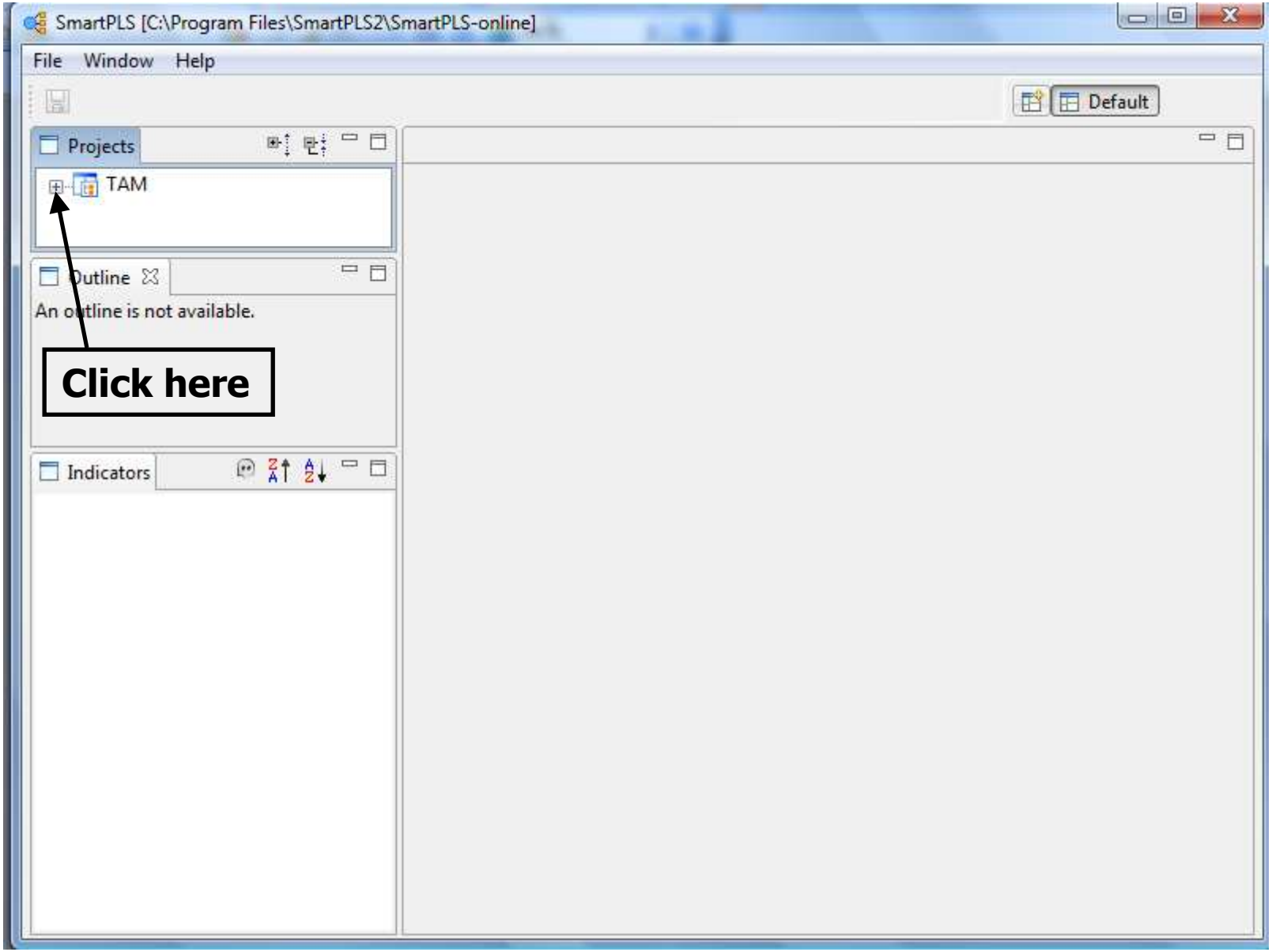
Import Model Indicator Data (.csv)



Missing Values



Main Window


SmartPLS [C:\Program Files\SmartPLS2\SmartPLS-online]
