



## New Features in *Art*

Chris Green

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# Overview

- Features in *art* 2.01.02, new since July 2015 (*art* 1.15.00).
- Teasers only! Links in PDF with further information.

# Systemic changes

- *Art* main site migrated from Sharepoint to [art.fnal.gov/](http://art.fnal.gov/).
- Official support for Ubuntu 14.04.
- Currently supported compiler: GCC 4.9.3.
- Setup and build system speed improvements (UPS setup, build-time file copying).
- *Art* has been split into *canvas* (file reading) and *art* (C++ framework) – migration tools provided in `$CANVAS_DIR/tools/canvas_refactor/`.
- [ROOT upgraded to v6](#): backward-compatible (and associated build system changes). C++11 / 14 constructs now understood; some C++11 / 14 entities are now persist-able.
- Removal of *cpp0x* package.

# New FHiCL-related features

- New executable: [fhicl-dump](#). Read FHiCL, process to *ParameterSet* and print.
- Concept of parameter protection a.k.a. binding modifiers ([release notes](#), [FHiCL quick start](#)): `@protect_ignore`, `@protect_error`.
- [Configuration validation](#) and [documentation facilities](#).
- [Art flags](#) to dump configuration prior to (or instead of) use, including configurable origin annotation.

# New features

- ROOT 6 dictionaries are now auto-loaded using generated `.rootmap` files.
- *Gallery*: interactive (ROOT macros) and Python (PyROOT) access to *art*-format ROOT files ([doc.](#), [next](#)).
- New plugin type: *ResultsProducer* – plugin to *OutputModule*, intended for data products at “file scope” ([release notes](#), [header doc](#)).
- [Support for tiered input files](#) (less-frequently needed data pulled from other compatible files).
- [Flexible output file handling](#): independent file closure criteria, *Run* and *SubRun* product aggregation facilities, no events in first input file not illegal (vs. [old behavior](#)).
- Support for DAQ systems for which [0 is a legal event number](#).

# New features

- [Art flags](#) to show available modules and services, with descriptions where available.
- [Single-argument service constructors](#) (no *ActivityRegistry*).
- *MemoryTracker* and *TimeTracker* improvements: 1<sup>st</sup> event data saved in DB, [better command-line activation](#).
- Modular replacement for *artmod*: [cetskelgen](#). More information, able to handle user-defined modules, [simple usage](#) identical to *artmod*.
- [Failure to put is now an error by default](#).
- New executable: [file\\_info\\_dumper](#). Print basic info about an *art-format* ROOT file.