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# Release notes

#### **Browser Support**











The ARTIS V2.9 user interface runs in any recent version of Chrome, Edge, Firefox, Opera and Safari. The versions tested include:

- Chrome 71+
- Edge 44+
- Firefox 78+
- Opera 57+
- Safari 12+

ARTIS does not require any plug-ins or add-ons but your browser does need to have JavaScript enabled.

Your web browser must allow artis.la to show pop-ups, for the user authentication lock and for this wiki itself.

#### Read Me!

- The ARTIS V2.9 user interface has been tested on Windows 10 Pro and 11, Ubuntu 20.04 LTS and 22.04 LTS, OSX from El Capitan up to Ventura OS 13, and an undocumented number of mobile and tablet operating systems.
- With Opera, in the edit preferences browser configure shortcut keys: the 'Find next' (Ctrl + G), the 'Paste and go' (Ctrl + Shift + V) and the 'Go to parent directory' (Command + Backspace) keyboard shortcuts may need to be deleted
- On Mac keyboards, use the key combination Fn + Backspace instead of the Delete key, and use the key combination Ctrl + Alt instead of the Alt key.
- On OSX with Firefox, disable the default Backspace action
- On Ubuntu 16.04 and 20.04, after file browsing, Chrome, Chromium and Opera don't show the focus outline on the diagram anymore. This inconvenience can be resolved by using the Tab key until the focus outline is back.
- On tablets and mobile phones: a third-party app like Offline Pages (iOS) or Offline Browser (Android) may be required for saving the user interface to local storage.
- On Android tablets, iPads, and mobile devices: some browsers offer inconsistent support for SVG files, hence the results pages might be shown without formatting and without charts. If you encounter this situation, you can install a light-weight mobile web server on your device, and set its root to your download folder. This will allow you to view the full results website with any web browser. The app store offers a variety of web servers.

## Compatibility

Under the ARTIS Software Service agreement, future ARTIS version upgrades remain free of charge and backward compatibility will be maintained at all times.

### Changes with respect to V2.8

ARTIS V2.9 provides all V2.8 functionality, and a new feature has been added for modelling curtailment

- A new reporting feature has been added to enable curtailment modelling.
- The curtailment results show the impact of reduced demand and network bottlenecks on the available production capacity.
- These results provide a comprehensive overview, and include the criticality rankings.
- The user can make any selection of consumption items.

#### Changes with respect to V2.7

ARTIS V2.8 has all V2.7 functionality, with powerful expansions for modelling large energy networks.

- The user interface has new interactive maps, to facilitate network modelling and analysis.
- The results have a new web page with extensive storage content information, for assessing buffer criticality and optimising buffer capacities.
- The criticality ranking of the network has been expanded, and the node criticalities are shown on the map, presenting an immediate overview of the weak points in the network.
- ARTIS V2.8 comes with beautifully designed state-of-the-art icons, and a sleek dark theme.

#### Changes with respect to V2.6

ARTIS V2.7 has all V2.6 functionality, with several upgrades and new additions.

- The context menus have been upgraded, with material-design layout and style, and universal access.
- Tablets and mobiles have a new touch-based user interface, replacing the previous swipe interface.
- The new file-insert operation inserts a previously saved model at a specified location in the open model. It works similarly as copy-paste, using the file system instead of the clipboard buffer. Like copy-paste, file-insert skips any listed events.
- V2.7 has time and space efficiency improvements, for handling big weather data sets

## Changes with respect to V2.5

ARTIS V2.6 has all V2.5 functionality, with some notable extensions.

- Continuous production systems that include batch processes can now be modelled.
- The user interface and the results website both have Chinese and Dutch translations.
- All user input strings allow the full Unicode character set (UTF-8 encoded), except the parallel bar || and the invisible characters.
- V2.6 can read legacy SPARC models.

# Changes with respect to V2.4

ARTIS V2.5 has all the V2.4 functionality and in addition supports some significant new functionality.

- V2.5 has a new user interface for modelling arbitrary networks.
- The network nodes have an efficiency parameter for modelling conversion and transport gains and losses.

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- The network edges can have buffers for modelling storage.
- For modelling the balance between supply and demand, a model can include both production and consumption.
- The V2.5 engine uses Monte Carlo simulations for problems that have no analytical solution.
- The results can now be presented in Dutch or English.
- The user can set the current time and the model unit.

#### Changes with respect to V2.3

ARTIS V2.4 has all the V2.3 functionality and in addition supports new functionality.

- For evaluating the production availability of arbitrary large networks with an exponential number of system states, V2.4 has reduced memory use and run time requirements.
- V2.4 has a GeoJSON interface to Google maps for showing the networks.
- V2.4 has an update of the Auth0 authentication and access management service.

#### Changes with respect to V2.2

ARTIS V2.3 has all the V2.2 functionality and in addition supports new functionality.

- For evaluating expressions, the V2.3 user interface calls the mathjs library instead of the JavaScript Math Object.
- ARTIS models can be saved and communicated in JSON format, with a concise EBNF based syntax, facilitating 3rd party application development.
- ARTIS can now handle arbitrary networks, not limited to the traditional reliability block diagrams.

#### Changes with respect to V2.1

ARTIS V2.2 has all the V2.1 functionality and in addition supports new functionality.

- The V2.2 user interface runs on touchpads and mobile phones.
- V2.2 adds mission reliability for applications outside oil & gas, in industries where fault tree analyses (FTAs) are still common.
- V2.2 provides fully automated criticality ranking and minimum cut set analysis, fully reported on the results website.

The mission reliability and criticality ranking features also provide a convenient basis for carrying out failure mode, effect, and criticality analyses (FMEAs, FMECAs) and probabilistic risk assessments (PRAs).

## Changes with respect to V1.1

The ARTIS V2.1 user interface has all the V1.1 functionality and in addition supports live applications.

- The V2.1 user interface can upload capacity profiles, downtime events and expressions from files and databases (CSV, Oracle, MySQL and SQLite)
- The V2.1 cloud service provides automated HTML5 web reporting with the model overview, full hierarchical breakdowns, and criticality analysis, including generated SVG files, ready for presentation.
- The definitions of capacity and reliability have been generalised and all results are now on a timeweighted basis. On periods that do have planned downtime, the reliability is now also defined.

# Changes with respect to V1.0

The ARTIS V1.1 user interface has all the V1.0 functionality and some important additions.

- There is now a provision for future model version updates.
- Several unit operations have been added:
  - the unit, component and downtime mode lists are now kept sorted by name and
  - there are some new unit, component and downtime mode operations: duplicate, delete, show/hide and 'delete unused'.
- The unplanned events have been added.
- Each downtime mode now has an estimate for its mean lifetime.
- Each item now has a grace period that applies to all its downtime.
- Each item can now have an initial and a cyclic capacity profile.

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