Basic & Extended Examples Work Plan 2016 Status

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Outline

- Status of developments and work plan
  - Examples Review
  - Migration to MT
  - Coding Guidelines
- Items for discussion
- AOB

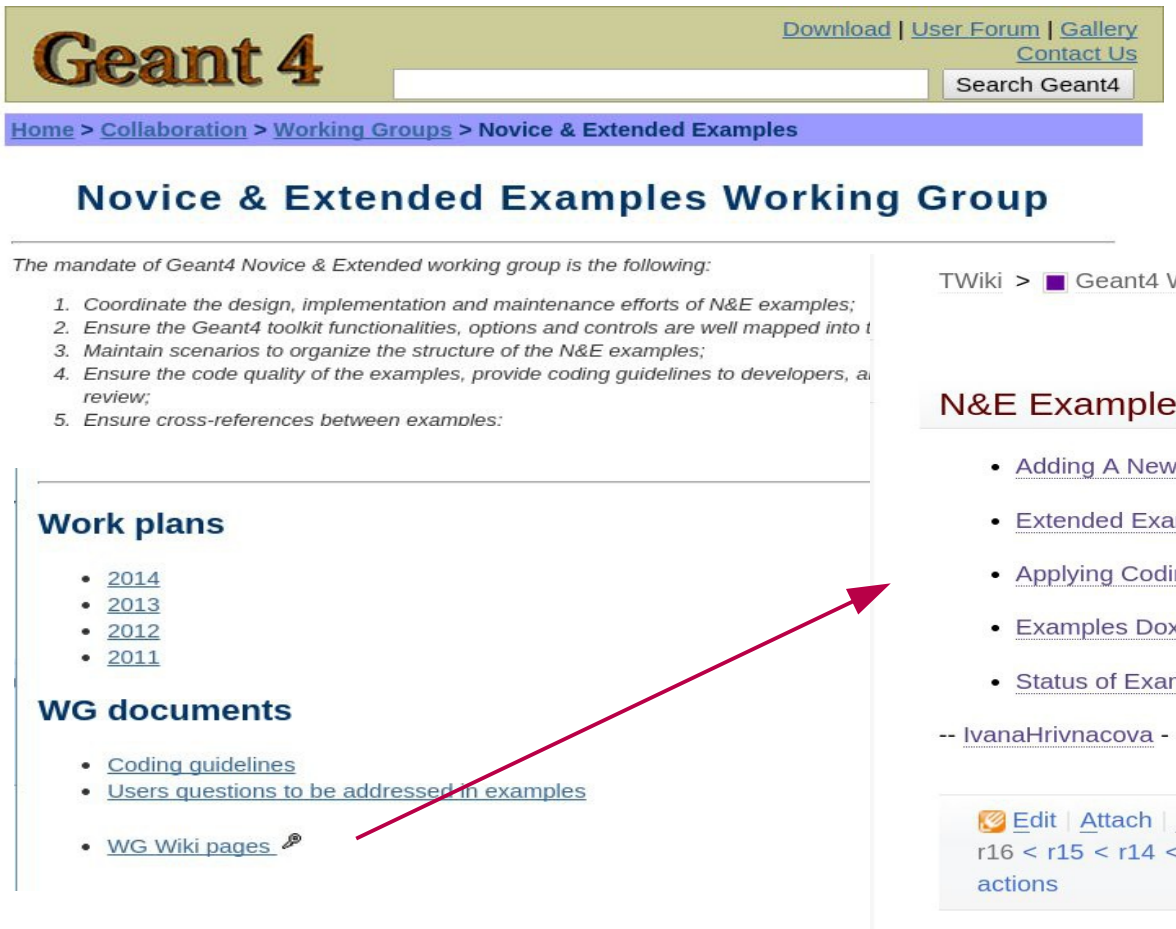
Work Plan 2016

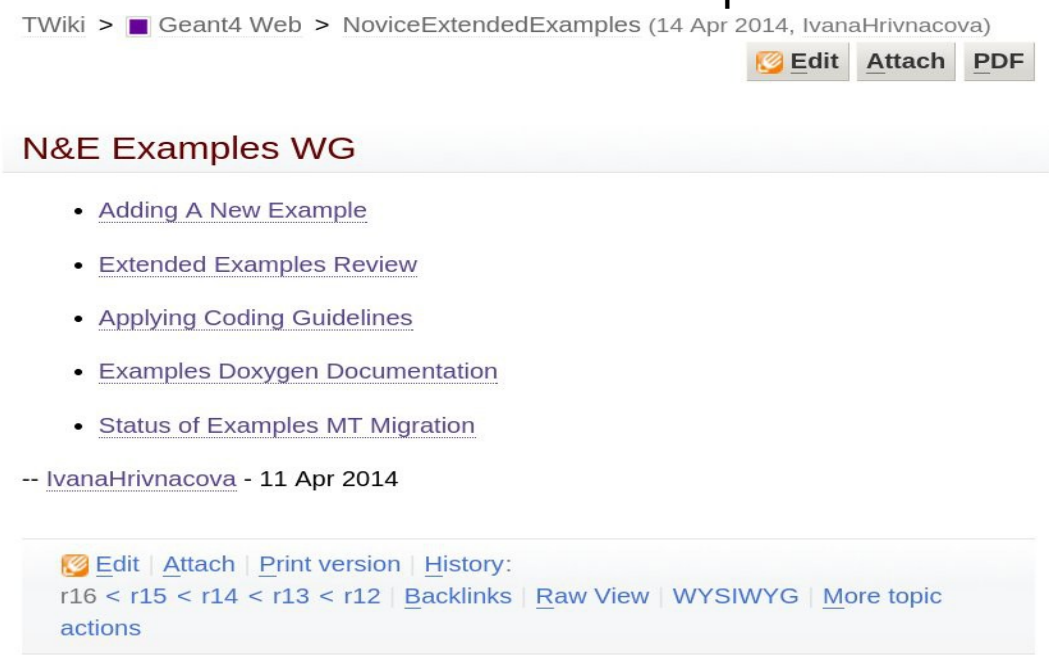
- New examples & Existing examples improvements:
  - Resolve the overlap in biasing B02/B03 and GB03 examples which implement the same use case. - Reminder to developers of biasing
  - Create a new directory showing how to create or use a physics list (no details on physics, only the technical aspects). First example: Hadr05 (G4GenericPhysicsList) - Reminder to Physics Lists WG
  - New Hadr07 example focused on testing physics, generic enough to be able to exchange results and plots with users, in a simplest way as possible.
    - Hadr07, AmBe already in SVN – mini-talk by M. Maire in this session
  - New example demonstrating monitoring of steps/tracks, etc (in collaboration with Q&A WG)
    - Work in progress - – mini-talk by A. Dotti in this session
  - Investigation of MongoDB interface for analysis
    - Probably not this year

Work Plan 2016 (2)

- Code review:
  - Review examples macros and tests: make sure that provided macros cover all commands implemented in example and the cdash test covers all important example use cases
  - Update Wiki page with obsolete features
  - Remove the obsolete features from the code using the agreed replacement
- Continue with migration to MT
  - Review the status and update the table on the Wiki page
  - Progress with the examples planned for this year release
- Finish applying coding guidelines:
  - Review the status and update the table on the Wiki page
  - Finish the examples not yet completed

WG Group Wiki





- The link to Wiki pages is available from the WG Web page
- Access is restricted to Geant4 developers

Examples Review

- The list of obsolete features in extended examples with the lists of examples (or files) where they are present was reduced
- Done:
  - Commands to set cuts per particle
  - Obsolete /vis/drawTracks, fDrawTrack
  - Obsolete /event/printModulo, fPrintModulo
- Pending:
  - Explicitly defined physics lists in examples not demonstrating physics
    - Reduced from 23 (2015) to 12
  - Explicit use of std:cout, std::cerr, exit()
- New:
  - Improve main() as in basic examples (details on the next slide)