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TAM
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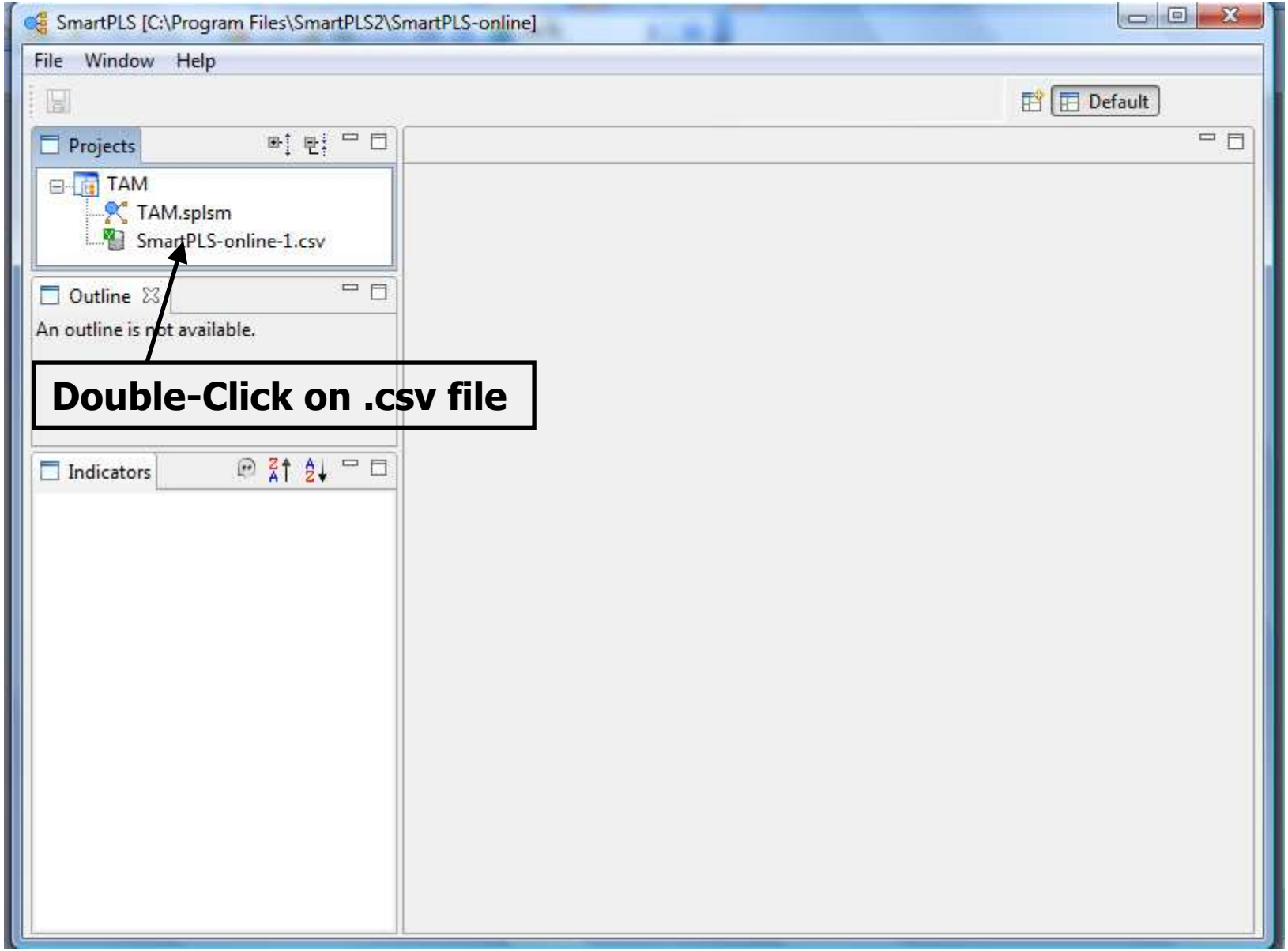
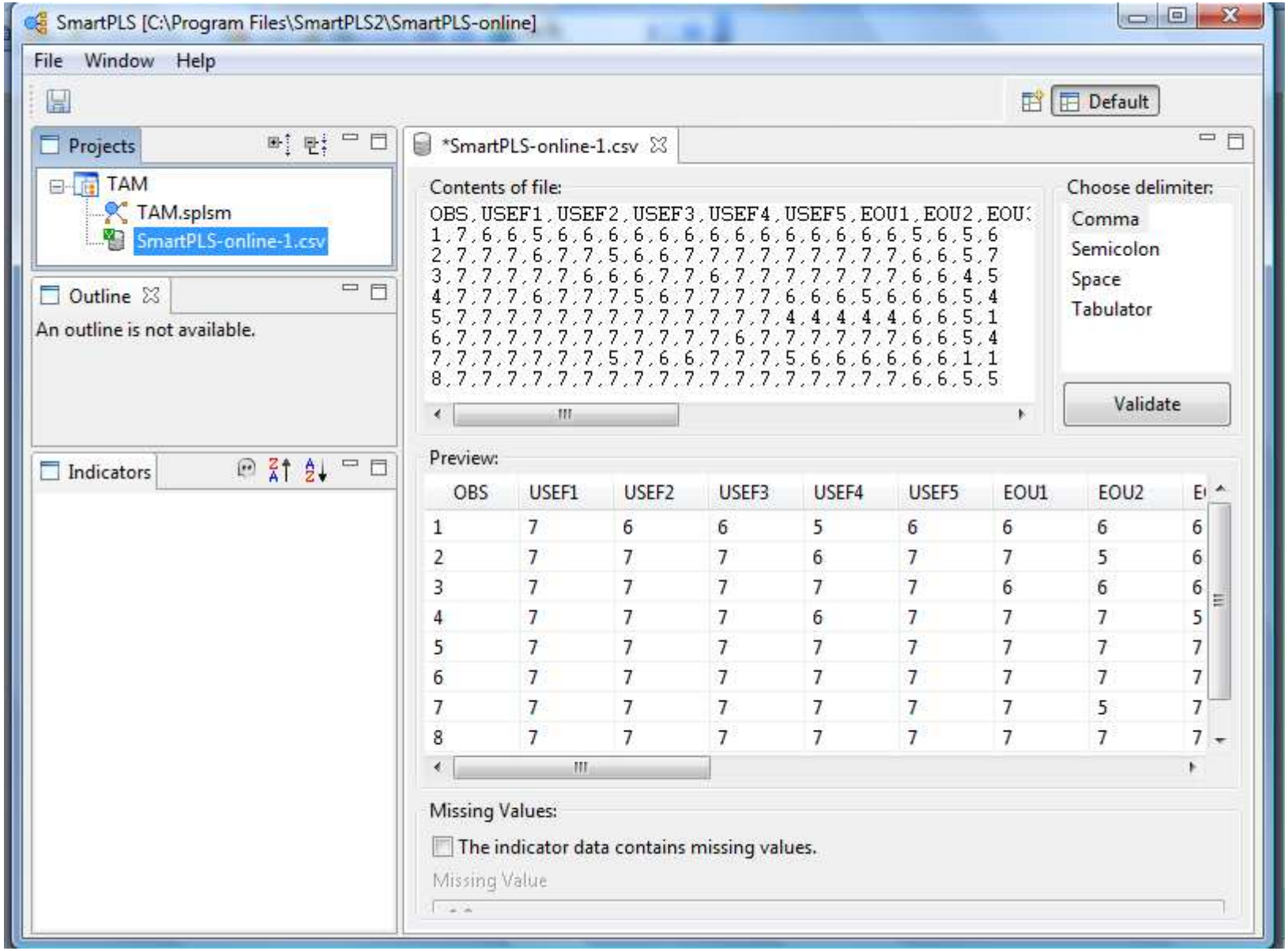
Indicators

