LCG Generator

P.Bartalini

LCG Simulation Project Organization

Geant4 Project

FLUKA Project

Simulation Project
T.Wenaus

Experiment Validation

MC4LHC

Framework
V. Pokorski

Geant4
J.Apostolakis

FLUKA Integration
A.Ferrari

Physics Validation
F.Gianotti

Shower Param

Generator Services
P.Bartalini

WP

WP

WP

WP

WP

WP
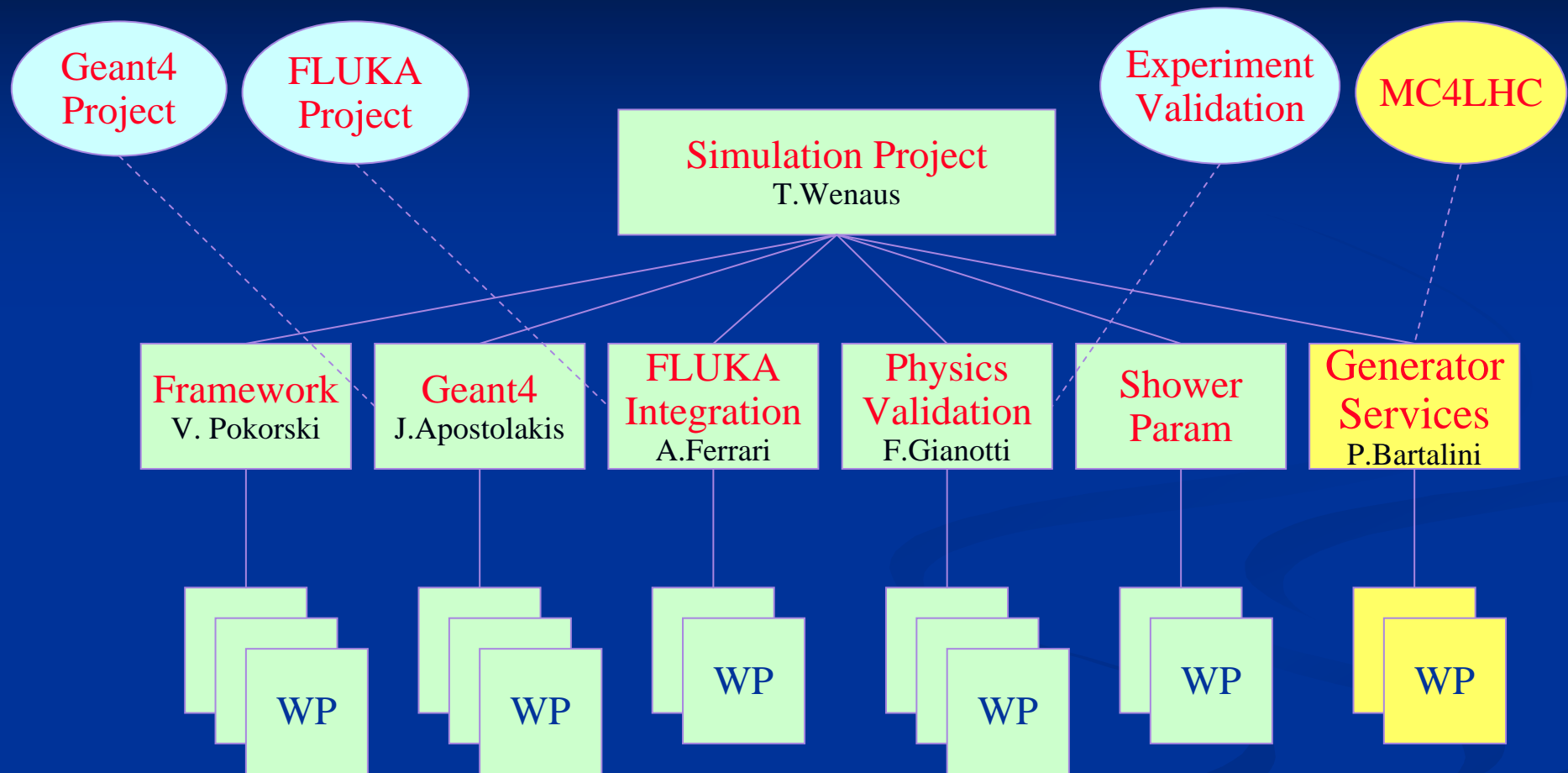
LCG Generator

GOAL: to guarantee the generator support in GRID computing

WP1: GENERATOR SERVICES LIBRARY (GENSER)

WP2: PRODUCTION OF COMMON EVENTS

WP3: CONFIGURATION & DATA BASE

WP4: TUNING AND VALIDATION

CERN (Coordination)
LCG-Russia (Library & Data Base)
LCG-Spain (Production)
Collaboration with independent projects: LCG-UK (Validation)
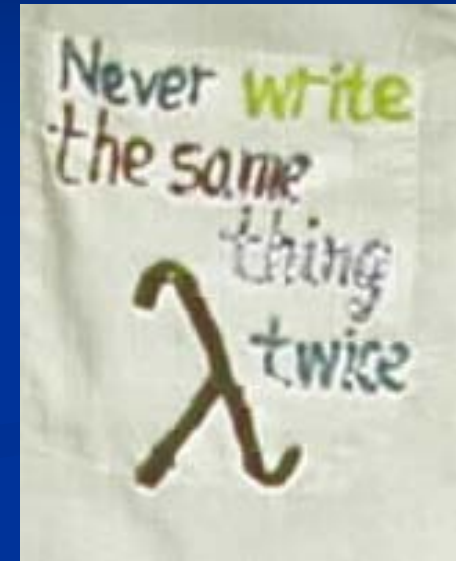Contact persons/Collaborators in MC Projects and LHC Experiments

