GENSER, the generator repository in LCG

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- LCG Application Area and Generator Services subproject.

- What is GENSER?

- Scheme of working with GENSER and duties of librarians.

- Structure of GENSER.

- GENSER, as a development environment.

- Plans.

LCG Application Area

Some information from http://lcgapp.cern.ch/project/

- Applications is one of 4 activity areas in LCG – the LHC Computing Grid Project.

- The Applications area develops and maintains that part of the physics applications software and associated infrastructure that is shared among the LHC experiments.

- The scope includes:
  - common applications software infrastructure, frameworks, libraries, and tools;
  - common applications such as simulation and analysis toolkits;
  - grid interfaces to the experiments;
  - assisting the integration and adaptation of physics applications software in the grid environment.

The Generator Services subproject
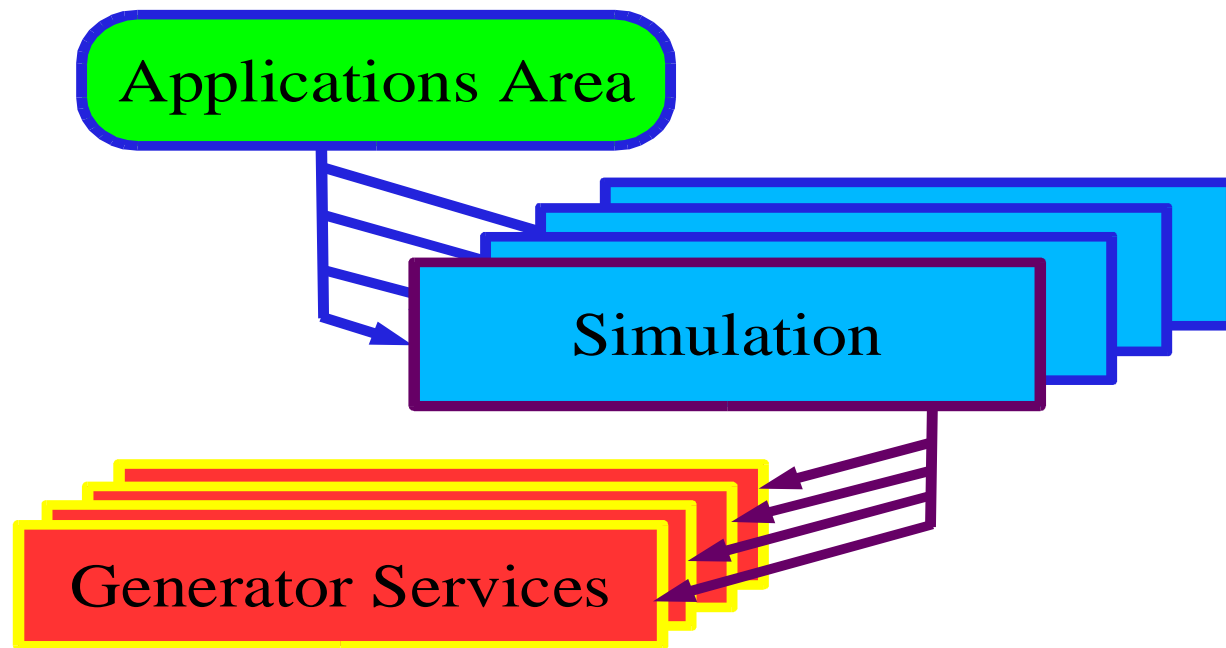
- Well-maintained common repository for the MC generators code.
- Common interface for events to OO code (collaboration software, etc.)
- A database for common events files.
- The development of a common validation tool/test suite for generators
- Try to engage HEP community external to the LCG to these efforts (convinient repositories, forums, etc.)
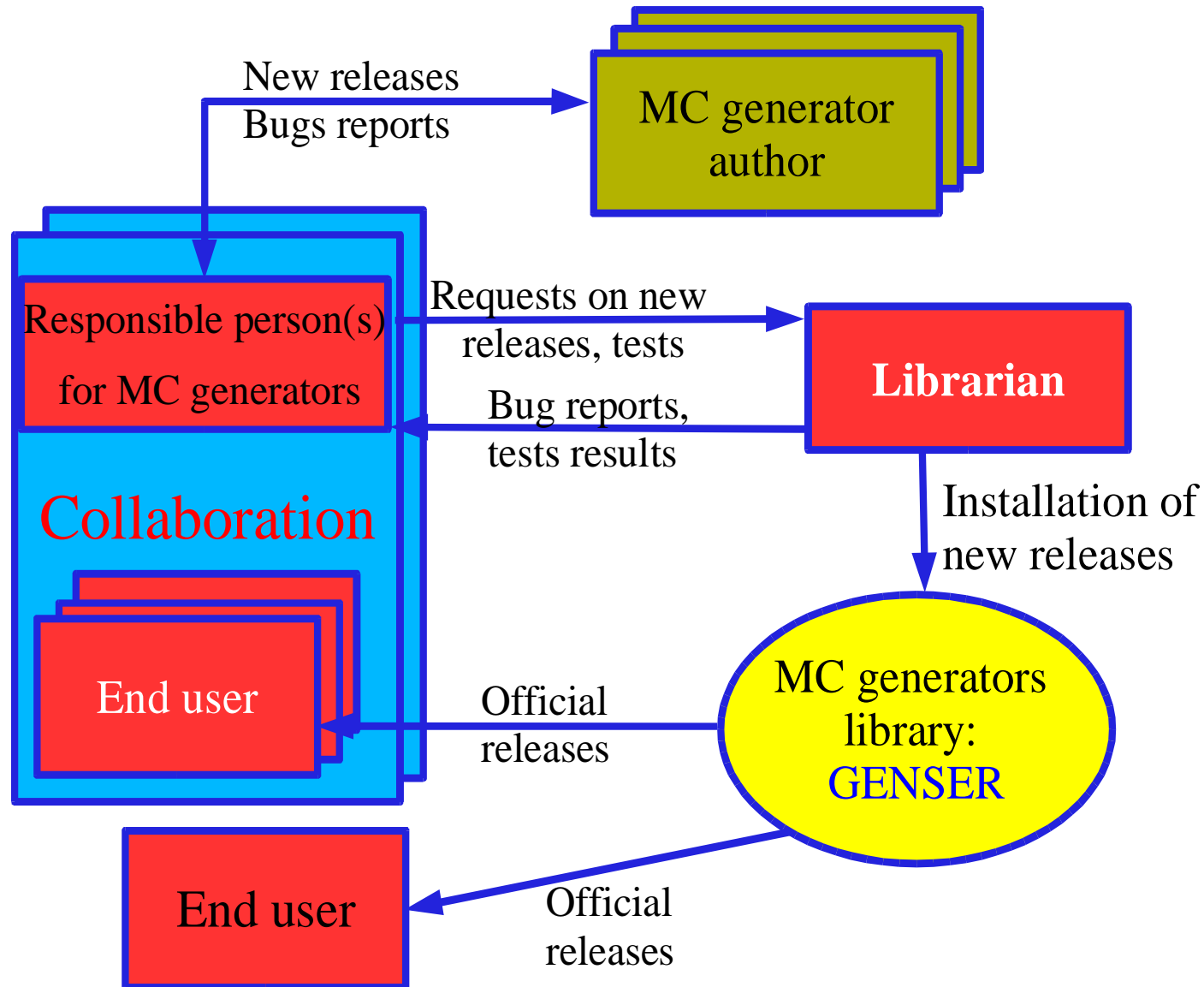
Extra information is in RTAG9.

Tasks of GENSER, MC generators repository

- Unified installation of MC generators which are used in several LHC collaborations (for example, PYTHIA). GENSER helps to organize central place where all maintained MC generator will be installed properly and have appropriate methods to access/use for all collaborationa (these methods will be developed by GENSER team and collaboration in a cooperation).

