art - Feature #20063

Random numbers in MixFilter detail

05/30/2018 12:57 PM - Andrei Gaponenko

Status:	Closed		**Start date:**	05/30/2018
Priority:	Normal		**Due date:**	
Assignee:	Kyle Knoepfel		**% Done:**	100%
Category:	Infrastructure		**Estimated time:**	0.00 hour
Target version:	3.02.00		**Spent time:**	3.00 hours
Scope:	Internal		**SSI Package:**	art
Experiment:	Mu2e			

Description

Hello,

Users can call initialize a random engine in a module constructor with
the createEngine(seed) call. To achieve this in mixing code one has to
take a more contorted way, and put in the MixFilter detail class
constructor something like

```
   art::RandomNumberGenerator::base_engine_t& engine = art::ServiceHandle<art::RandomNumberGenerator>()->getEngine();
   int dummy(0);
   engine.setSeed( art::ServiceHandle<SeedService>()->getSeed(), dummy );
```

It would be nice to streamline the interface for MixFilter users.

Andrei

History

#1 - 05/30/2018 01:00 PM - Kyle Knoepfel

- Description updated

#2 - 06/04/2018 11:01 AM - Kyle Knoepfel

- Status changed from New to Accepted

This sounds like a reasonable proposal.

#3 - 06/15/2018 09:44 AM - Kyle Knoepfel

- Target version set to Vega

#4 - 06/15/2018 01:26 PM - Kyle Knoepfel

- Category set to Infrastructure

- Status changed from Accepted to Resolved

- Assignee set to Kyle Knoepfel

- % Done changed from 0 to 100

- SSI Package art added

This feature has been implemented with art:652b484. The createEngine interface has been added to the MixHelper class. Note that under some circumstances, the MixHelper already requires the use of a random-number engine for sampling entries in secondary files. In such case, calling createEngine may return an engine that has already been created. This will not create any breaking changes since users have had the same behavior by calling getEngine.

An example:

```
MixFilterDetail::MixFilterDetail(fhicl::ParameterSet const& pset,
                                 art::MixHelper& helper)
  // initializers
```

```
{
  auto& engine1 = helper.createEngine(124);                     // May return already created engine
  auto& engine2 = helper.createEngine(125, "HepJamesRandom"); // May return already created engine
  auto& engine3 = helper.createEngine(126, "HepJamesRandom", "second_engine"); // new engine

  // If an empty engine label has been specified, but with a different
  // engine type other than HepJamesRandom, an exception will be thrown
  // if a read mode was chosen that requires sampling.
  auto& engine4 = helper.createEngine(127, "MTwistEngine");    // May throw.
}
```

#5 - 08/20/2018 01:45 PM - Kyle Knoepfel

- Target version changed from Vega to 3.01.00

#6 - 09/26/2018 10:05 AM - Kyle Knoepfel

- Target version changed from 3.01.00 to 3.02.00

#7 - 01/31/2019 02:03 PM - Kyle Knoepfel

- Status changed from Resolved to Closed