Monte-Carlo Events Data Base

L. Dudko, A. Kryukov, A. Sherstnev
CompHEP Group
Scobeltsyn Institute of Nuclear Physics,
Lomonosov Moscow State University
S.Makarychev and I.Seluzhenkov
Institute for Theoretical and Experimental Physics,
Moscow, Russia

Outline

- Motivation
- History
- General concepts of LCG MCDB
- Technical realization
- Nearest plans

Motivation. The main idea of MCDB project is to share MC event samples prepared by experts, between physics groups and different collaborations.

- Most of the interesting processes require an expert knowledge to prepare correct MC events.
- Most of MC generators, in particular those calculating high orders corrections to processes, require a lot of computer and human resources. Thus, samples prepared by the generators may be (and have to be) used repeatedly.
- Public availability of common event files will speed up the validation procedure.
- Need a central public place where people could find well documented MC events and MC generators.
- Need a central place for rapid and publicly available communication between authors of MC events and users.

How it could be done. Experience.

- **PEVLIB**
  /afs/cern.ch/cms/physics/PEVLIB/
  Events are publicly available on AFS file system (few Gb). Subdirectories correspond to physics processes and description of events is in the same directory in ASCII text format.

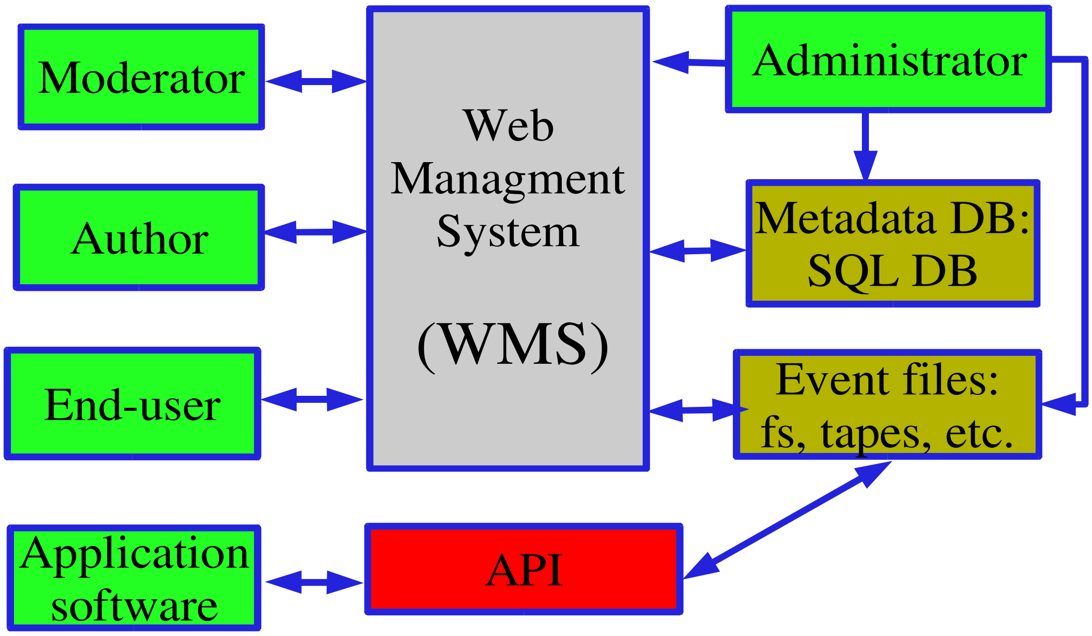
- **FNAL MCDB**
  ENSTORE & `http://www-d0.fnal.gov/~dudko/mcdb`
  There are two separate parts of the system. The event files (and generators) are stored on FNAL tape system "ENSTORE" (200Gb for these files) in STD-HEP format and available only for FERMILAB users. All of the documents described events and generators are stored in the Web Data Base and publicly available.

- **CMS MCDB**
  `http://cmsdoc.cern.ch/cms/generators/mcdb`
  The Web interface is developed for everything. Store parton level events. Everything is available publicly. Authors have restricted and secure WEB area to change content of the Data Base.

