



GEANT4
A SIMULATION TOOLKIT

Integrating R&D outcomes into release

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23rd Geant4 Collaboration Meeting
Aug. 30, 2018



NATIONAL
ACCELERATOR
LABORATORY



U.S. DEPARTMENT OF
ENERGY

Office of Science

Two topics

- This short presentation covers two topics regarding how R&D could be integrated into our releases.
 1. How external users would make a contribution, and how we promote them.
 2. How R&D outcomes could be integrated into our releases.
- There is basically nothing new, but reminding you of the current processes and encouraging enhancements.

- Given our limited resources and expertise, to extend Geant4 toolkit, we need to invite external users contributions. There have been three ways for external users to make their contribution.
 1. Users donate their code to Geant4 collaboration and we maintain it.
 - We acknowledge their contribution and allocate our resource to maintain
 - Effective for small add-ons, sustainability concerns for larger stuff.
 2. Users join the collaboration and they maintain their code.
 - Most natural way to enhance and grow Geant4 and Geant4 Collaboration
 - We have to ensure the long-term commitments of these users, otherwise we cannot maintain the code.
 3. Users distribute their code by themselves.
 - Long-term stability of our API is desirable for promoting this.
 - We need to guide other users to their distribution. We do not currently have such a catalog (web pages). We have to make it ASAP!
- To promote users contributions, we have to solicit these ways through our webs and other means.
- For the cases of 1) and 2), we have to make the testing and maintenance strategies.

- We have been successfully adopting new architectures or new designs .
 - E.g. from RogueWave to STL, MPI parallelism, Multithreading, etc.
 - E.g. Cuts per region, parallel worlds, USolid/VecGeom, etc.
 - E.g. SVN, Git, Drupal, etc.
- Every time we took the following procedures.
 1. Presentation of research/prototype outcomes with solid benefits at collaboration meetings and/or other occasions
 - Join Parallel 7A to see the growing seeds.
 2. Steering Board creates a task force composed by those who have expertise in the domain of developments and categories that are heavily involving
 3. Task force estimates the required efforts and creates work plan
 4. Steering Board checks the feasibility and makes the decision
 5. Task force drives the adoption. It regularly reports to Steering Board. If appropriate, Task force and Steering Board ensure the information flows to the entire collaboration.
 6. As adoption proceeds, Steering Board creates a release plan and conducts related working groups to create test/validation/document the new development.
- This process has been working well but needs to be well documented.