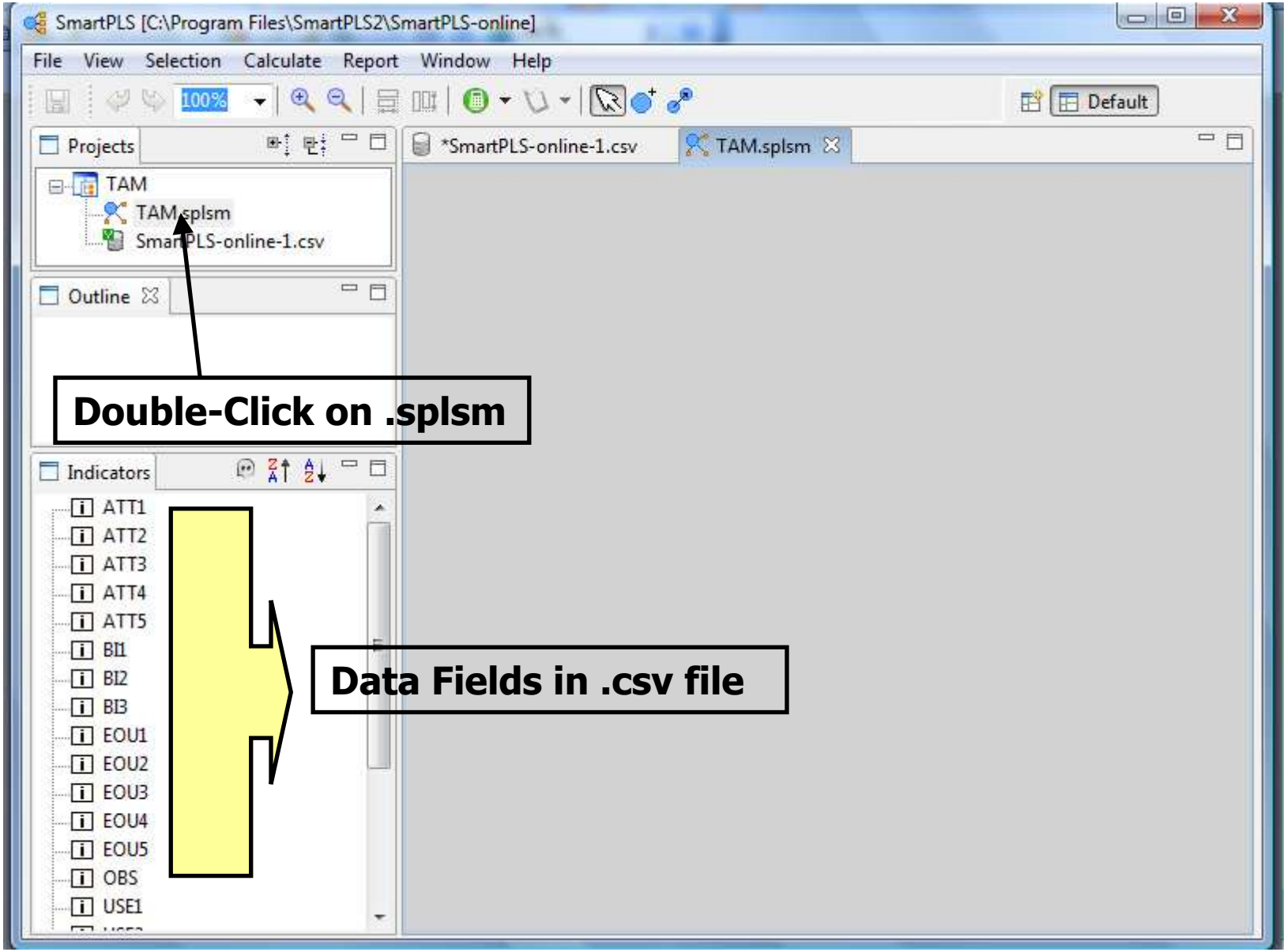
Open Data File



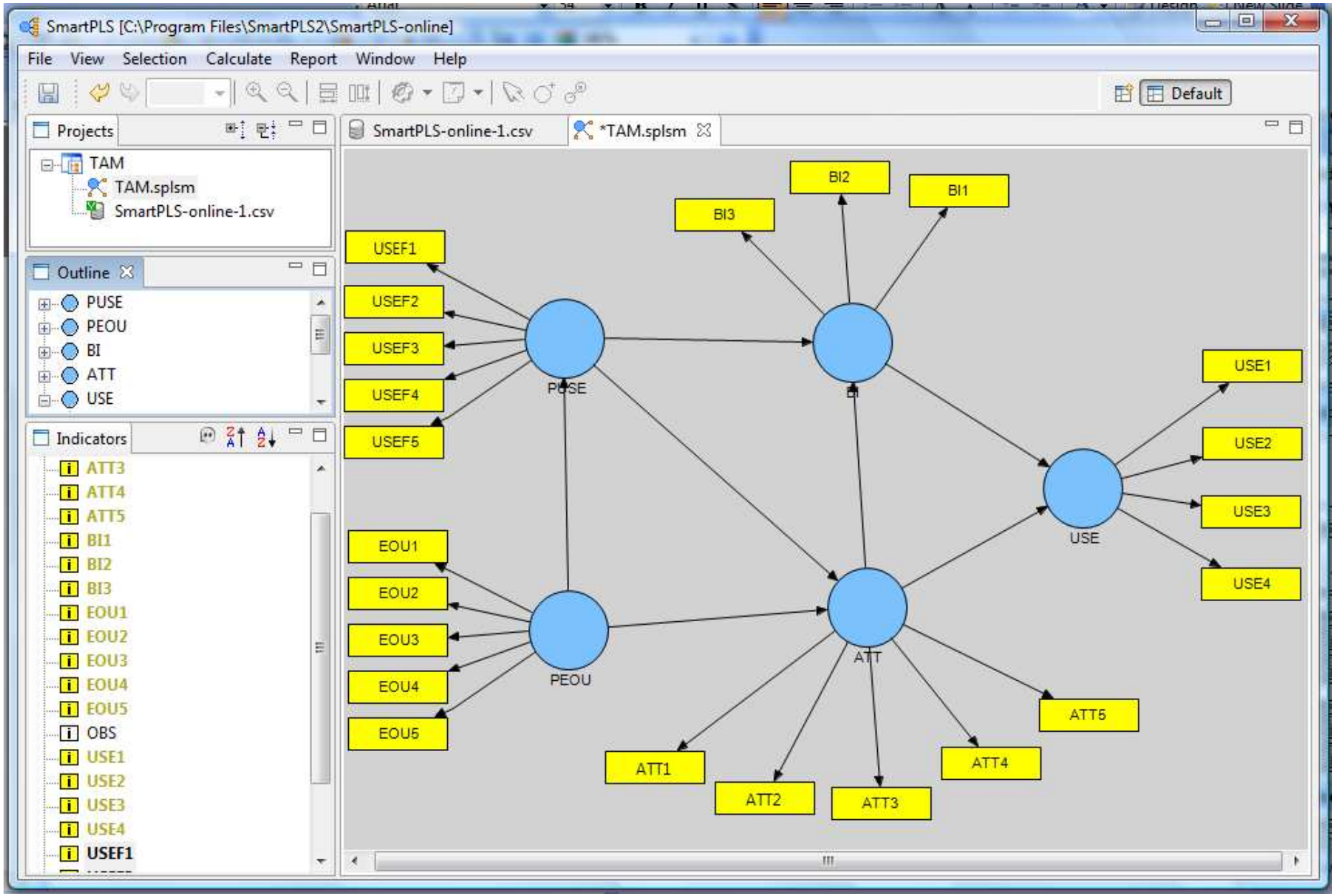
Data File Contents



Open Drawing Window (.splsm)



TAM Model


SmartPLS [C:\Program Files\SmartPLS2\SmartPLS-online]
File View Selection Calculate Report Window Help
Default
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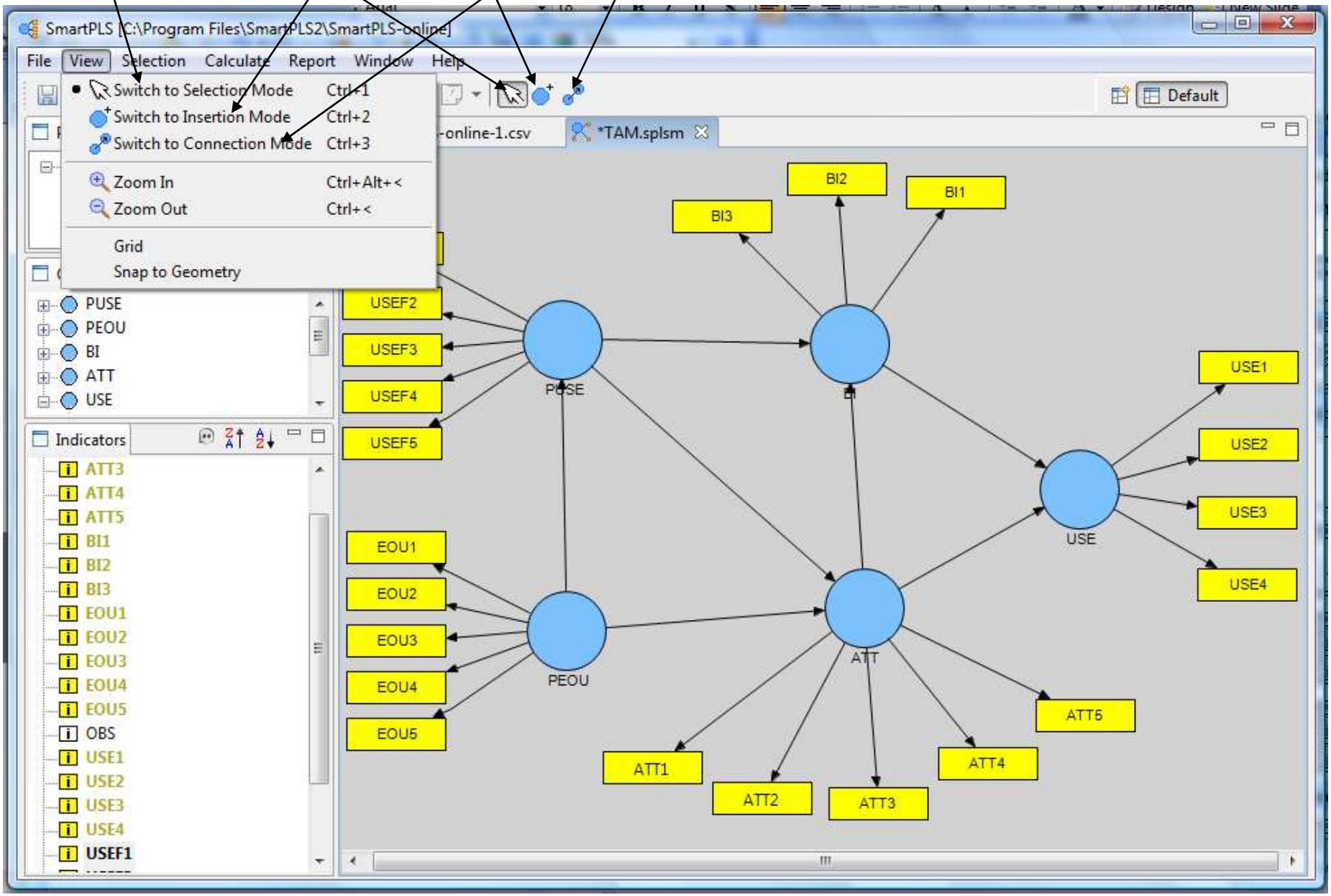
Selection Mode

