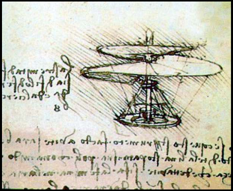

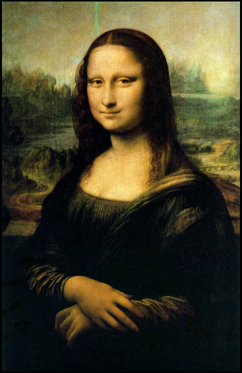

The ***art*** *Framework*

Chris Green
Fermilab Scientific Software Infrastructure Group
CHEP 2012
21 May, 2012

Outline

- What is **art**? Why is **art**?
- Architecture & key features.
- Origins of **art**.
- Collaborative development.
- The Future.
- Summary.

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  Most HEP experiments use a framework; **art** is a framework that is being used by multiple experiments, which has relieved them of the need to produce and maintain their own.

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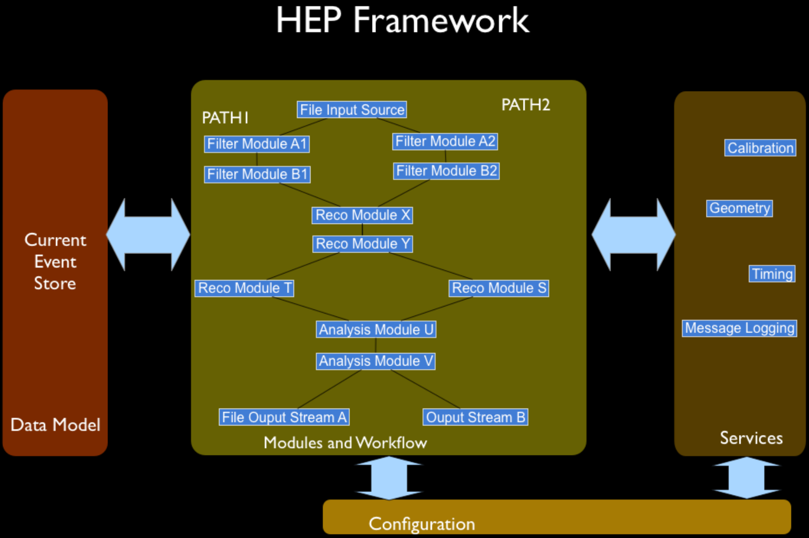

Architecture

```
#snip
source: {
  module_type: RootInput
  fileNames: [ "file1.root",
               "file2.root" ]
}
physics.producers.trac1: {
  module_type: TrackFinder
  myPar: 5
}
physics.producers.trac2: {
  module_type: TrackFinder
  myPar: 10
}
#snip
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- **`products`** retrieved from the data store are non-modifiable: derived or edited data are saved as a new product.
- Configurable exception handling: categorization of a failure is distinct from its handling action.

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- An input source class template for more straightforward user implementation of "raw" data input.

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- New, simple configuration language, **FHiCL** to match stakeholder requirements replaces use of **Python** and associated **Python** modules. **FHiCL** is used by other projects such as **LQCD** and has **Python** and **Ruby** bindings.

Collaborative development

- **art** is developed by a small team, with weekly input and priority setting from interested individuals on each experiment.

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- Experiments develop their own modules, services, auxiliary code and (optionally) main programs which interact with art.

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Future enhancements

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- Remove internal use of Reflex to be ready for **ROOT**/ **Cling**.
- Move to **ISO C++ 2011** (already used in development, **artdaq**).

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- Generalize and expand **CMake**-based build / package delivery system for use by experiments as an alternative to supporting their own build system.

Future directions

- "Multi-schedule **art**": process multiple events simultaneously in the same executable; in addition, allowing for algorithm parallelization within modules.

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