- Many, many tests. The very important problem of the MC generation is to organize tests/validation of MC events and compare samlpes prepared by different MC generators. The GENSER will collect all test applied in collaborations for every MC generator.

- In GENSER we will try to invovle MC generator authors/experts to participate in development of MC generators and tests suites.

- - GENSER will be base on the SCRAM.

- For end users GENSER will be presented as an usial SCRAM project. We plan to make new releases of GENSER when a collaboration give us a new official release of some MC generator or prepare a new tests suite.

Preliminary scheme of working with GENSER, as a generator library

New releases
Bugs reports

MC generator author

Collaboration

Responsible person(s) for MC generators

Requests on new releases, tests

Bug reports, tests results

Librarian

Installation of new releases

End user

Official releases

MC generators library: GENSER

End user

Official releases

Tasks of the GENSER librarians

- Install and testing of a new generator release in GENSER, prepared by a LHC collaboration:
  - install the release code and the tests suite in a standard manner (developed in cooperation by the collaboration and our GENSER team).
  - carry out the tests and inform all collaborations about the tests results and bug reports.

- Install a generator release as an official release in GENSER for given collaboration:
  - install the official release to GENSER in a standard way.
  - make a new release of GENSER.

- Clean-up and maintaince of GENSER. The librarian should remove all releases which are obsolete and not needed in LHC collaborations in the nearest release of GENSER.

- Librarians have to cooperate with all LHC collaborations to develop appropriate install/store procedures of the MC generators in GENSER.

A possible structure of GENSER

- There are two possibilities of GENSER building:
  - to store the MC generator code in GENSER, as a part of it
  - to install MC generators as external software packages in the LCG environment and store in GENSER just tests suites and other code related to the maintained MC generators.

- Since both solutions have advantages and drawbacks, we do not have a final solution yet...

GENSER_X_X_X/

Config/

$platform/

Bin/
Lib/
Tests/

Src/

PYTHIA/

Include/
Src/
Tests/
Examples/

MCDB/

...

LCG policy on project code structure

Problems of GENSER

- Installation of MC generators code to GENSER internally:

  - Advantages:

    1. Users can install and work with GENSER on a local machine without installation of full LCG environment.

    2. There is a possibility to develop the code of MC generators in GENSER CVS directly.

  - Drawbacks:

    1. the existed LCG policy doesn't allow to have extra directories in the src directory of packages (we should change the policy or to reorganize the code).

