# Basic & Extended Examples For 10.2

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### for N&E Examples WG

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# Outline

- Newly added extended examples
- Ongoing tasks
  - Examples Review
  - Applying Coding Guidelines
  - MT Migration
  - g4tools Migration

# New Extended Examples

- 13 new extended examples added since the last CM

    - 7 of them already included in Geant4 10.1

- 1 more example in WG work plan for this year

- All included in Geant4 testing and in the Web documentation (generated automatically with Doxygen)

- A brief overview on the next two slides, a less brief overview in the parallel session 3B on Tuesday

# New Extended Examples (2)

- medical/dna
  - Sebastien Incerti, Mathieu Karamitos, Carmen Maria Villagrasa Canton
  - Demonstrate using the Geant4-DNA physics processes and models.
  - 7 already in 10.1, 3 more for 10.2
- Parameterisation/Par02
  - Alberto Ribon
  - Based on an application developed by the Ph.D. student Anna Zaborowska for FCC
  - To show how to do "track and energy smearing" in Geant4, in order to have a very fast simulation based on assumed detector resolutions
  - 10.2
- biasing/GB03, GB04
  - Marc Verderi
  - Demonstrate geometry based biasing (GB03) and a Bremsstrahlung splitting (GB04)
  - Both already in 10.1

# New Extended Examples (3)

- eventgenerator/basicPrimary
  - Michel Maire
  - Illustrates the basic functionalities to create a primary event: it shows how to create several vertices and several tracks per vertex
  - 10.2
- parallel/MPI/ex03
  - Andrea Dotti
  - This example is the same as exMPI02 with the following differences:
    – It uses g4tools instead of ROOT for histogramming and shows how to merge, using g4tools, histograms via MPI
    – It also shows how to merge G4Run objects and scorers from different ranks
    – MT is enabled.
  - 10.2

# Ongoing Tasks

- The WG Wiki pages were updated for Work Plan 2015 items, see

- https://twiki.cern.ch/twiki/bin/viewauth/Geant4/NoviceExtendedExamples

  - The link to Wiki pages is also available from the WG Web page

  - Access is restricted to Geant4 developers

TWiki > ■ Geant4 Web > NoviceExtendedExamples
(2015-05-04, 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

- List of Extended Examples

-- IvanaHrivnacova - 04 May 2015

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# Examples Review

- List of obsolete features with the lists of examples (or files) where they are present

  - Explicitly defined physics lists in examples not demonstrating physics

  - Commands to set cuts per particle

  - Obsolete /vis/drawTracks, fDrawTrack

  - Obsolete /event/printModulo, fPrintModulo

  - Explicit use of std:cout, std::cerr, exit()

- Updated in April  and in September 2015

  - Both old and new files are kept to see if there is a progress

- In plan:

  - Start reviewing 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

# 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 list of violators (examples files) is available on the wiki page

  - Generated for ref-08 tag

  - All developers which are responsible for the examples, where a violation of guidelines was detected, were reminded by e-mail two weeks ago

  - The files will be updated with the next reference tag

# Migration to MT

- 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
- ~ 50% of extended examples already migrated in Geant4 10.1
- 20 examples not yet migrated
  - Listed in Table 1 on the wiki page with the status , can be:
  - Done for 10.2, To be done for 10.2,  To be done after 10.2
    - 4 examples already migrated
- 21 examples which will not be migrated
  - Listed in Table 2 on the wiki page with the status  with a comment why the example wiil not be migrated:
    - Most of them: MT irrelevant, or use of external packages

# g4tools Migration

- Migration to g4tools will be completed in 10.2

- All examples but one were migrated already in 10.1

- Last example (rdecay02) has been migrated by Michel Maire in February

- AIDA based analysis is kept in one example:

  - analysis/AnaEx03 example

  - The examples AnaEx01, AnaEx02 and AnaEx03 demonstrates use of g4tools (01), ROOT (02) and AIDA tools (3) on the same simulation setup

# Conclusions

- The number of extended examples is growing
  - 13 new extended examples since last CM
  - Current number of extended examples: 107
- The effort on removing the obsolete features
  - More uniform approach in using physics lists, use of Geant4 built-in command when available instead of introducing own ones
- Automated checking of coding guidelines
- Migration to MT ongoing, migration to g4tools done