PROOF in FairRoot

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PROOF in FairRoot, part 1

- FairAnaSelector: a general class deriving from TSelector that allows parallel event processing using FairTasks and the FairRunAna

- Users' "decent" tasks can be used in PROOF with users' old macros with only one change:

```
FairRunAna *fRun = new FairRunAna("proof");
```

- The old FairRunAna constructor is still in use:

```
FairRunAna *fRun = new FairRunAna(); // is the same as
FairRunAna *fRun = new FairRunAna("local");
```

PROOF in FairRoot, part 11

- I have decided to remove the previous (as of December 2011) way of starting proof because of too much time spent in not needed initialization on the master:

```
fRun->Run(beginEvent,nofEvents,"proof");
```

- For now, the outputs from individual worker nodes are stored, they are not merged - the merging is very slow for the output trees/files

PROOF in FairRoot, part III

- In order to run users' tasks on PROOF, the tasks have to be PROPERLY initialized. Users have to take care of it themselves, as

  - it is potentially HARMFUL also when running the tasks locally

  - I do not know myself how you want your tasks to be initialized on default

ALICE developers' experience

- Tasks have to be properly initialized

- Users were spending long days trying to find the cause of analysis crash after adding one class member and forgetting initialization

- Merging of anything more advanced than 2D histograms is time and RAM costly

- On the other hand: IF THE CODE IS RUNNING ON PROOF IT WILL RUN ANYWHERE

notes

- Do not add all the tasks at one.

- Fix them one by one.

- The debugging may be tedious.

- Worker log files are located in:

```
$HOME/.proof/pandaroot_directory-macro-yourmacrodir/session-$hostname-$jobID-$PjobID/
worker-0.$workerNumber.log
```

- For example for me it is:

```
karabowi@lxi012::~/pandaroot_proof/proof/macro/global$ ls ~/.proof/pandaroot_proof-proof-
macro-global/session-lxi047-1330966740-31330/worker-0.0.*
/misc/karabowi/.proof/pandaroot_proof-proof-macro-global/session-lxi047-1330966740-31330/
worker-0.0.env
/misc/karabowi/.proof/pandaroot_proof-proof-macro-global/session-lxi047-1330966740-31330/
worker-0.0.log
/misc/karabowi/.proof/pandaroot_proof-proof-macro-global/session-lxi047-1330966740-31330/
worker-0.0.rootrc
karabowi@lxi012::~/pandaroot_proof/proof/macro/global$
```

- Contact me in case of problems

Summary

- I hope to introduce the changes to the trunk SVN this week

- Hope you will like it and find use for PROOF

Results for analyzing 20000 events with 2μ$^+$ and 2μ$^-$ on 8 CPUs machine:

	GEM	GEM+MVDDigi	GEM+MVD	GEM+MVD+STT	GEM+MVD +STT+BTF
local	34.3664 s	74.498 s	176.855 s	223.477 s	316.819 s
proof	17.4425 s	33.919 s	43.400 s	49.578 s	59.189 s
speedup	1.97	2.19	4.08	4.51	5.35

```
GEM:      PndGemDigitize+PndGemFindHits
STT:      PndSttHitProducerIdeal
MVDDigi:  PndMvdDigiTask
MVD:      PndMvdDigiTask+PndMvdClusterTask
BTF:      PndBarrelTrackFinder
```