



GEANT4
A SIMULATION TOOLKIT



Basic & Extended Examples For 10.5

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for N&E Examples WG

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New Extended Examples

- 4 new extended examples added since the last CM
- 2 of them in a new category: “physicslists”
 - 3 included in Geant4 testing
 - 1 to be finalized
- A brief overview on the next two slides, a less brief overview in the parallel session 6B in the afternoon

New “extended/physicslists” Category

- Introduced in the last year release (10.4)
- The purpose is to demonstrate usage of Geant4 reference physics lists and physics builders.
- Three examples:
 - **factory** – based on Hadr00 by V. Ivantchenko (I. Hrivnacova)
 - **extensibleFactory** – new example (R. Hatcher)
 - **genericPL** - replaced extended/hadronic/Hadr05 (W. Pokorski)
- The same scenario is used in all three example
 - Implemented with use of shared code

New Extended Examples (2)

- [optical/OpNovice2](#)
 - Daren Sawkey
 - New in 10.5
 - Investigate optical properties and parameters. Details of optical photon boundary interactions on a surface are recorded. Details of optical photon generation and transport are recorded.
- [medical/DICOM2](#)
 - Jonathan Madsen
 - New in 10.5
 - Demonstrates how to reuse of the DICOM example library for another application
 - Still to be finalized (documentation, not yet included in testing)

Ongoing Tasks

- The WG Wiki pages were updated for Work Plan 2017 items, see
- <https://twiki.cern.ch/twiki/bin/viewauth/Geant4/NoviceExtendedExamples>
 - The link to Wiki pages is also available from the WG Web page
 - The access is restricted to Geant4 developers

TWiki >  Geant4 Web > NoviceExtendedExamples
(2015-05-04, IvanaHrivnacova)

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N&E Examples WG

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-- [IvanaHrivnacova](#) - 04 May 2015

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Examples Review

- Improve `main()` as in basic examples (details on the next slide)
 - Remove `G4VIS_USE` and `G4UI_USE` macros to make the function `main()` easier to understand to users
 - `G4UIExecutive` should be instantiated at the same beginning of `main()`, if interactive mode is enabled. This makes possible to handle the output and eventual exception via the Geant4 UI since the beginning of running example
 - **Done for almost all extended examples**
– thanks a lot to John Alisson
 - See more details in John's talk in the parallel session 6B in the afternoon
- Explicitly defined physics lists in examples not demonstrating physics
 - Reduced from 23 (2015) to 12 (2016), 13 (2017)
 - New: a list of all customized physics builders defined in examples
- Explicit use of `std::cout`, `std::cerr`, `exit()`
 - Increased from 1(2016) to ~10 (2017) !

Macros Review

- Objectives:
 - To review all examples and remove the commands, defined in the example messenger classes, if they are not directly relevant to the features demonstrated in the example.
 - All the useful remaining commands should be demonstrated in a macro, and all macros provided with an example should be referenced in the README.
- The procedure of the review was discussed and agreed at the WG meeting in March

Macros Review (2)

- The list of items to be reviewed is available on [the wiki page](#) together with the lists of unused commands, generated in a semi-automatic way two years ago
- A table for monitoring the progress was added to the page
 - ~ 23 % of all extended examples are reviewed
- A mail about this review was sent to all example developers
- We would really like to have the macro review completed in time for this year release
 - The examples developers are kindly asked to collaborate, fix their examples and let us know when done

Coding Guidelines

- Following the coding guidelines is requested when adding a new example
 - Most of the guidelines are checked automatically
- The number of violations was reduced significantly in the past years
- The list of violators (examples files) is available on the wiki page
 - Updated once per year
- 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

Conclusions

- The number of extended examples is growing
 - 120 (last CM) => 124 (this CM)
- The effort on reviewing macros
- Progress with eliminating of obsolete features