Status and Perspectives on the "*raw2dst2root*" processing

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Raw2dst2root for dummies: 3 levels of data

n_TOF detectors plugged into flashADC: oscilloscopes!

UNIQUE

1) RAW data (binary): oscilloscope mode data

Headers: run number, detector number, settings, etc.

Data: basically timestamp and array with values 0-255.

"raw2dst" : basically Digital Pulse Shape Analysis Algorithms

NOT UNIQUE (PSA versions)

2) DST (binary): Data Summary Tapes

Headers: same as for RAW data

Data: list of signals and their characteristics: amplitude/area, ToF, etc.

"dst2root": basically translation from binary to ROOT, loosing headers

3) ROOTfiles (CERN ROOT format)

Data: list of signals and their characteristics, as in DST, used by scientists!

Present situation (C. Guerrero and E. Mendoza in charge)

RAW: binary with n_TOF-DAQ format

DST: binary with n_TOF-DAQ format with <u>one version number</u>

- No traceability, documentation or change-tracking for the PSA used.
- Unreadable for the n_TOF users (binary + complex format)
- No means for nTOF user testing of PSA routines
- One individual PSA per detector type
- No automatic or easy way of adding new detectors (too manual)

ROOT: "root" files with <u>one version number</u>

- Carried out manually by the user
- Not necessarily ROOT variables correspond to DST variables
- No traceability, documentation or change-tracking for the PSA used.

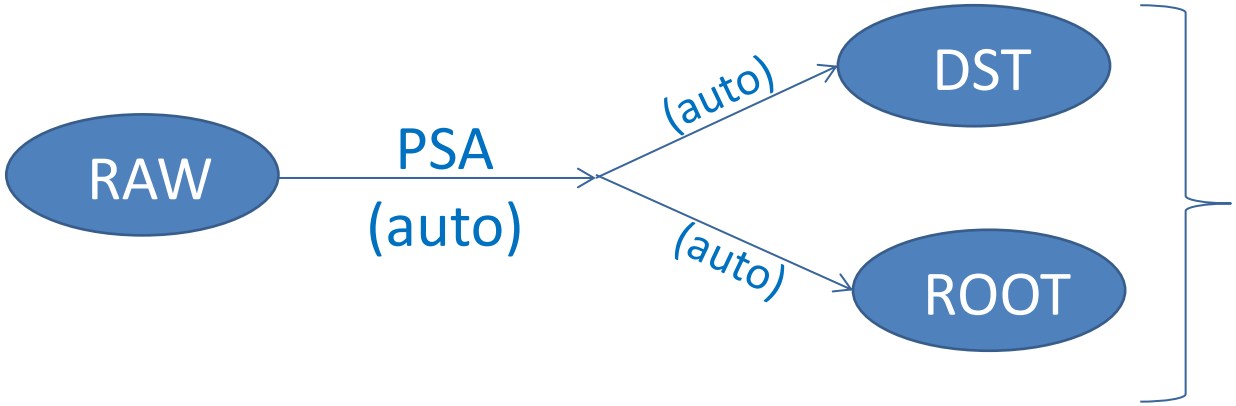
Future situation (Weiss, Hernandez, Guerrero, Mendoza, Gunsing)

- Milestone 1 (November 2013)
  - Back-up of all software used in Phase1 and Phase2 (v0.0) (AH)
  - Create “doxygen” documentation for “raw2dst” software (AH)
  - Create versioning system using SVN: (AH)

  http://information-technology.web.cern.ch/services/svn-service/
  - Create a raw2dst version (v0.1) with the latest software used (AH+CG)

Future situation (Weiss, Hernandez, Guerrero, Mendoza, Gunsing)

- Milestone 2 (January 2014):
  - Decide on a new strategy for RAW2DST2ROOT
  - Decide on the tools that will be made available for the nTOF users to tests existing or new PSA routines on RAW data
  - Create software version v0.2



Adding for both DST and ROOT files headers, version numbers and/or stamps for PSA tracing

Future situation (Weiss, Hernandez, Guerrero, Mendoza, Gunsing)

- Milestone 3 (February 2014):
  - Migrate the software from 32bits SLC to 64bits SLC6X OS. Towards version V0.3 (AH)
  - Reliability test for the new software. Stable version V0.3 (AH)

Future situation (Weiss, Hernandez, Guerrero, Mendoza, Gunsing)

- Milestone 4 (March 2014):
  - Simplify the number/types of PSA routines (CW and CG)

A) General routine for any detector:

Based on basic principles and using derivatives and integration for peak finding and analysis (similar to present SiMon, MGAS and PPAC). From one detector to another the only changes should be the parameters for "signal width", "noise level", type of baseline"

B) Routine for detectors with constant pulse shape:

Based on the current C6D6 PSA, will fit each signals found with a "reference shape". From one detector to another only changes should be the parameters for "signal width", "noise level", type of baseline" and "reference pulse shape"

C) Especial routines:

Cases A) and B) should be used by default, but for some case like BaF2 or maybe some new detectors dedicated routines will be used.

Future situation (Weiss, Hernandez, Guerrero, Mendoza, Gunsing)

- Milestone 5 (April 2014):
  - Export the libraries to create the definite ones able to read not only the current 1 byte data but also the new type of 2 bytes data (CW + AH)
  - Reliability test for version 1.0 (CW + AH)

Future situation

"Profesionalization" of the raw2dst2root procedure:

- Backup and versioning system
- Codes visible to all n_TOF users
- ROOT files produced automatically (headers/versions added)
- PSA routines revised and types simplified
- n_TOF users' tools for test/create/modify PSA on raw data
- Plugging of new PSA rotuines simplified

But still:

- Only 1-2 people capable of producing definitive DST/ROOT files

From May 2014 onwards: contact C. Weiss!