Arius 3.2.1

Release Notes and
Installation Instructions

Milliman

IT TAKES VISION

1. Release notes

RELEASE 3.2.1 ADDS THE FOLLOWING NEW CAPABILITIES:

1. **Stochastic Model Compilation**

   The Arius Stochastic system now offers the ability to combine stochastic results from multiple projects and model types into one stochastic distribution. These combinations have two forms:

   - weighting results across models (e.g. ODP Bootstrap vs Mack) or projects in a similar fashion to the ODP Summary, or

   - combining results, taking into account the effects of correlation among the various results, to get a bottom-line view of your stochastic results across multiple Arius projects.

   To use this capability you will first set MODEL OPTIONS | SAVE RESULTS TO FILE to **All Incrementals, by Iteration** before running your selected stochastic models on the individual reserving segments (▶ from the **Stochastic** ribbon). You will then use these output CSV files (found under the Documents\Milliman\Arius\Sim_Results folder) along with the new Compilation tools (▲ on the ribbon) to create a new compilation file which aggregates your selected results into a one combined distribution.

2. **Canadian Regulatory Reporting**

   The Arius Deterministic system now offers special regulatory reports to assist Canadian companies with reporting requirements related to the provisions for adverse deviation (PfADs). These new tables utilize existing loss, ALAE, and salvage/subrogation results and patterns, along with new user inputs for the three margins for adverse deviation (i.e., Interest Rate, Claim Development, and Reinsurance), to derive new summary reports showing results before and after the application of the PfADs.

   These new tables can be found in the **Collection Library** in a new node labeled DETERMINISTIC | SPECIAL REGULATORY | CANADIAN (PFAD). You can simply drag the collection into the Deterministic section of your project and immediately begin taking advantage of these new tables.

   Note: In order for these tables to populate you need to have values in all supporting arrays. For example, if you are not performing an ALAE or Salvage & Subrogation analysis, you can easily enter zeros in these arrays using the DEFAULTS|DATA feature from the **HOME** ribbon.

IN ADDITION TO THE NEW FEATURES NOTED ABOVE, THIS RELEASE ALSO FIXES A FEW ISSUES REPORTED BY OUR USERS.

- We corrected a potential crash that could occur while copying and pasting across multiple Arius projects.

- The Weights array is no longer an option for minimum default values for the formula driven assumption arrays.

- We fixed a potential crash that could occur in Arius 3.1 when opening certain Arius files that came from ReservePro files with data across multiple layers.

- Modify STRUCTURE|COMPRESS ROWS no longer results in unexpected behavior in formula driven assumption tables.

- Column headings on Trended Expected tables needed minor changes to the text (calculations themselves were correct).

- Stochastic residual graph labels now always reflect the appropriate exposure period type.

- Excluding an entire row of residuals no longer causes refresh issues on the stochastic residual graphs.

- We fixed a potential error situation that could occur in Over-Dispersed Poisson (ODP) stochastic paid loss diagnostics when the incurred loss triangle consisted of a single diagonal.

- ODP time horizon models that are "shifted" to a user's input now calculate the shift amount using the ultimate unpaid rather than the time horizon unpaid.

- ODP stochastic diagnostics now exclude the prior row when calculating hat matrix adjustments to the residuals (whenever a prior row has been defined in **Project Settings**).

2. Installation requirements

Basic system requirements are as follows:

- Minimum operating system: Microsoft Windows 7 + SP1 or newer (both 32- and 64-bit versions)

- Minimum hard disk space: 3.5 GB

- Minimum RAM: 1024 MB, though 2048 MB or more is recommended

- Related tools: Microsoft Office 2007 or newer (Arius does not support Microsoft Office XP). Arius and its API support 32-bit versions of Microsoft Office. The API also works with 64-bit Office with a Registry update available in the **FAQs** in the Support section of actuarialsoftware.com. Arius requires the Microsoft .NET Framework 4.6.1. (Many Windows installations may already have this; you can confirm it at CONTROL PANEL | PROGRAMS AND FEATURES.)

