g4tools

diff –u Ferrara Chicago

G.Barrand, CNRS/IN2P3/LAL

g4tools : main ideas

- g4tools is an automatic extraction of some code found in the softinex/inlib and namespaced "g4tools" for an embedding in Geant4.

- Pure header code. Highly portable (including iOS and Android). Easily embeddable (no "config.h" or specific build tool in the way).

- Strongly OO. No implicit (g) management.

- Thread safe (no writable statics).
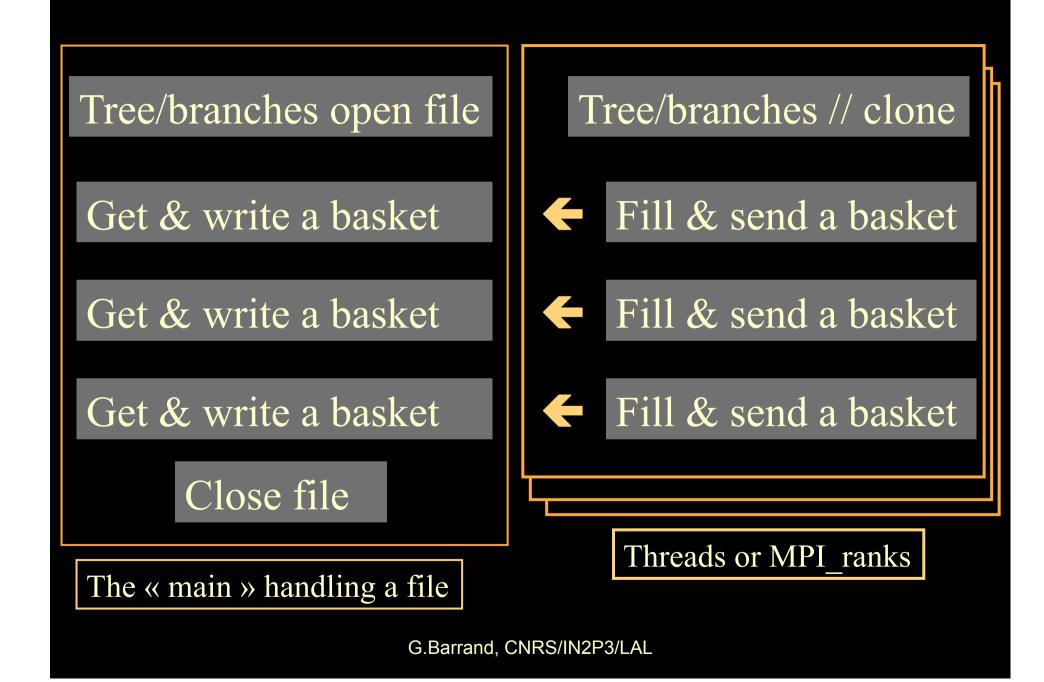
- See http://softinex.lal.in2p3.fr

What's new ?

- Parallel ntuple writing at the CERN-ROOT format.
- "usual work" to please Coverity and nightlies ☺

(Ok, there is also a new iPhone ☺, but nobody care in Geant4 ☹)

Parallel tools/wroot/tree

The logic of pages/baskets found in the tree (branch in fact) permits to have an efficient way to write only one file for a collection of ntuples for which the booking had been cloned and that each one « runs and fills » in a parallel thread or in a parallel MPI_rank.

Tree/branches open file

Tree/branches // clone

Get & write a basket ← Fill & send a basket

Get & write a basket ← Fill & send a basket

Get & write a basket ← Fill & send a basket

Close file

Threads or MPI_ranks

The « main » handling a file

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Conclusions

- This work had been a « touchy lace work » with not so much code added and probably possible for me because this root/io implementation does only root/io implementation !
- It gives ideas ! Something similar with CSV ntuple writing ?
- In softinex we use also (for long) HDF5 for IO and we plan to look parallel ntupling here too within next year around our astro activity. Would Geant4 be interested ?