Insertion Mode

Connection Mode

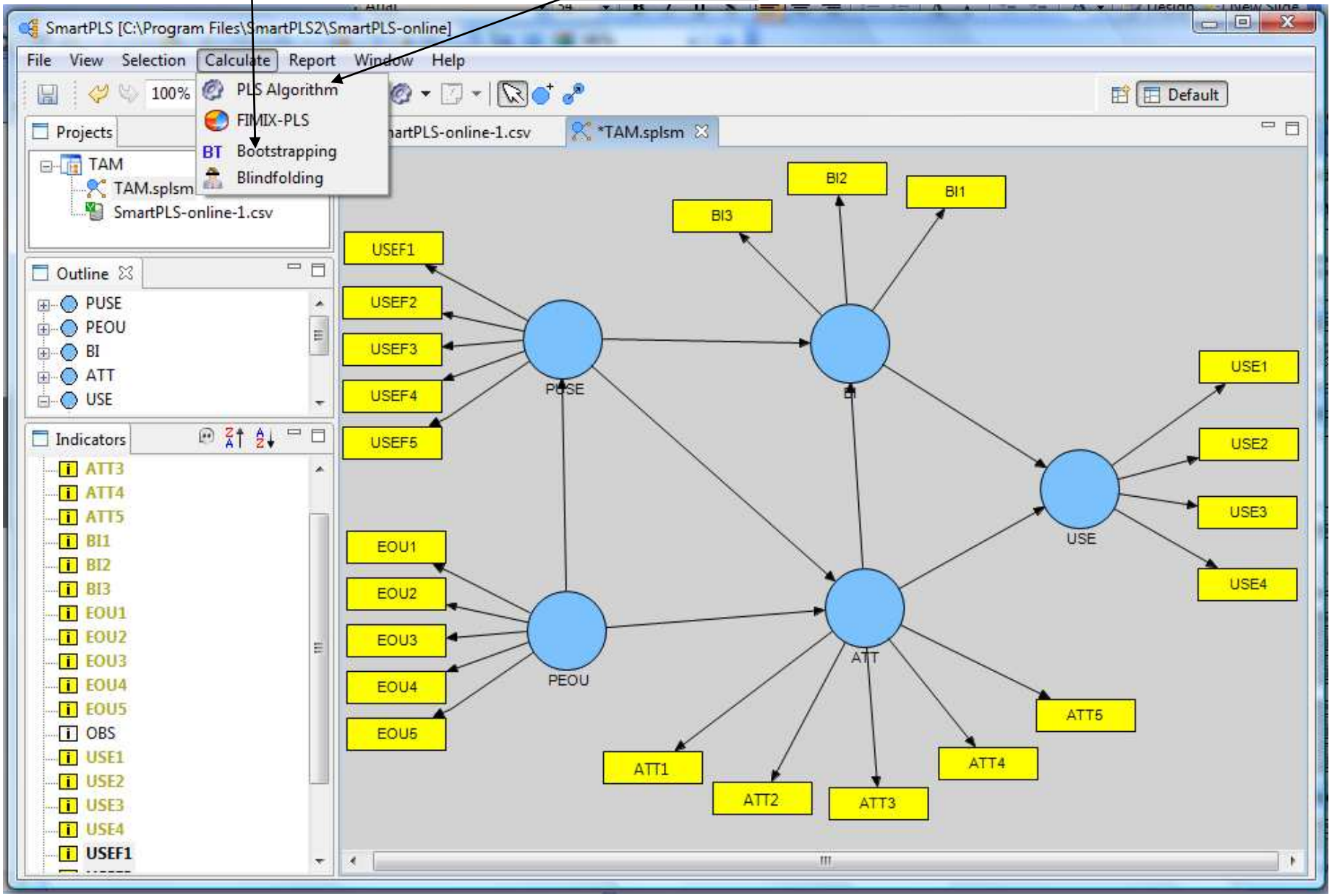
Selection, Insertion, Connection Modes



Selection, Insertion, Connection Modes

- Selection Mode
  - To select items in the drawing window
- Insertion Mode
  - To drag and drop new latent variables
- Connection Mode
  - To add paths to the model.

Calculate: Bootstrapping and PLS Algorithm



Calculate Bootstrapping and PLS Algorithm

- Bootstrapping
- PLS Algorithm

Bootstrapping

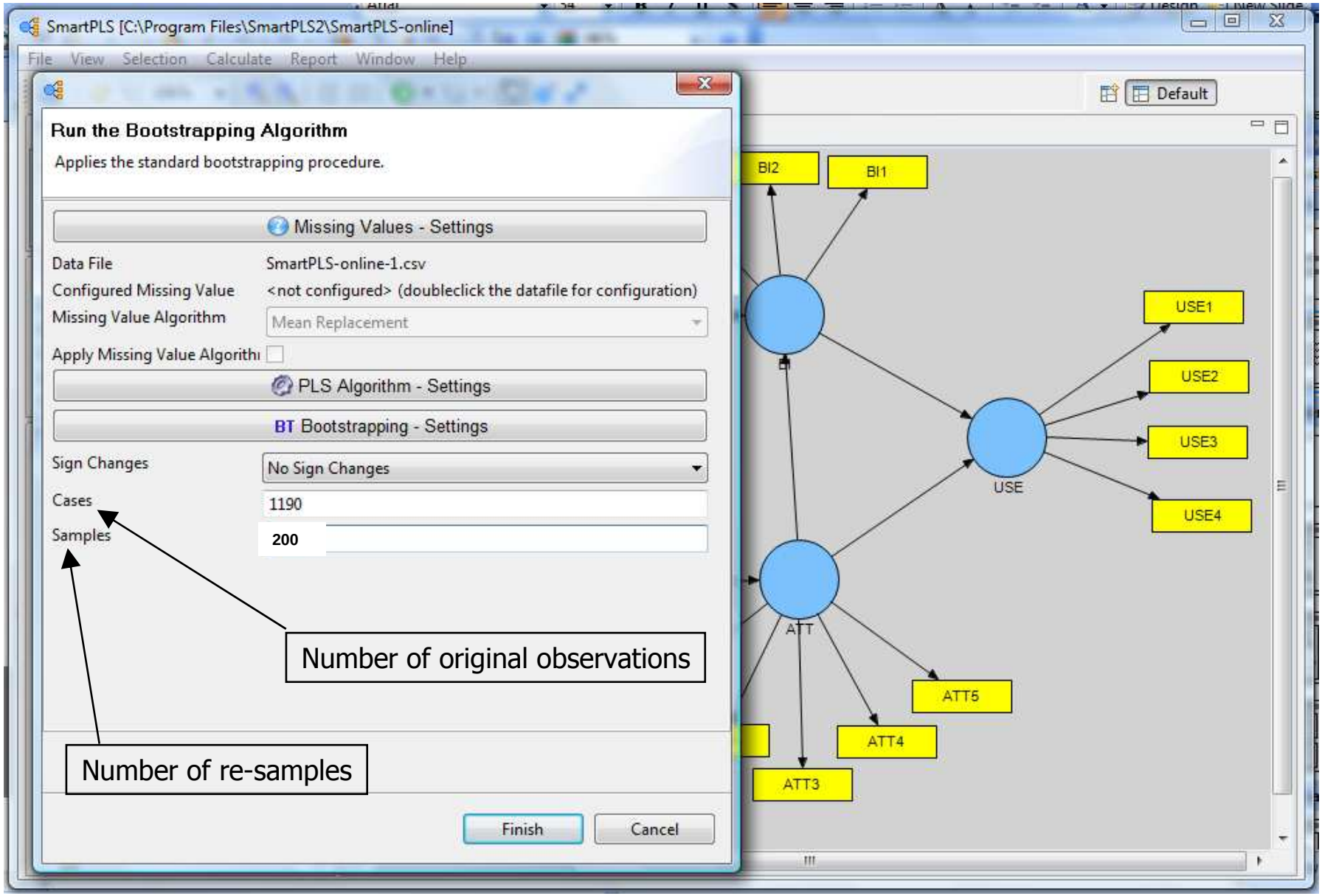
- Estimates t-values of item (factor) loadings (outer model) and path coefficients (inner model)
- Establish a number of subsamples to be created (e.g. 200)
- Randomly selects 1,190 cases (with replacement) and estimates the model 200 times
- Cases are drawn with a probability of 1/1190 from the data set (a certain observation may be selected 0 to 1,190 times when creating a bootstrap subsample).