- An Internet connection for license authentication

3. Installation instructions

Note: Administrator privileges are required to perform this installation.

NEW INSTALLATIONS

For new users this will be a multi-step installation.

1. Make sure any open Excel workbooks are closed before beginning the Arius installation process.

2. Click the **Download** link and **Save** (do not Open) AriusSetup_v321.zip onto your computer.

3. Locate the downloaded file and unzip it to **Extract** (do not Run) AriusSetup_v321.exe.

4. After it is extracted, **right-click** on the EXE file and select **Run as Administrator**. It will first need to install a copy of the MATLAB runtime system (or reinstall an updated copy). When you select **Yes** to download the runtime files, the system downloads the MATLAB Installer from our site, and you can then follow the instructions to install the runtime.

    ▪ Alternatively, you can download the runtime directly from Mathworks:
        site: http://www.mathworks.com/products/compiler/mcr/index.html
        version: R2013b (8.2) 32-bit

5. You will then re-run the AriusSetup_v321.exe install; as described above, **right-click** on AriusSetup_v321.exe and select **Run as Administrator**.

    ▪ Arius requires that the Microsoft .NET Framework version 4.6.1 is installed with your operating system. This may already be the case for many users. However, if the installation routine detects that this is necessary, it will install the updated Framework directly from Microsoft's download server. After installing that update, you may be directed to restart your computer, and then you will restart step #5 again one last time.

    You may also see installation processes for Microsoft F# Runtime and the Microsoft C++ Redistributable. Both may be required as part of the install as well, though neither should require restarting the install process after they run.

UPGRADING AN EXISTING SYSTEM

If you previously installed Arius on this computer, the installer will determine if a reinstall of MATLAB is required.

Previous installations of Arius will be removed automatically during this upgrade. All of your data files and customizations such as user-defined objects or reports will be preserved.

1. Make sure any open Excel workbooks are closed before beginning the Arius installation process.

2. Click the **Download** link and **Save** (do not Open) AriusSetup_v321.zip onto your computer.

3. Locate the downloaded file and unzip it to **Extract** (do not Run) AriusSetup_v321.exe

4. After it is extracted, **right-click** on the EXE file and select **Run as Administrator**. If necessary, it will first install an updated copy of the MATLAB runtime. When you select **Yes** to download the runtime files, the system downloads the MATLAB Installer from our site, and you can then follow the instructions to install the runtime.

5. If you installed MATLAB in step 4, you will then re-run the AriusSetup_v321.exe install; like before, **right-click** on it and select **Run as Administrator**. If you did not need to download and install the MATLAB runtime in step 4, your installation is complete when you see the screen that says "Setup has finished installing Arius on your computer."

    ▪ Arius requires that the Microsoft .NET Framework version 4.6.1 be installed with your operating system. This may already be the case for many users. However, if the installation routine detects that this is necessary, it will install the updated Framework directly from Microsoft's download server. After installing that update, you may be directed to restart your computer, and then you will re-run the AriusSetup_v321.exe install once more; like before, **right-click** on it and select **Run as Administrator**.

4. Additional information

After installation, the application is listed as Arius in your START|ALL PROGRAMS listing.

The system installs with three sample project files. They can be found at:

C:\Users\<yourname>\Documents\Milliman\Arius\DemoFiles   or perhaps displayed as
Libraries\Documents\Milliman\Arius\DemoFiles

- Arius_Sample.apj – Sample data with 5 segments, a mix of short-, medium-, and longer-tailed lines of business. This is intended to give you a sense of the system's capabilities and a sampling of how the models can be set up with different assumptions for different lines. Note that all of the segments don't necessarily work with all of the models (much like in the real world...).

- ODP_Mack_Hayne.apj – Sample data with 3 segments, showing a detailed implementation of all three families of stochastic models fully parameterized.

- Hayne_Paper.apj – Contains the data used in Dr. Roger Hayne's paper on Maximum Likelihood Estimator approaches, *A Flexible Framework for Stochastic Reserving Models*.