Started May 2003
Long Term Project

Workshop on MC's for the LHC (MC4LHC)
CERN, July 7 - August 2 2003

LHC-Hera Worshop – 27 March 2004

Between Two Worlds

- **Small TH groups**
- **Huge fortran packages still in development**
- **Cannot spend all the time to give user support**

Never write the same thing twice λ

LCG Generator

- ◆ **Large Experiments**
- ◆ **C++ Frameworks**
- ◆ **Challenging requirements**

WP1: The LCG Generator Library (GENSER)

GOAL: to replace the obsolete CERN Library

→ **CVS repository, AFS and Tarball distribution**

✓ **GENSER β:** HERWIG (P.Richardson), PYTHIA (T.Sjöstrand), HIJING (X.N. Wang), ISAJET (F.E. Paige), LHAPDF (M.Whalley), ALPGEN (M.Mangano), COMPHEP (A.Sherstnev), EvtGen (A. Ryd), Glauber Xs (V.Uzhinsky), ORIGINAL CODE (Validation, Data Base, Production).

✓ **Future:** DPMJET, MC@NLO, GRACE, MADGRAPH, NEXUS, PHOJET, PHOTOS, SFM, TAUOLA, HERWIG++, PYTHIA 7, SHERPA, ThePeg etc.

→ **GRID compliant code to be used by CERN and external laboratories in event production**

✓ **Tested by all the LHC experiments**
✓ **Release rate: 4 per year**

→ **Librarian (LCG-Russia)**

✓ **~ 1 FTE (3 months shifts)**

ATLAS PRODUCTION RELIES ON GENSER !!!

WP2/WP3: Production of Common Event Files

> **GOAL: to produce certified generator level events**

❖ **Use them for** benchmarks, comparisons **&** combinations **in** LHC W.G.
❖ **Improve the quality of shared samples** with respect to **LEP W.G. era !!!**

➤ **Production framework**

  ✓ Milestone: Proposal June 2004
  ✓ Design stage (Responsible identified)
  ✓ Expression of interest from LCG Spain

Should Be Officially Adopted By CMS

➤ **Production centre**

➤ **Configuration & Book-keeping**

  ✓ MCDB: α version
  ✓ ~ 1 FTE from LCG Russia (MSU, ITEP)
  ✓ Milestone: Deployment June 2004

Tested At Fermilab Tested By CMS

WP4: MC Validation and Tuning

GOAL: to cross-check MC's and to compare with data

❖ **Basic Sanity Checks**

❖ **Reference distributions** (multiplicities, P_T Spectra etc.)

➤ **Validation Framework**

✓ JetWeb: in production

✓ LCG-UK (U.C.London)

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http://jetweb.hep.ucl.ac.uk/

**Database of Data, MC & Comparisons
Web interface, Job submission**

Will switch soon to GENSER ?

➤ **Standalone Studies**

✓ HIJING Validation (JINR)

✓ ALPGEN Validation (Perugia)

✓ Work on other packages (Librarian, Beta Testers in Experiments)

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http://lcgapp.cern.ch/project/simu/generator/HIJING/

Collaboration with ALICE

bug fix produced

Organisational Issues

WEB page
   http://lcgapp.cern.ch/project/simu/generator
   → Links to relevant documents and to CVS repository

CDS Agenda Home > Projects > LHC Computing Grid > Physics Generators
   → Minutes of meetings, slides of presentations

Applications area mailing list:
   project-lcg-simu@cern.ch

Meetings:
   → Last Thursday of the month at 5 PM in 32-1-A24 & VRVS

Special LCG Generator Meeting:
   → GENSER Review: Today from 1:30 PM in 32-1-A24 & VRVS Desert

1) Current developments and future directions (LCG Generator Group)
2) User experience with the Generator Library (LHC Experiments)
3) Status of MC Projects & Feedbacks (Theory)

Backup

Agenda

13:45	Introduction (Bartalini, P.)
13:50	LHAPDF v2 (Whalley, M.)
14:20	GENSER, the generator library (Alexander, S.)
14:50	GENSER validation (Ambroglini, F.)
15:05	User experience with GENSER (Hinchliffe, I.)
15:25	The LCG generator library (Discussion) (all)
16:25	---Coffee---
16:40	A framework for generator level production&validation (Bartalini, P.)
16:55	The MCDB project (Dudko, L.)
17:10	MCDB Implementation (Vologdin, A.)
17:25	The HEPCODE project (Stirling, W.J.)
17:35	Event formats & Monte Carlo data base. (Discussion) (all)