Smart PLS

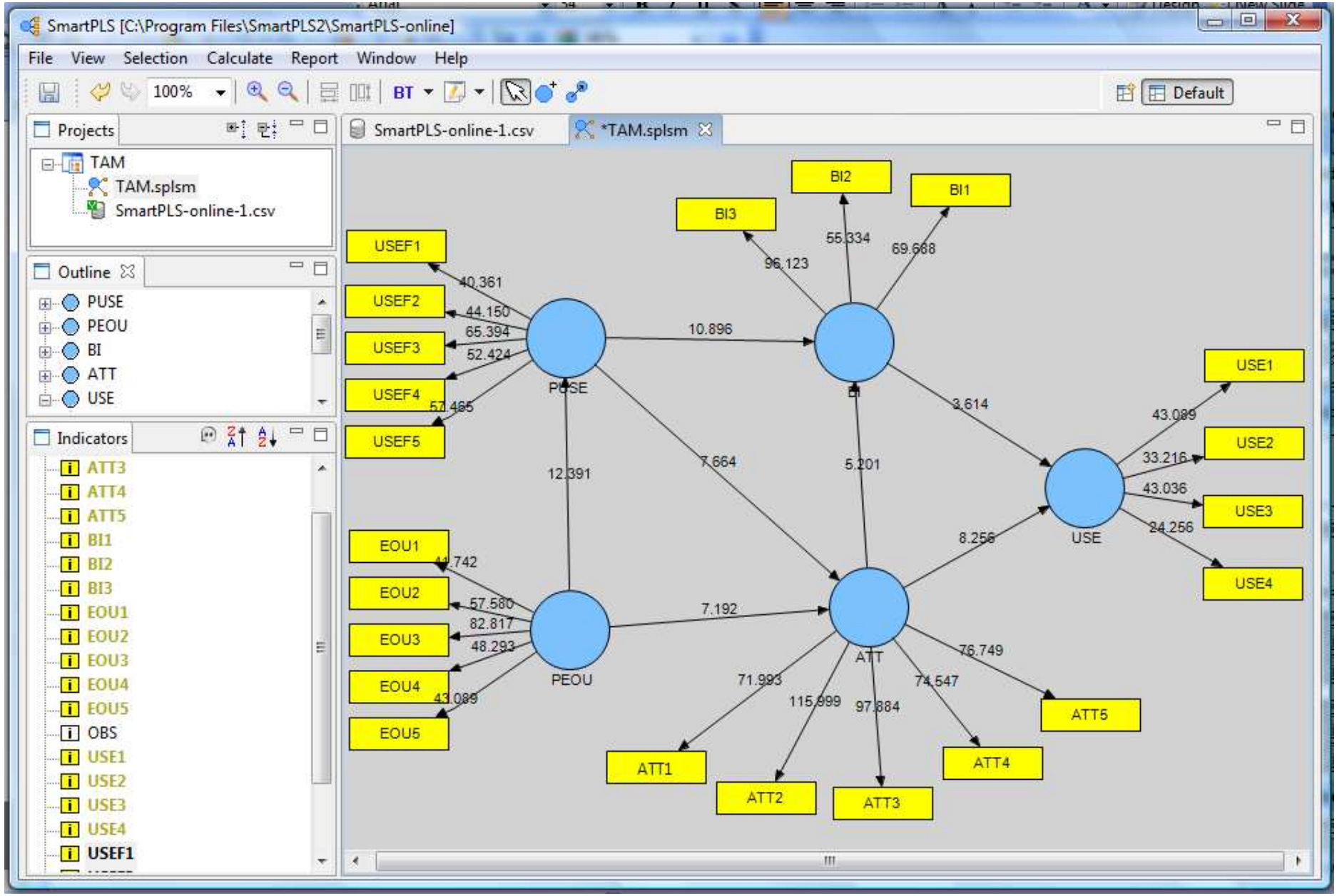
Bootstrapping - more

- Bootstrapping provides t-values for
  - Inner (structural) model path coefficients
  - Outer (measurement) model item loadings
- Bootstrapping procedure provides mean values for
  - weights in the inner (structural) model
  - weights in the outer (measurement) model
  - outer (measurement) model item loadings