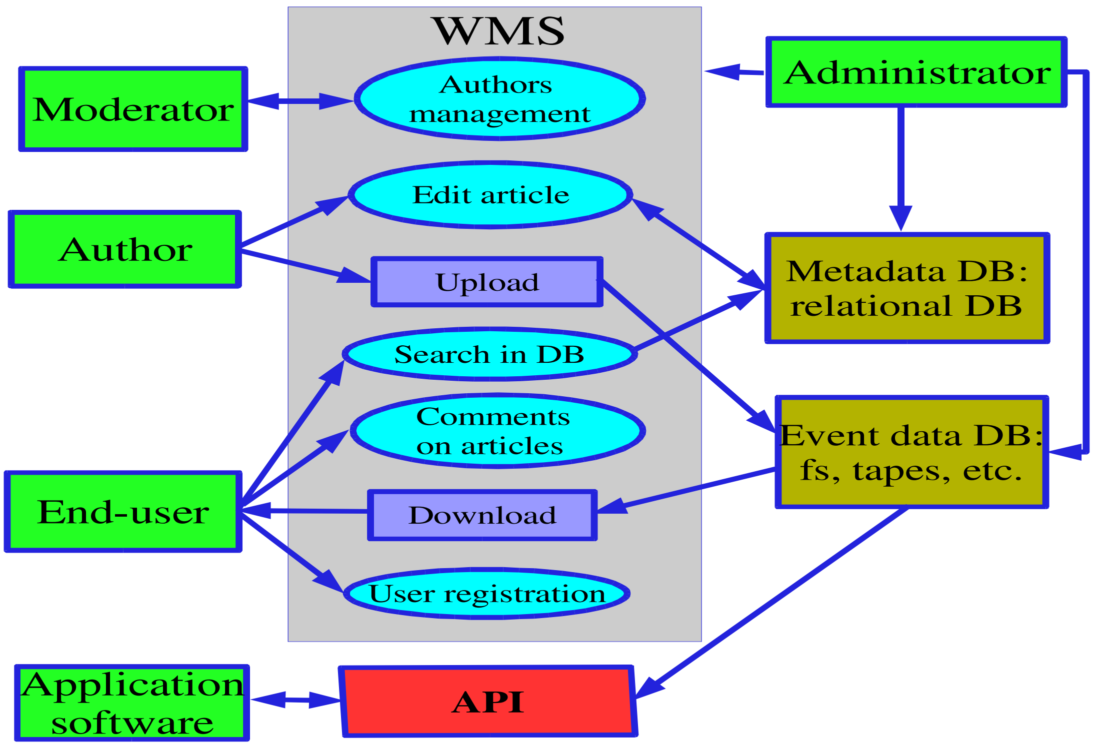
General concepts of LCG MCDB:

WMS; Data Base; API.

Authors, End Users, Administrator



- MC experts (Authors) provide files and its description;
- End Users can find necessary file, download and discuss it;
- API library provide direct way for collaboration software to download and process particular MC sample.



- Author – authorised MC expert who can create/modify his articles and upload MC samples by WMS interface
- End User – any user, can search, read MCDB by WMS interface. Have to accept MCDB License before download files.
- Administrator, Moderator – system administrators of MCDB
- Application software – experimental software to access event files directly via API of MCDB.
- MCDB License – agreement which describes relations between author and end-user

WMS sub-blocks.

- Authors part
  - Authorization system
  - Authors information management
  - Articles management
  - Uploading block
  - User comments management
- Users part
  - DB search
  - Comments on articles
  - License Agreement
  - Download block

DB subblocks.

- SQL DB – PostgreSQL (Metadata information on each MC sample and author articles)
- Event files (Mass storage system)

API. C++ Library to link with collaboration software.

Nearest plans

- Split each part of MCDB to independent sub-blocks
- Document input and output for each subblock
- Publish LCG Note with detailed description of MCDB
- Share design of subblocks between people who involved in the project

Longterm plans and Milestones will be published in LCG Note at the end of this year.