



GEANT4
A SIMULATION TOOLKIT



Basic & Extended Examples Common Tasks Status

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WG Group Wiki

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Novice & Extended Examples Working Group


The mandate of Geant4 Novice & Extended working group is the following:

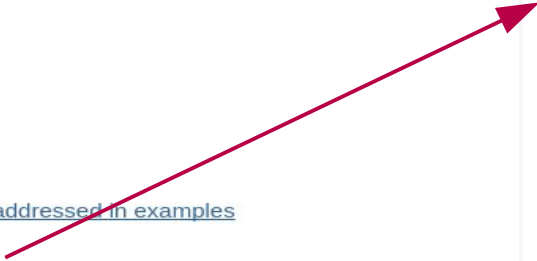
1. Coordinate the design, implementation and maintenance efforts of N&E examples;
2. Ensure the Geant4 toolkit functionalities, options and controls are well mapped into t
3. Maintain scenarios to organize the structure of the N&E examples;
4. Ensure the code quality of the examples, provide coding guidelines to developers, a review;
5. Ensure cross-references between examples:

Work plans


- [2014](#)
- [2013](#)
- [2012](#)
- [2011](#)




WG documents

- [Coding guidelines](#)
- [Users questions to be addressed in examples](#)
- [WG Wiki pages](#) 



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



TWiki >  Geant4 Web > [NoviceExtendedExamples](#) (14 Apr 2014, IvanaHrivnacova)

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N&E Examples WG

- [Adding A New Example](#)
- [Extended Examples Review](#)
- [Applying Coding Guidelines](#)
- [Examples Doxygen Documentation](#)
- [Status of Examples MT Migration](#)

-- [IvanaHrivnacova](#) - 11 Apr 2014

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Examples Review

G4VIS_USE and G4UI_USE Removal

- 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 event
- Done for almost all extended examples
– thanks a lot to John Allison
- Remaining: parallel, HepMC

Examples Review

Explicitly Defined Physics Lists and Builders

- From Gunter's mail:
- Remarks, or questions (in order of noting these down):
 - hadronic/NeutronSource has a specific EM physics, why?
 - Similar for Hadr07, this also has an EM constructor, and also other "private" physics constructors
 - Many many examples have EM constructors with names similar to constructors in physics_lists/constructors/electromagnetic.
 - There are many examples adding a StepMax, Decay, or StepLimiter; I think these should be provided in a common place, and not repeated over many examples
- *For me the last two points gives a negative impression to Geant4: as a user would imply that the options provided in the source/physics_lists are not good enough for the example.*

Examples Review

Explicitly Defined Physics Lists and Builders (2)

- Explicitly defined physics lists in examples not demonstrating physics
 - Reduced from 23 (2015) to 12 (2016), 13 (2017, 2018)
- Physics lists derived from G4VUserPhysicsList (and not build via G4ModularPhysicsList) in physics examples:
 - In 7 examples
- Explicit Physics Builders in examples
 - 65 in extended examples in total
 - 28 in electromagnetic, 14 in medical, 12 in hadronic, 4 in exoticphysics, 3 in optical, 2 in radioactive decay, 1 in parallel, polarization
- https://twiki.cern.ch/twiki/pub/Geant4/ExtendedExamplesReview/physics_list_aug18.txt

Macros Review

- 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
 - A reminder will be sent after the CM

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
- Most of violations in 3 examples: which were not yet updated at all:
 - **HepMC/HepMCEx01, HepMC/HepMCEx02** - not yet updated at all
 - **medical/DICOM/dicomReader** – using a different convention for class data members (“the” instead of “f”)
- <https://twiki.cern.ch/twiki/bin/view/Geant4/ApplyingCodingGuidelines>

Build Options in DICOM example

- 3 options
 - “old”, DICOM_USE_DCMTK, DICOM_USE_HEAD
- The optional build is not supported in Geant4 tests
 - A test (reading a reduced file) was prepared by Susanna for the new DICOM_USE_HEAD option for 10.4
 - But we failed to add the test in Geant4 cdash tests due to optional build
- A new DICOM2 example is going to be added for 10.5
 - Based on DICOM with DICOM_USE_DCMTK, which is not included in testing due to the optional build