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

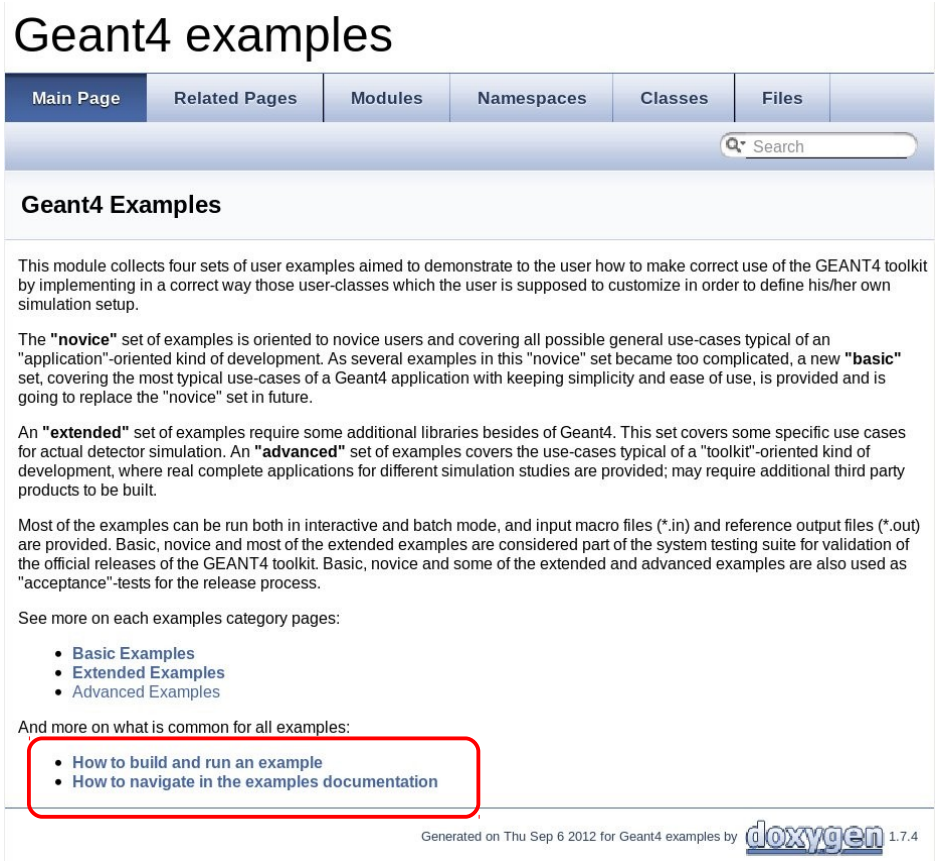
g4tools Migration

- 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



- Documentation for the examples is generated using Doxygen from examples source code and .README files
- It covers basic and extended examples and povides 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