```
_____
       Starting OpenBDLM_V1.0
_____

              Time series analysis using
              Bayesian Dynamic Linear Models
_____
— Start a new project:

      *       Enter a configuration filename
      0    —> Interactive tool

— Type D to Delete project(s), V for Version control, Q to Quit.

    ( choice >> 0 )    Step 1: select the interactive tool


_____
          Starting a new project...
_____


— Enter a project name (max 25 characters):
    ( choice >> Example_DISP )    Step 2: choose project name

— Does this project aim to create synthetic data ? (y/n)
    ( choice >> no )    Step 3: disregard generating synthetic data

      Load data...

— Choose a database

      0    —> Build a new database

    ( choice >> 0 )   Step 4: load new data

— Data available:

      Time series number #        Reference name          Size
      _____

      1                           DISP                    [19366x1]
      _____


      — How many model classes do you want for each time series?
    ( choice >> 1 )    Step 6a:  select the number of model class
```

```
        _____

        BDLM Component reference numbers
        _____

        11: Local level
        12: Local trend
        13: Local acceleration
        21: Local level compatible with local trend
        22: Local level compatible with local acceleration
        23: Local trend compatible with local acceleration
        31: Periodic
        41: Autoregressive process (AR(1))
        51: Kernel regression
        61: Level Intervention
        _____


-   Identify components for time series #1; e.g. [11 31 41]
        choice >> [11 31 31 41]   Step 6b: select model block components

        Building model...
        Saving project...
        Project saved in saved_projects/PROJ_Example_DISP.mat.
        Printing configuration file...
        Saving data...

        Database saved in data/mat/DATA_Example_DISP.mat
        Configuration file saved in config_files/CFG_Example_DISP.m.



        _____

/       OpenBDLM main menu. Choose from
_____


        1  ->  Learn model parameters values
        2  ->  Estimate initial hidden states values
        3  ->  Estimate hidden states values

        11 ->  Display and modify current model parameter values
        12 ->  Display and modify current initial hidden states values
        13 ->  Display and modify current training period
        14 ->  Plots
        15 ->  Display model matrices
        16 ->  Create synthetic data
        17 ->  Export
        18 ->  Display current options in configuration file format
```

```
      Type Q to Save and Quit

    ( choice >> 1 )    Step 7a: access model parameter estimation menu

————————————————————————————————————————————————

/ Learn model parameters
————————————————————————————————————————————————


      1 —>  Newton—Raphson
      2 —>  Stochastic Gradient Ascent

      Type R to return to the previous menu

    ( choice >> 1 )     Step 7b: choose parameters estimation method
      Learning model parameters (Newton—Raphson) ...

     \Start Newton—Raphson maximization algorithm

       Training period:                              1—Inf [days]
       Maximal number of iteration:                  100
       Total time limit for calibration :            60 [min]
       Convergence criterion:                        1e—07*LL
       Nb. of search levels for \lambda:             4*2

            Initial LL: 48819.1638
                      AR|M1|1         AR|M1|1        |M1|1
      parameter names: \phi           \sigma_w       \sigma_v
       initial values: +9.76e—01      +1.93e—02      +7.43e—07
  —————————————————————————
    Loop #1 : |M1|1 | \sigma_v
       delta_param: —8.1948e—10
    log—likelihood : 48819.1638
    param change   : 7.4258e—07 —> 7.4176e—07


————————————————————————————————————————————————
/     OpenBDLM main menu. Choose from
————————————————————————————————————————————————


    ( choice >>  2 )   Step 8: estimate initial hidden states


 ————————————————————————————————————————————————————

 /     OpenBDLM main menu. Choose from
 ————————————————————————————————————————————————————
```

```
        choice >>  3        Step 9:  estimate the hidden states
_____
/     OpenBDLM main menu. Choose from
_____

        choice >> 17      Step 10a:  access export menu

_____
/     Export menu
_____


      1 ─>  Export the project in a configuration file
      2 ─>  Export data in CSV format
      3 ─>  Export results in CSV format
      4 ─>  Create and export figures

      Type R to return to the previous menu

      choice >> 4       Step 10b: access export figure menu

      1 ─>  Export figures in PNG
      2 ─>  Export figures in PDF
      3 ─>  Export figures in TEX


      choice >> 3      Step 10c: export figure in LaTeX
      Creating figures for data ...

_____
/     OpenBDLM main menu. Choose from
_____

      choice >> Q       Step 11: Save and quit
```