G4VIS_USE, G4UI_USE

- The main() function in most extended examples was defined according to basic examples
- Just before the 10.1 release, main() functions in all basic examples were improved:
  - G4VIS_USE and G4UI_USE macros were removed from all basic examples, which makes the function main() easier to understand to users
  - G4UIExecutive is instantiated at the same beginning of main(), if interactive mode is enables. This makes possible to handle the output and eventual exception via the Geant4 UI since the beginning of running example
    - With QT, all output now appears in the Qt driver output window
    - Exception is issued in its Qt window
- New item will be added in the list of obsolete features this year

Macros Review

Objectives:

- Make sure that all provided macros run without problems

  (usually the examples are tested only with one macro while they provide several ones)
- Make sure that provided macros cover all commands implemented in example
- Make sure that all macros are commented in README

Macros Review - (2)

- Helper scripts:
- process_macro.sh – automatically detects and runs an example executable with all macros (files ended .in or .mac)
  - Check if all macros can run
  - The macro will be used by WG coordinators and non-working macros will be reported to examples developers
- check_commands.sh – checks if all commands defined in the checked example are used in some macro
  - The list of commands is generated with newly introduced (not committed) command: /control/list
  - Uploaded on the wiki page:
  - https://twiki.cern.ch/twiki/bin/view/Geant4/ExtendedExamplesReview
  - The example developers will be asked to check the files and either remove the commands not used or include them in some macro if they are useful

Migration to MT (1)

- The status & planning for MT migration of extended examples is monitored at the dedicated Wiki page:
  - https://twiki.cern.ch/twiki/bin/view/Geant4/ExampleMTMigration
- ~ 70% of extended examples migrated to MT
- 14 examples not yet migrated
  - Listed in Table 1 on the wiki page, the status to be updated with:
    - Done for 10.3, To be done for 10.3, To be done after 10.3
- 21 examples which will not be migrated
  - Listed in Table 2 on the wiki page with the status with a comment why the example will not be migrated:
    - Most of them: MT irrelevant, or use of external packages

Migration to MT (2)

- Status & planning:
  - 14 examples not yet migrated
  - **Only 1 example migrated since last release**
  - No requirements from users side for this migration
  - Should we put more (or less) effort here ?

Coding Guidelines

- Following the coding guidelines is requested when adding a new example
- Progress with automating the procedure of checking
  - Now also the guidelines for class members names can be checked automatically (using modified Doxygen built from sources)
- The biggest violators RE05, TestEm10, Pol01 were fixed
- The number of violations reduced significantly::
  - 663 data member names (sep15) => 95 (july16)
  - 32 member function names (sep15) => 18 (july16)
- The list of violators (examples files) is available on the wiki page
- All developers which are responsible for the examples, where a violation of guidelines was detected, will be reminded by e-mail after the collaboration meeting

Discussion

Physics Lists Category

- Request to Physics List WG presented in Fermilab
- Create a new directory showing how to create or use a Physics List (no details on physics, only the technical aspects).
  - First example Hadr05 (G4GenericPhysicsList)
  - Example(s) demonstrating current/new Physics List factory

C++11 in basic examples ?

- Possibilities: adapt all, just one, several basic examples
- Most frequent changes: auto declarations
  - Make the code simpler
- Proposal: B4 (all a,b,c,d variants) and B5 for 10.3

FindROOT.cmake

- Provided in cmake/Modules
- Used only in examples & tests
- As ROOT provides CMake build, the file is needed only with ROOT installed via old installation method, which is still available (was not removed) but which is not supported
- Our FindROOT.cmake does not include function for generation of ROOT dictionnaries
  - Actually we have a new example (chem4) which uses a class requiring generation of dictionnaries
- Request from F. Carminati:

  To drop FindROOT.cmake and switch to ROOT CMake build
- However this would disconnect users who build ROOT in the old way