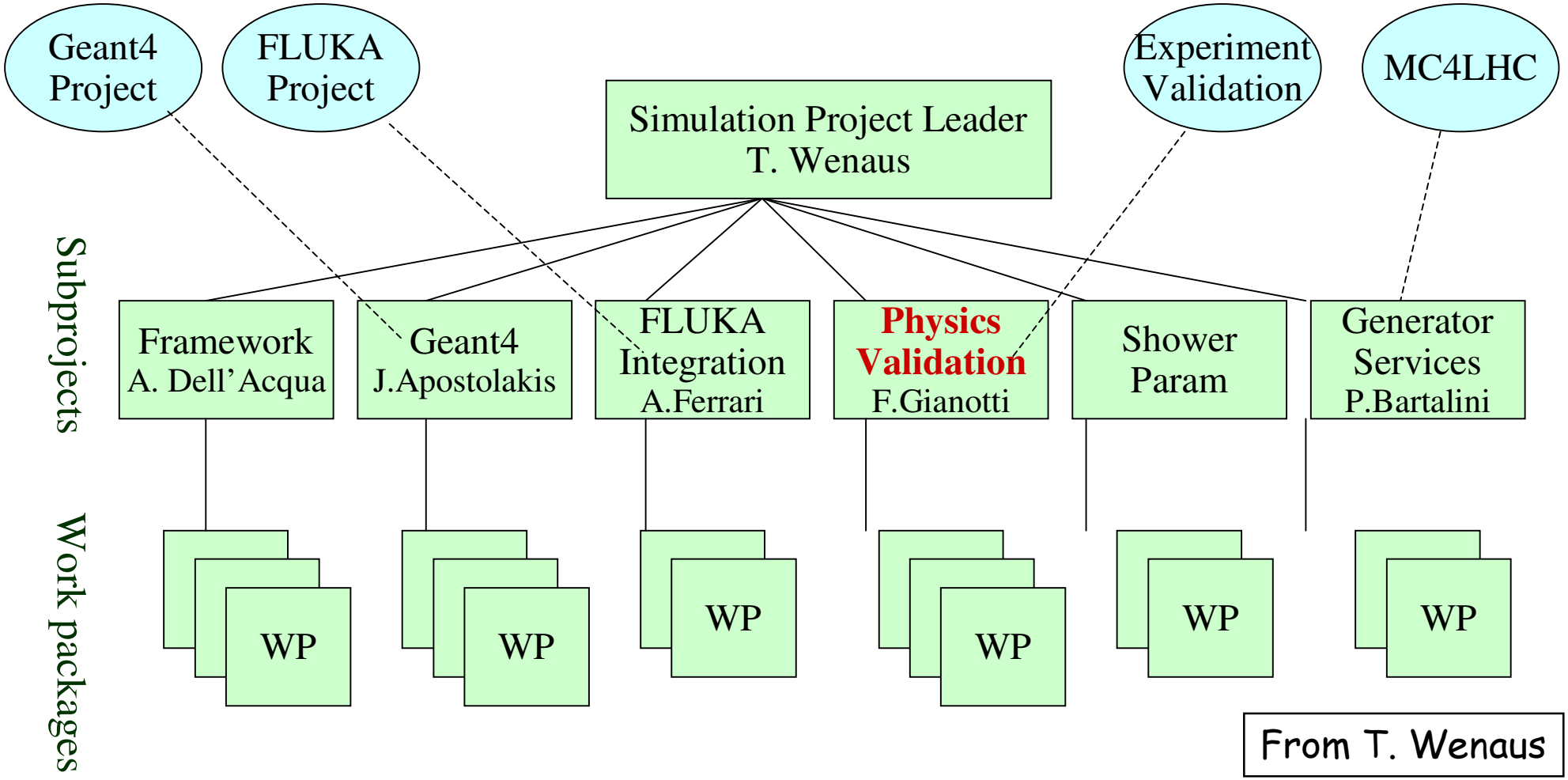
These Physics validation meetings are organized in the framework of the LCG Simulation Project (put in place following Simulation RTAG)



From T. Wenaus

What do we need to validate ?

- EM physics (should be ~ok)
- HAD physics (calorimetry, tracking, radiation background)