    2. The GENSER size can increase rapidly (Solution: proper administration - remove obsolete/dead parts, etc.)

- Installation of the MC generators to the external software area of the LCG environment.
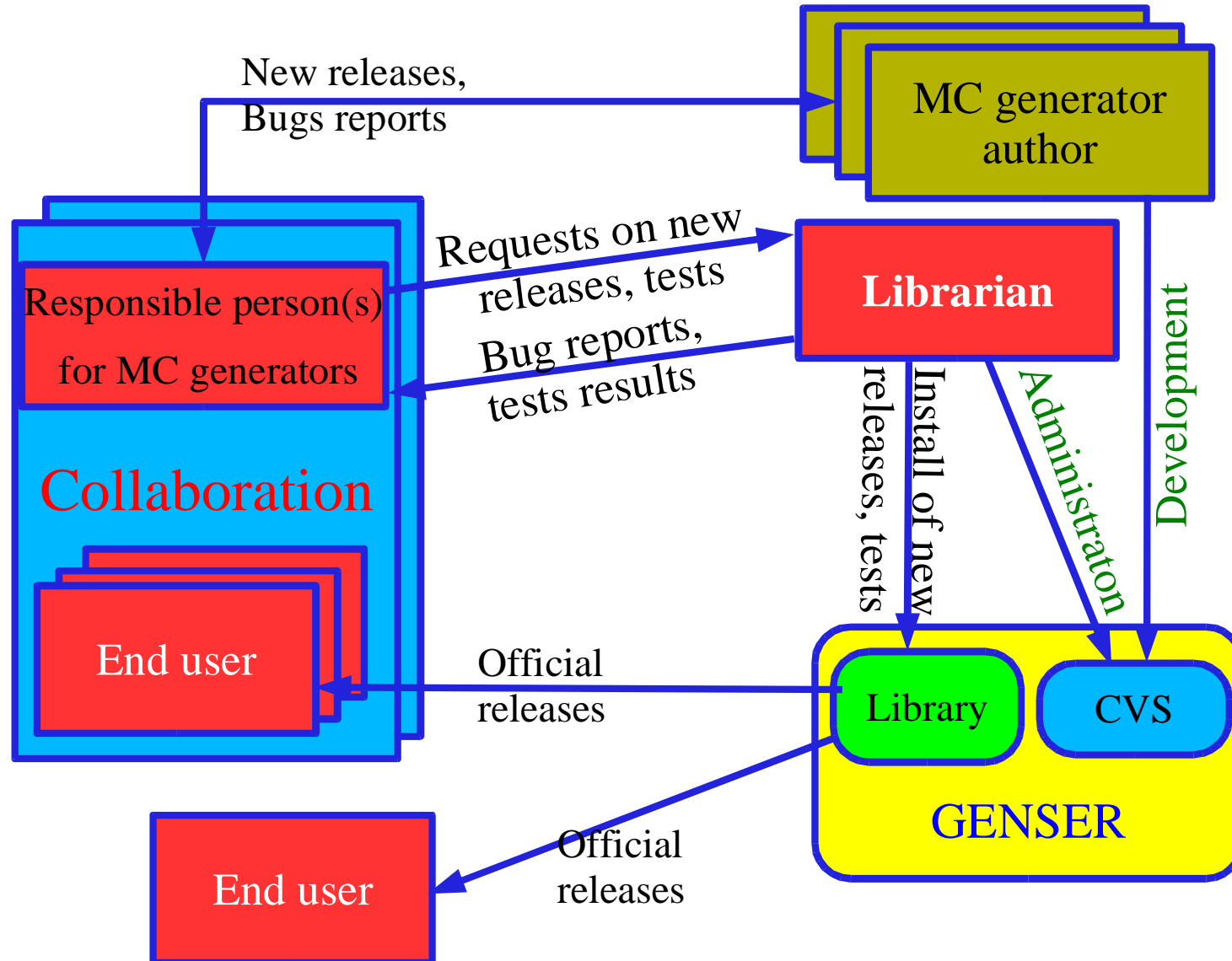
  Advantages ⟷ Drawbacks

  Extra drawback: we need constant write access to the external software area via another persons (not from GENSER team).

GENSER, as a developer environment.

- In future GENSER can be transformed to a development environment. The authors of MC generators can use GENSER CVS repository for development of the MC generators code.

- Advantages of such the repository:

  ➜ MC generators authors will have a convenient environment for development.

  ➜ The authors will have a rapid feedback from users at LHC.

  ➜ Collaborations will recieve new releases of necessary MC generators quickly with, maybe, taking into account of some suggestions of the collaboratons (structure, user interfaces, documentations, etc.).

Possible scheme of working with GENSER, as development environment

New releases,
Bugs reports

MC generator
author

Requests on new
releases, tests

Librarian

Bug reports,
tests results

Responsible person(s)
for MC generators

Collaboration

Install of new
releases, tests

Administraton

Development

End user

Official
releases

Library

CVS

GENSER

End user

Official
releases

Our plans:

- Now our main task in the GENSER project is to collect opinions and suggestions of LHC collaborations and theoretical groups about:

    → How we can organize effectively cooperation between MC generators experts (in and out of LHC collaborations) and our GENSER team.

    → Understand possible ways to include GENSER in collaborations software environments.

    → We start to develop the effective ways of this cooperation with every collaboration and some MC generator teams.

- Now we have a CVS for GENSER in LCG and begin to fill the repasitary with our already prepared code (first - the MCDB project).

- Manpower:
    - 1FTE (Y.Bugaenko, S.Makarichev, A.Sherstnev from Russia LCG team).
    - ???

- The first milestones:
    - prepare alpha version of GENSER during the june/july.