

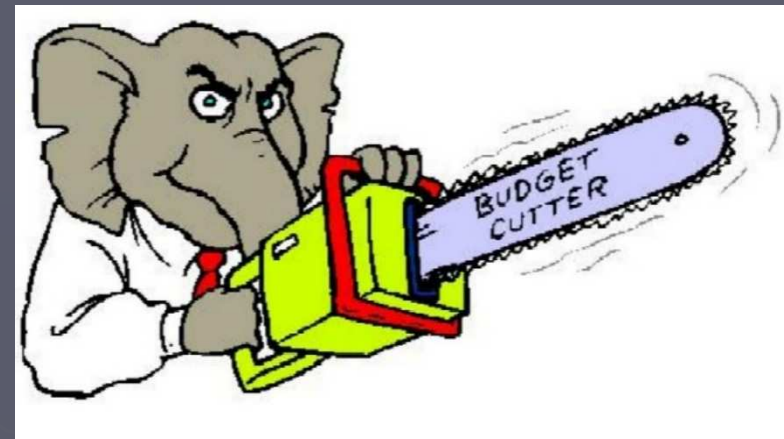
Ljubljana 2008

FFREEDAC

Some Concluding Remarks

Conclusion

- ▶ ENSAR stands for European **Nuclear** Science and Applications Research and is the I3 application for the FP7 program.
- ▶ ENSAR regroups a number of LoIs – including the FREEDAC proposal.
- ▶ ENSAR has not been financed as yet. Thus we do not have approval for Letter of Intent FREEDAC. It will be some time before we get a definite reply. The ENSAR budget will likely be cut – hence most likely that of our demand. Precise information will be given in the next two to three months.
- ▶ This raises the question of financing our projects for the developments and travel.



Conclusion

Very Front End Electronics



Young George in his lab.

► PreAmplifiers (Ge)

- Within FREEDAC there is a need of high Dynamic Range electronics
 - ToT technique is a possible soln.
 - Need to try on Si, ...
- Making of ASICs circuits for Ge (Ian & Francesca)
- Solutions exist

→ *Explore: study other methods for high dynamic range for comparative selection.*

Conclusion

- ▶ A working group will be set-up within FREEDAC to explore/study:
 - Different high gain methods for selected detector types
 - The pre-amp Coupling to signal processing ASICs
 - A possibility to make pre-amp pro-types through approved programs.
 - Alberto (Alberto.Pullia@mi.infn.it) has accepted to animate the group for FREEDAC. Persons interested please contact Alberto.

Conclusion

- ▶ The AGATA on board Programmable pulser. A need of the community is felt. An ASIC can possibly be made. *A project to follow. For people interested – contact George Pascovici*
- ▶ XYTER: The De-randomizing, sparsifying Token Ring readout. A possible extension is to employ external pre-amp option (if necessary), for use in beam tracking with for example secondary electron detectors at GSI & SPIRAL2 can be envisaged.
 - Lavish use by PANDA & CBM of XYTER – this implies that there will be a strong effort towards the use of the chip.

Conclusion

- ▶ Time Stamping
 - The Nuclear Physics community need a Mapping of the Time-Stamping methods. A common interface is essential for existing systems and for new developments.

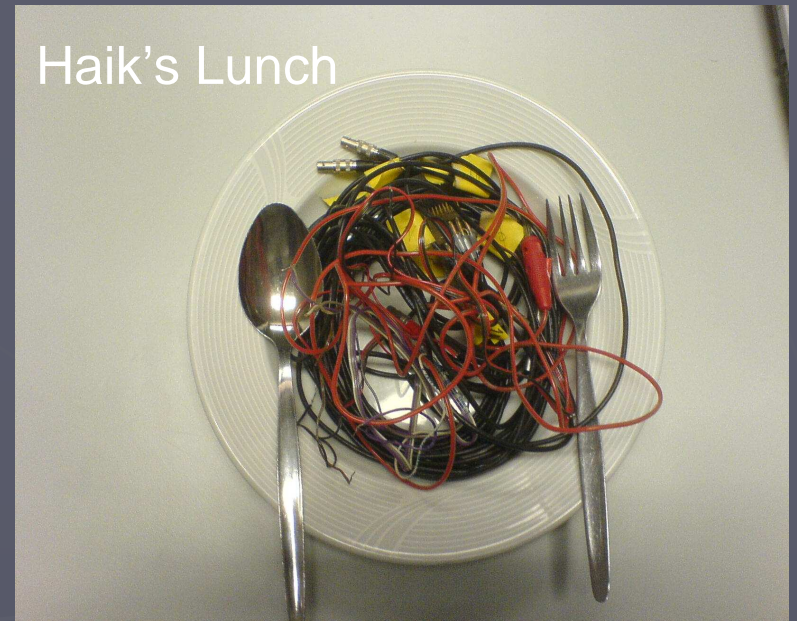
Time Stamping Working Group

- ▶ ***What shall we do?***
 - *Review existing systems*
 - *Review planned systems*
 - *Exchange information*
 - *Consider strengths and weaknesses of known systems*
 - *Should we standardise on one system?*
 - *Can we make a common TS port (c.f. AIDA for DeSpec)*
- ▶ ***Who will participate?***
 - *All are welcome...*

- ▶ In new ASIC developments Time Stamped are possible & in certain cases essential. A 'common' module will be more than very useful.
- ▶ Ian (i.h.lazarus@dl.ac.uk) will be animating the Time-Stamping. Persons interested please contact Ian.