} G4, FLUKA

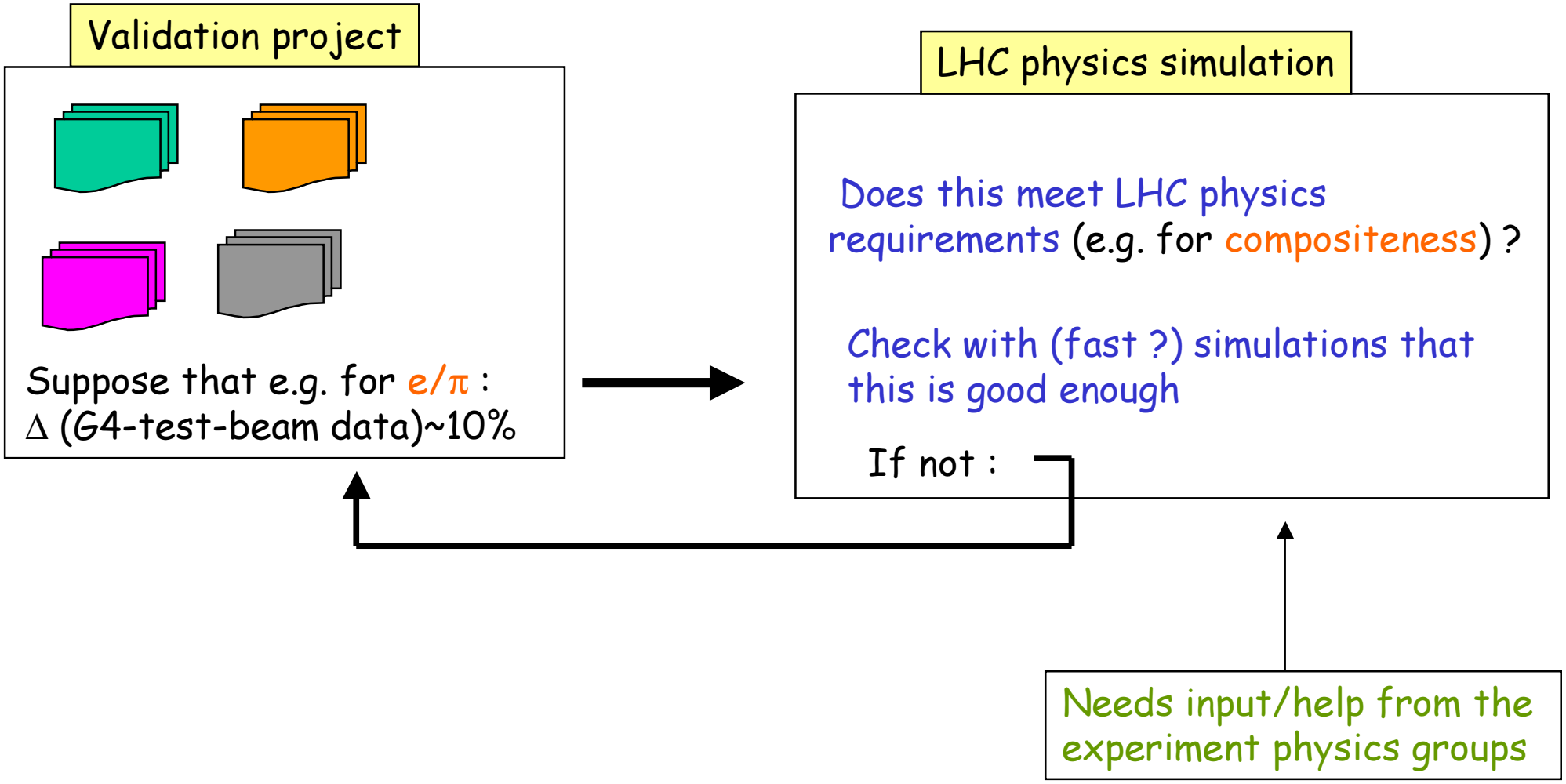
- Adequacy and usability of simulation environment: MCTruth, shower parametrisation, infrastructure (e.g. CPU, memory, interactivity), etc.

Note : -- a lot of work already done in the experiments and by G4 and FLUKA teams
-- continue/finalise this work. In particular, test coherence of results across experiments and sub-detector technologies.

Validation will be based on :

- experiment work : test-beam data, LHC-detector simulations
- relevant "simple benchmarks" (e.g. thin targets) : compare G4/FLUKA/data (→ see J. Beringer's talk)
- collection of most LHC-relevant results from outside LHC (e.g. BaBar, Belle, HARP ...)
- interactions with G4, FLUKA, framework experts

What do we mean by " validation" ?



What will be the output of the project ?

- "certify" that simulation packages and framework are ok for LHC physics
- weaknesses and strengths of the packages (complementarity) ?
- uncertainties and inadequacies of the simulation packages
  → contribution to systematic errors of measurements when data will be available
- define optimized and recommended physics lists, balancing technical performance against physics
- simulation benchmark suite with relevant plots and tests for automatic (or semi-automatic) validation of future releases
- a document (likely with ancillary notes) summarising all the work

High-level (somewhat ambitious …) milestones

- first cycle of EM physics validation by Summer 2003
- first cycle of HAD physics validation by end 2003
- further iterations in 2004 : ATLAS combined test-beams; framework; etc.
- write final document end 2004 ?

Note : participation of the 4 experiments to the various activities is not uniform (and is time-dependent), but strength of LHC-wide effort is that it allows for some "compensation"

- WEB page (created and maintained by J. Beringer):
  http://lcgapp.cern.ch/project/simu/validation
  -- work plan of this project → look and react
  -- links to experiment's simulation validation pages and to G4, FLUKA pages
  -- minutes of meetings, slides of presentations
  -- for each WPG of the plan, existing information from the various experiments (in preparation …)
  -- collection of our (digested) results : plots + some explanation
  -- code repository, useful documentations, etc.

- Mailing list : project-lcg-simu@cern.ch → please subscribe

- Meetings : each first Wednesday of the month 14:00-16:30 (with a few exceptions)

  I propose the following dates for 2003 (see WEB page for details):
  Wednesday 4/06, 2/07, 30/07, 3/09, 1/10, 5/11, 3/12
  Please react quickly if there are problems for some experiments/teams