

Work Plan and Status of Basic & Extended Examples For 10.00

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Outline

- MT Migration
- Applying Coding Guidelines
- g4tools Migration
- Examples Review
- CMake build
- Documentation

MT Migration

- All examples developers were asked to communicate us their plans for the migration of their examples and their replies were collected in a table on the wiki page:
 - <https://twiki.cern.ch/twiki/bin/view/Geant4/ExampleMTMigration>
- The examples status can be one of the following
 - Done
 - To be done (10.00 release)
 - To be done (10.00 release) * - if migration goes straightforward otherwise not
 - To be done (after 10.00 release)
 - To be decided later
 - Cannot be done (eg. when the example is using an external, not thread-safe code)
 - Empty = no reply (or under discussion)

MT Migration For 10.00

- Number of extended examples: 81
- Done examples: 11
 - Analysis/AnaEx01 [1/5], electromagnetic/TestEm1,TestEm4 [2/19], all optical [3], parameterisations/gflash [1/2], runAndEvent/RE03,RE05 [2/6], g3tog4 [1/1], medical/DICOM (not yet committed) [1/6]
- To be done for 10.00: 20 + 10* + 11 already done = 41
 - Analysis/A01 (if kept) [1/5], all biasing [3/3], electromagnetic [5*/19], errorpropagation [1/1], eventgenerator/exgps [1/6], all field [7/7], all medical [1+4*/6], all parameterisations [1/2], persistency/P03 [1/7], radioactivedecay/rdecay02 [1/2], all runAndEvent [4/6]
- **In total: 41 of 81**
 - analysis [2/5], all biasing [3], electromagnetic [7*/19], all errorpropagation [1], eventgenerator [1/6], no exoticphysics, all field [7], all g3tog4 [1], all medical [6], no hadronic, all optical [3], all parameterisations [2], persistency/P03 [1/7], radioactive decay [1/2], all runAndEvent [6], no visualization

MT Migration After 10.00

- To be done after 10.00: 11, total migrated will be then: 51
 - Analysis/AnaEx02 [1/5], exoticphysics/phonon [1/2], all persistency [6/7], all visualization [3/3]
- To be decided later: 21
 - Analysis/N03con [1/6], electromagnetic [11/19], eventgenerator/particleGun [1/6], exoticphysics/monopole [1/2], geometry/transforms [1], hadronic [4/4], polarization/Pol01 [1/1] radioactivedecay/rdecay01 [1/2]
- Cannot/Will not be done: 2
 - Analysis/AnaEx03 [1/6], eventgenerator/pythia [1/6]
- Not replied: 5
 - eventgenerator/HepMC [3/6], parallel/MPI [2/2]

MT Migration Strategy

- Questions raised during survey
- Should examples which demonstrate features not affected with MT (eg. geometry persistency) be migrated?
 - We propose to migrate them for consistency but migration can be done after 10.00
- Should examples which are fast, and so do not profit much from parallelism, be migrated (eg. rdecay01) ?
 - We propose to migrate them for consistency and also for checking that they are able to run in MT mode correctly

Requests and Wishes

- Requested a possibility to instantiate `UserSteppingVerbose` class via `UserActionInitialization` class
 - Currently `UserWorkerInitialization` is needed to be defined in addition to the `UserActionInitialization` class
- The output from physics list construction is (partly) duplicated on all threads, though as the same list of processes is defined
 - In B1 example: 510 lines * 8 => ~ 4000 lines
 - Could these printings be reduced ?
 - Either by providing a shorter output for verbose = 1 level (as when using the prepackaged physics list all defaults are “static”)
 - Or by printing the processes info just once ?

Applying Coding Guidelines

- The coding guidelines for the examples were agreed in 2011 and applied in new basic examples
- Ongoing progress in extended examples is monitored on the dedicated wiki page:
 - <https://twiki.cern.ch/twiki/bin/view/Geant4/ApplyingCodingGuidelines>
- The SVN hooks implemented by Gunter in May:
 - The file cannot be committed if contains any line with more than 100 characters, a warning is perform when more than 80 characters
 - The file cannot be committed if contains tabulations or if there is no separator present in .cc file
- However the hooks applies only to code updates, and if the code is not touched the hooks have no occasion to do their work
- Most of examples are now ok (or almost)
- Biggest violators (no guidelines applied);
 - HepMC examples, MPI examples, RE05

Examples Reviews

- List of items to be reviewed, available at the wiki page
 - <https://twiki.cern.ch/twiki/bin/view/Geant4/ExtendedExamplesReview>
- 22 review documents were uploaded on the site
 - For the time being applying the recommendations in the review are on volunteer basis
- The procedure how to put the reviewer recommendation in place will be discussed in parallel session

g4tools Migration

- Agreed at the phone WG meeting (on February)
- AIDA based analysis will be kept in 10.00 only in analysis/AnaEx03 example
- All other examples will migrate to g4tools for 10.00
- Remaining 4 examples:
 - *exgps, rdecay02, analysis/A01, polarisation/Pol01*
 - *A01 was proposed to be removed (the removal will be discussed in parallel session)*

CMake Build

- CMake configuration files with the same block structure in all examples implemented last year
 - The same build instructions apply to all examples: *when adding/modifying an example, please, follow the existing structure*
 - Possibility to build examples per categories and sub-categories
- In 10.00:
 - Fixed handling of required external packages: check for package availability is moved to the file in upper directory and the “required” option is used in the example CMake file

Documentation

Geant4 examples

Main Page | Related Pages | Modules | Namespaces | Classes | Files

Search

Geant4 Examples

This module collects four sets of user examples aimed to demonstrate to the user how to make correct use of the GEANT4 toolkit by implementing in a correct way those user-classes which the user is supposed to customize in order to define his/her own simulation setup.

The "**novice**" set of examples is oriented to novice users and covering all possible general use-cases typical of an "application"-oriented kind of development. As several examples in this "novice" set became too complicated, a new "**basic**" set, covering the most typical use-cases of a Geant4 application with keeping simplicity and ease of use, is provided and is going to replace the "novice" set in future.

An "**extended**" set of examples require some additional libraries besides of Geant4. This set covers some specific use cases for actual detector simulation. An "**advanced**" set of examples covers the use-cases typical of a "toolkit"-oriented kind of development, where real complete applications for different simulation studies are provided; may require additional third party products to be built.

Most of the examples can be run both in interactive and batch mode, and input macro files (*.in) and reference output files (*.out) are provided. Basic, novice and most of the extended examples are considered part of the system testing suite for validation of the official releases of the GEANT4 toolkit. Basic, novice and some of the extended and advanced examples are also used as "acceptance"-tests for the release process.

See more on each examples category pages:

- [Basic Examples](#)
- [Extended Examples](#)
- [Advanced Examples](#)

And more on what is common for all examples:

- [How to build and run an example](#)
- [How to navigate in the examples documentation](#)

Generated on Thu Sep 6 2012 for Geant4 examples by [doxygen](#) 1.7.4

- Documentation for the examples is generated using Doxygen from examples source code and .README files
- It covers basic and extended examples and provides a link to advanced examples
- It is linked from the Geant4 User Support Web page
- An update is generated with every release
- *Please, do not forget to update both README and .README files when updating an example*

Conclusions

- Migration to MT and g4tools ongoing
 - Half of extended examples is planned to be migrated to MT for 10.00 release
 - All examples except one are planned to be migrated to g4tools
- Most of extended examples conform to coding guidelines
- Code reviews will continue next year