



# New ideas for next phases - Project definition

*Ch. THEISEN for the DAQ WG*

# Project definition



Agata/ProDef/July10/0.7

**AGATA**

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**Advanced Gamma Tracking Array**

**PROJECT Definition**

**Phase 1**

# GSI Phase



- See next presentation by N. Kurz
- Remarks concerning the DAQ hardware :
  - Scale existing system for more detectors
  - Keep existing software
  - 22 out of 26 pizzas we have will have their warranty expired in 2011
    - New pizzas
    - Detector rate specifications
  - disks, KVM and switches lifetime is much longer
    - Scaling + maintenance
  - Maintenance and support

# Possible new developments

## Remote Control Room (RCR)

Goal : full DAQ monitoring, access to GUI's and continuous video connection

Cannot replace shifts !

- Engineers : spy, user's support...
- Physicists : selected aspects of experiment monitoring...

Todo : detailed feasibility study; legal aspects related to the video connection. Remote control tools deployments (VPN, ...); host laboratory hardware configuration.



## Graphics Processing Unit (GPU)

- R&D ongoing at Legnaro (Enrico Calore) for implementing PSA algos on GPUs
- One should keep an eye on GPUs and more generally CPUs evolution which may improve the performances of the system.



# Graphics Processing Unit (GPU)

- R&D of algorithms
- One shared evolution

The screenshot shows the NVIDIA website's Tesla RS Solutions page. At the top, there's a search bar and navigation links like 'DOWNLOAD DRIVERS', 'COOL STUFF', 'SHOP', 'PRODUCTS', 'TECHNOLOGIES', 'COMMUNITIES', and 'SUPPORT'. Below that, a green banner reads 'TESLA'. The main content area features a large image of server racks with a green overlay containing the text: 'GPU POWERED CLOUD COMPUTING NVIDIA TESLA RS SOLUTIONS THE FUTURE OF 3D WEB APPLICATIONS'. Below this, there's a section titled 'NVIDIA TESLA RS SOLUTIONS' with a sub-header 'NVIDIA REALITYSERVER DEPLOYMENT SOLUTIONS'. This section lists three deployment options: 'Design Team Collaboration' (8+ Tesla GPUs, 10+ concurrent users), 'Large Product Teams' (32+ Tesla GPUs, 100+ concurrent users), and 'Consumer Service Platform' (100+ Tesla GPUs, 1000+ concurrent users). A small caption at the bottom states: 'The Tesla RS system is configurable from a small 8 Tesla GPU system designed for small workshop collaboration'.

Implementing PSA

generally CPUs  
es of the system.



## Narval2.0

- This new version should be released by ~2012 and will include, among many new features:
  - Enhanced stability using a new buffer system.
  - Improved communication with external third party systems (ancillaries in particular)

## OpenCL.

- Using this programming standard, software can be compatible with many architectures (including GPUs) and can therefore benefit from its performances. Algorithm should therefore migrate to OpenCL. See <http://www.khronos.org/opencl/> for details.

## Agata Data Replay Center (ADRC)

- The idea of an ADRC is twice:
  - Provide a “small” computing center for data analysis with the same environment as the AGATA DAQ.
  - DAQ developments: perform developments and validation of new algorithms, study new computing techniques (GPUs, Power6, Cell, Wii ...). Perform real size test of new software versions (Narval, ADF, PSA ...); algorithm benchmark. Prototype new DAQ architecture...
- A “low cost” ADRC may be installed using hardware recycled from AGATA and/or elsewhere.

Todo : evaluate

- Needs (not a competition with grid)
- hardware and infrastructure needed.





Note :

The DAQ project definition strongly rely on actual electronics knowledge. Any new electronics design can impact strongly on the DAQ, which details should be revised accordingly.