Bootstrapping Screen



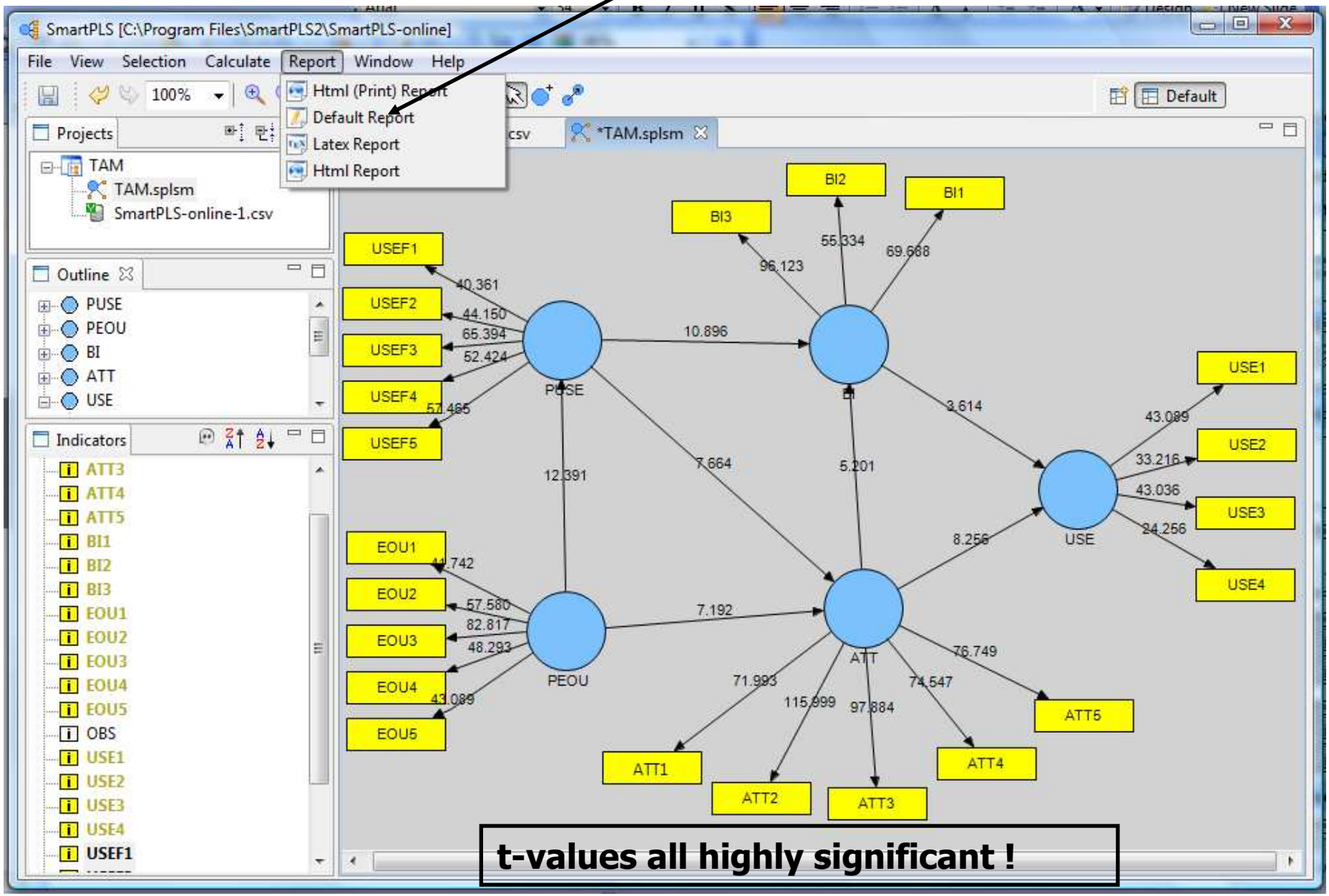
Bootstrapping t-values



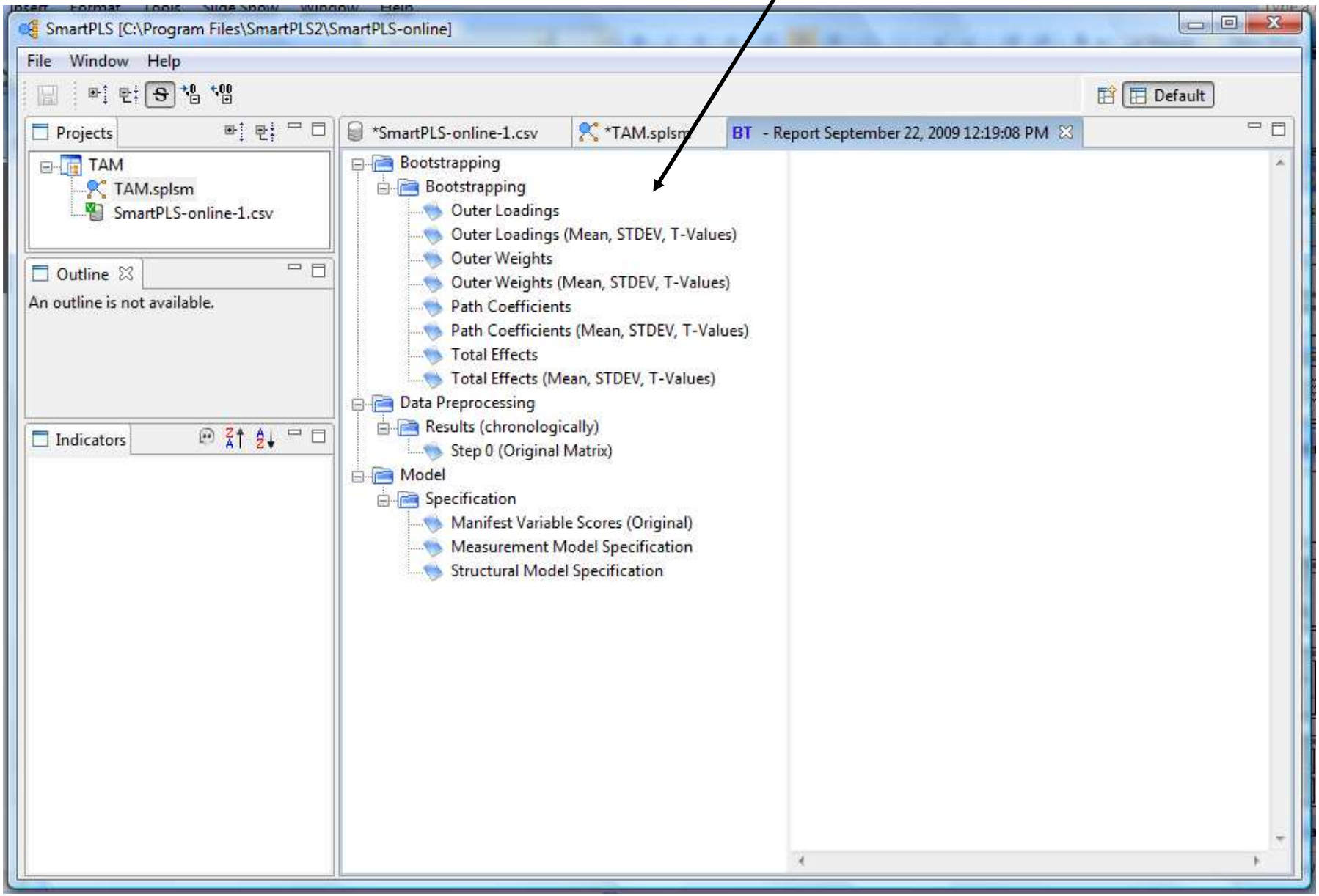
Are t-values Significant?

- Look at the t-values for the item loadings (outer model) and for the path coefficients (inner model)
  - Are they significant ? (e.g. t >1.96 at p < 0.05, t > 2.576 at p < 0.01, t > 3.29 at p < 0.001 for two-tailed tests)
  - If so, good !
  - If not, might want to revise the measurement model (in practice, you may leave an insignificant relationship in the inner path model)
- Note: If your measurement model has problems, the structural model has problems, too!
  - By default since your items used to measure the latent constructs are problematic !