Conclusion

- ▶ The age without cables
- ▶ Missing (FREEDAQ) Items
 - timestamp distribution and protocol
 - adequate multi-channel FEs with high dynamic range - Haik's conclusion
- ▶ AGATA at SPIRAL2 and NUSTAR
 - This program sets what is necessary to have a viable interface in two principle labs for time stamping and DAC. The interfaces will be built without having to go through FREEDAC. These programs will provide interfaces which could be useful for other programs.
Within FREEDAC exchanges are of course more than welcomed.



Conclusion

- ▶ DABC is the FAIR soln
- ▶ NARVAL is the SPIRAL2 soln.
 - *It does seem that with regards data transfer the interfacing jobs are worked on as it is needed.*
 - *There has been a forum with FREEDAC.*
- ▶ **GANIL & NUSTAR & LEGNARO**
 - have a large number of instrumentation programs.
 - the programs can be characterised in their request for R&D.
 - ▶ E.g. most need time-stamp facilities
 - ▶ E.g. A grouping requesting Calorimeters
 - EXL, R3B, PARIS, HYDE, GASPARD
 - ▶ E.g. A group requiring spectroscopy from light particle detection from Si detectors & TPCs
 - EXL, R3B, PARIS, HYDE, GASPARD
 - R3B-TPC, ACTAR, Bordeaux-TPC
 - ▶ E.g. Spectrometers electronics to be refurbished or built
 - SPEG, VAMOS, Big-BITE, S3
 - ▶ E.g. Pulse Shape Analysis for PI & other
 - GASPARD, FAZIA, EXL, HYDE, NFS, ...
 - *Via FFREEDAC we can provide the necessary framework to reach the necessary SYNERGY.*

Conclusion

► Control

- Control is an innovative part of the FREEDAC program (See LoI for FP7)
- The numeric Kalman filtering and its wonders is a local expertise. Quite a bit achieved. Quite a bit to go to find for example the appropriate *correlated parameters* – Heinrich -that will yield the optimum data filtering & throughput.
- Numeric filtering applied to 'time-pickoff' & 'shape' – Butcar/ Matjaž Vencelj/Andrej Likar/Heinrich/Roman Novak.
- *Comparative tests needs with other efforts – ADONIS for example. Should perhaps program this encounter in our next meeting.*

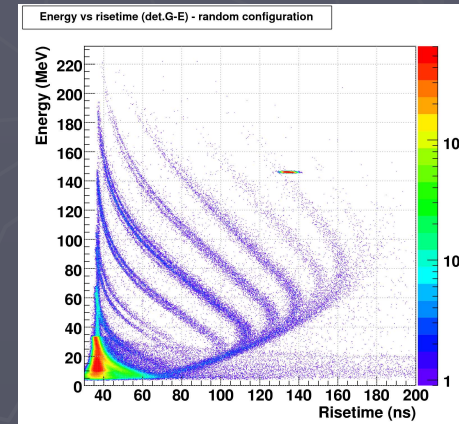
► Control Cont'

- Demand for sampled data from different detector types (Heinrich).
 - Si – Particle Identification
 - Gas – TPC
 - Crystals/Liquids – N/gamma, phoswitch ...
- *The need to have 'controlled' data not necessarily easy. The Control FREEDAC working group needs to work on this!*
- Peter's contribution: The Software development that will build 'models' of automated, optimised controls. *Work is in progress on this – contact Heinrich.*

Conclusion

► Control Cont'

- Pulse Shape for Particle Identification – channeling & resistivity (Luigi Bardelli).
- *FREEDAC: No extensive work available for light particle identification using Pulse Shape to set the specifications towards the electronic front end (Particle Spectroscopy Programs: HYDE, GASPARD & EXL). Work in progress to be followed by FREEDAC.*
- *Not clear what on-line control parameters to introduce. A project to follow.*



Conclusion

- ▶ Yes we should continue with FREEDAC
- ▶ Exchange is the key note in FREEDAC
 - Travel money is required
 - ▶ *We did manage so far without direct support – so the administration must appreciate this SYNERGY group.*
 - ▶ *We have to approach formally the different administrations.*
 - We need to have fruit of the discussion. Namely the building & testing of some equipment.
 - Source of 'funding' can be obtained from though those programs which will profiting from the fruit.

Conclusion

► Networks

- Pre-Amplifiers → Alberto
- Time Stamping → Ian
- AGIC → From a list of μ -electronics engineers – to be defined.
- Control → Frederic, Heinrich, Haik & Matjaž
 - Frederic.drouille@cea.fr
 - wortche@kvi.nl
 - h.simon@gsi.de
 - matjaz.vencelj@ijs.si
- To set a well defined objectives giving a time line to cover approx 12 -18 months is important.