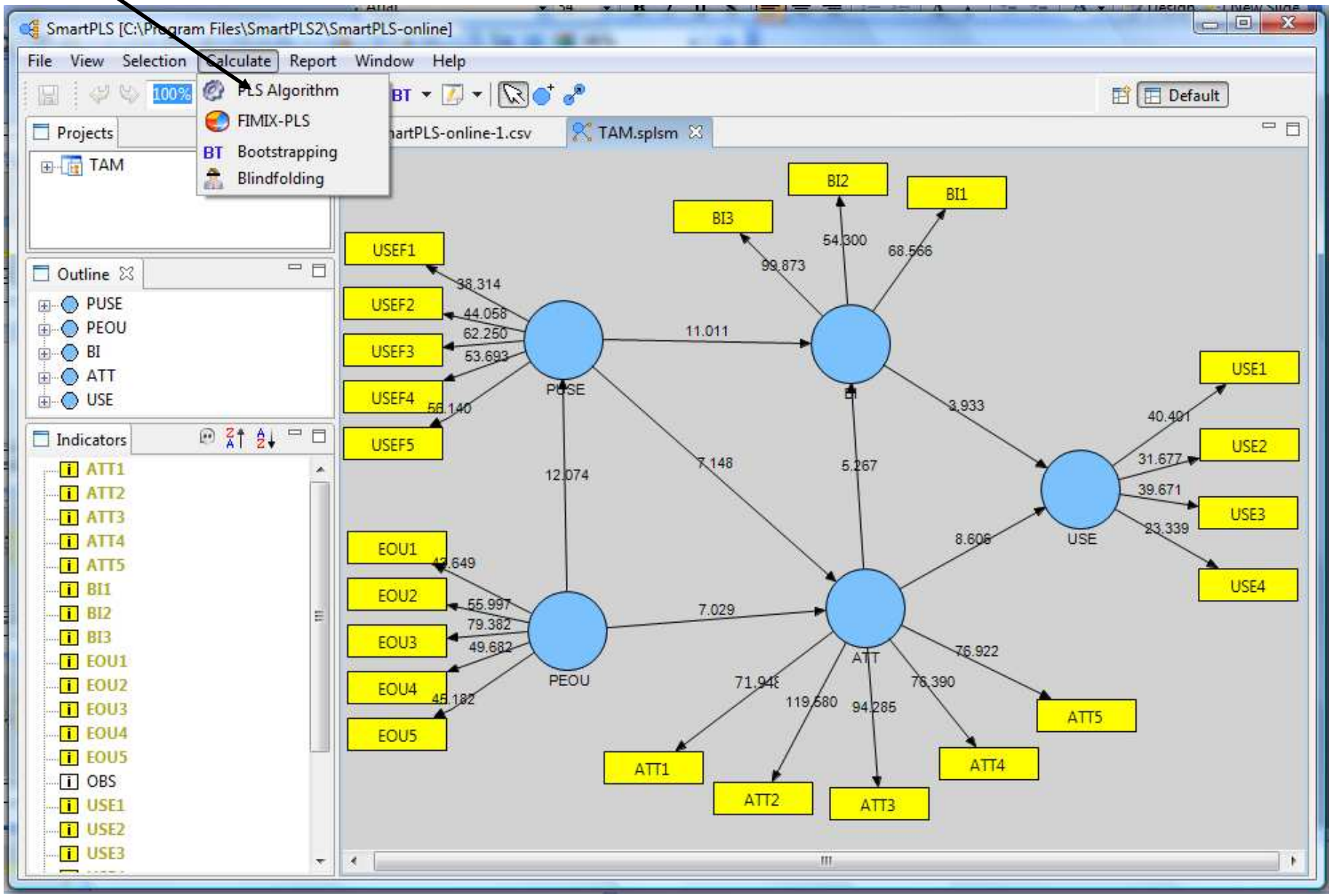
Default Report



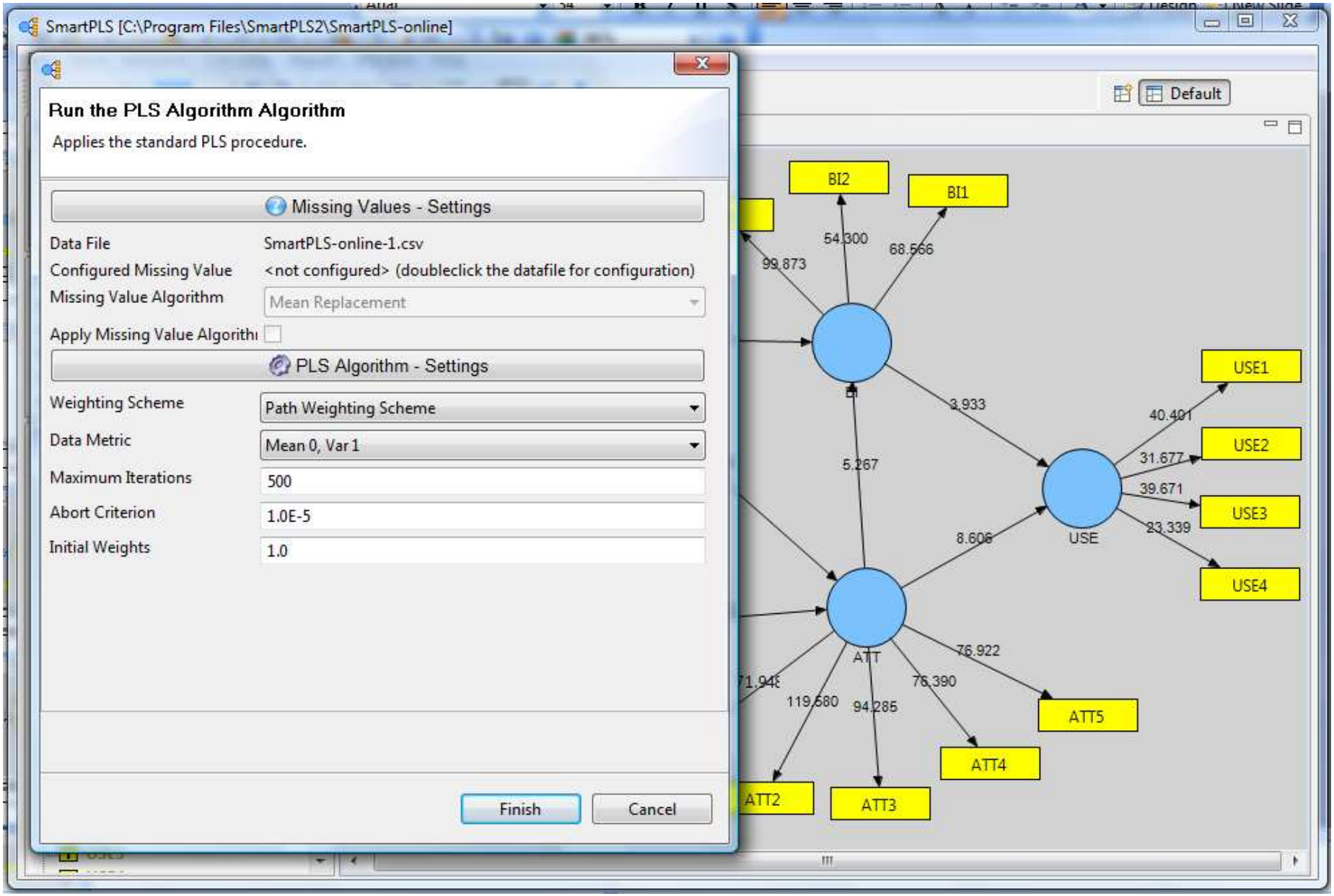
Default Report



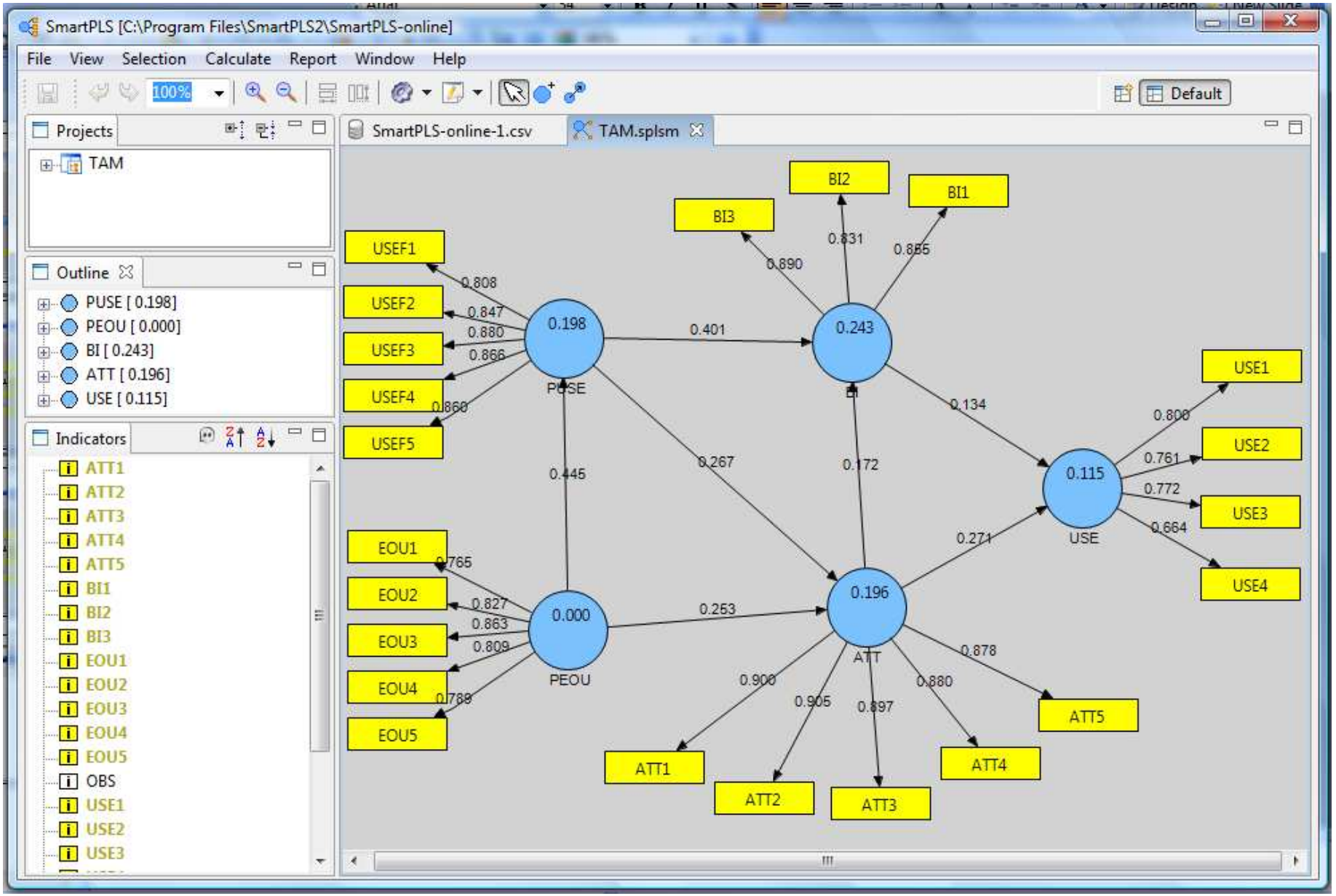
Calculate: PLS Algorithm



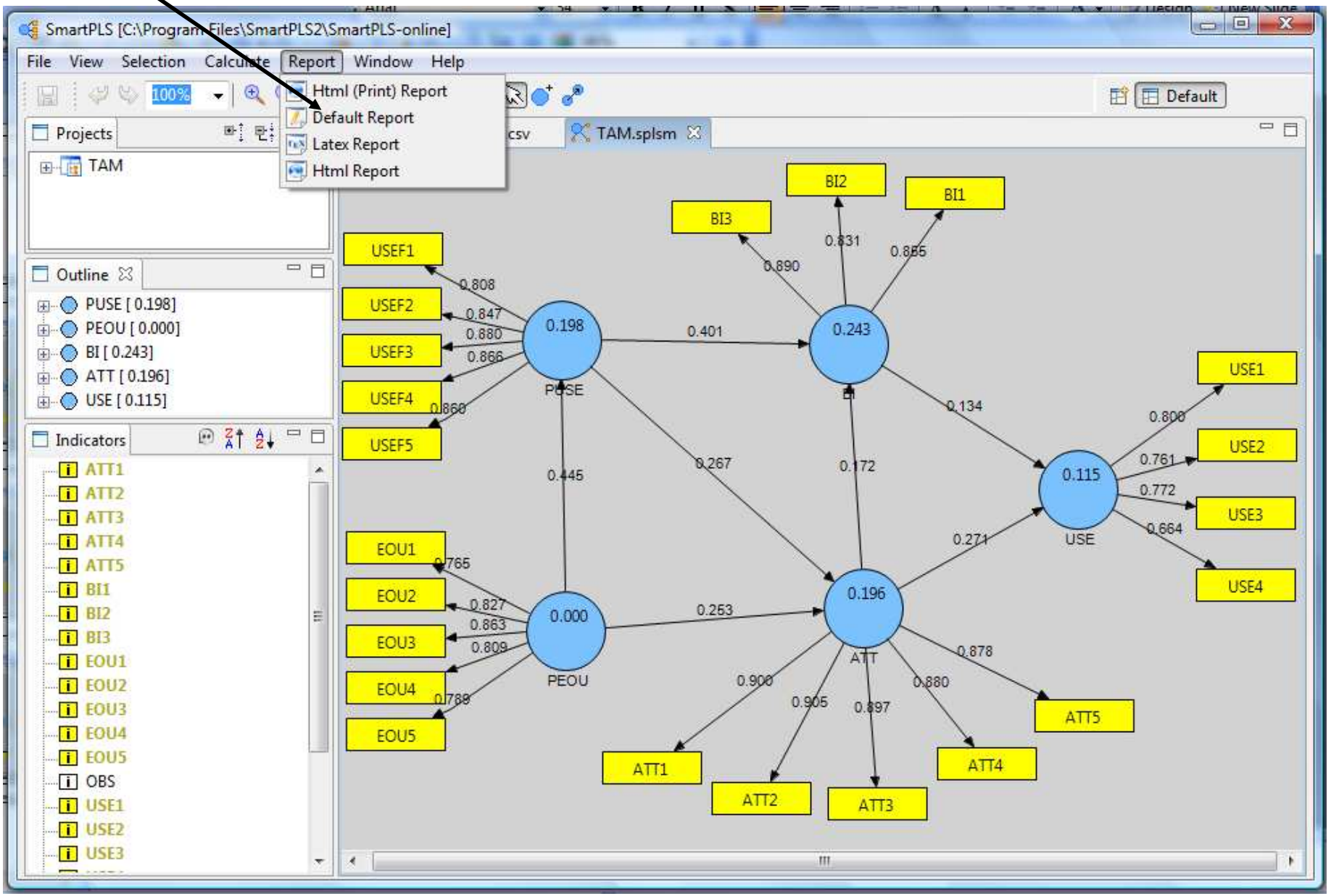
Calculate: PLS Algorithm



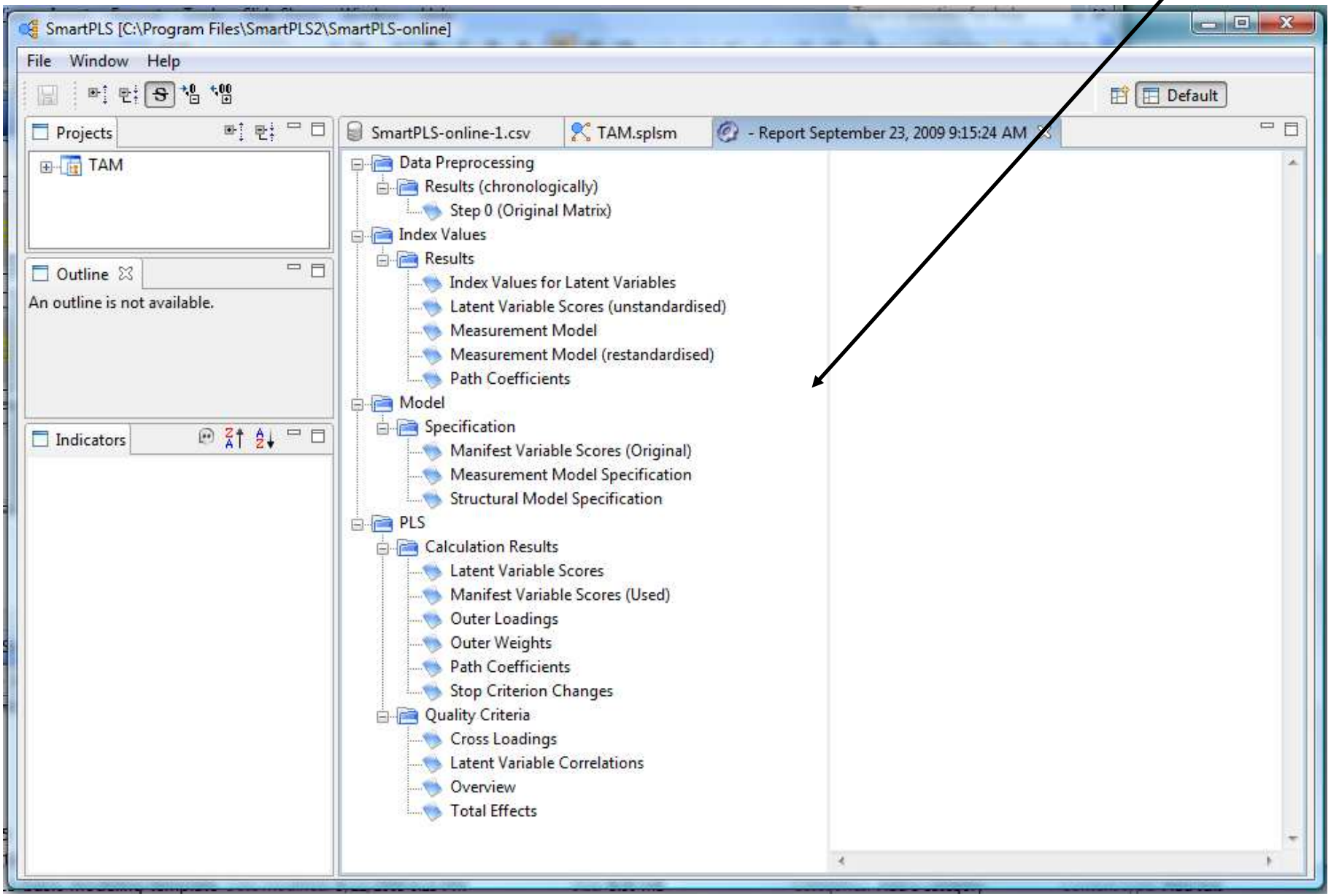
PLS Algorithm Results



PLS Results Default Report



PLS Results Default Report



After-Class Exercise . . .

- If you have not done it already, use SmartPLS to re-create the basic TAM PLS-SEM model that we reviewed in this presentation.
  - Use the enclosed data file TAM.csv