SAMPLERS IN A 3-TIER CONTROL SYSTEM: PLANS AND FIRST EXPERIENCE
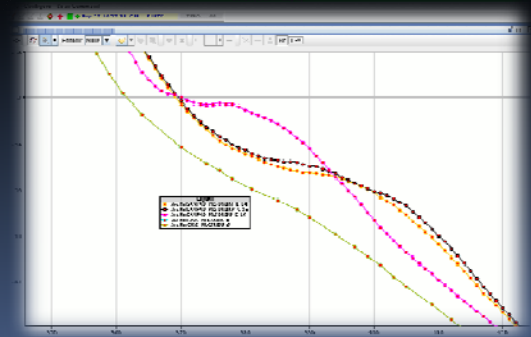
Rende Steerenberg,
BE-OP

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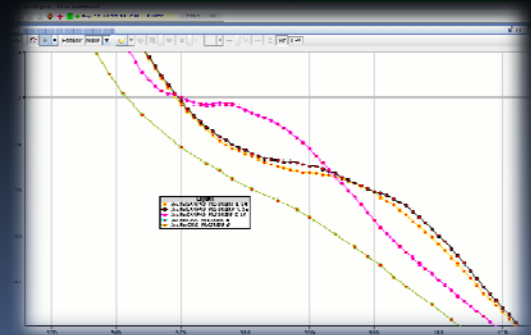
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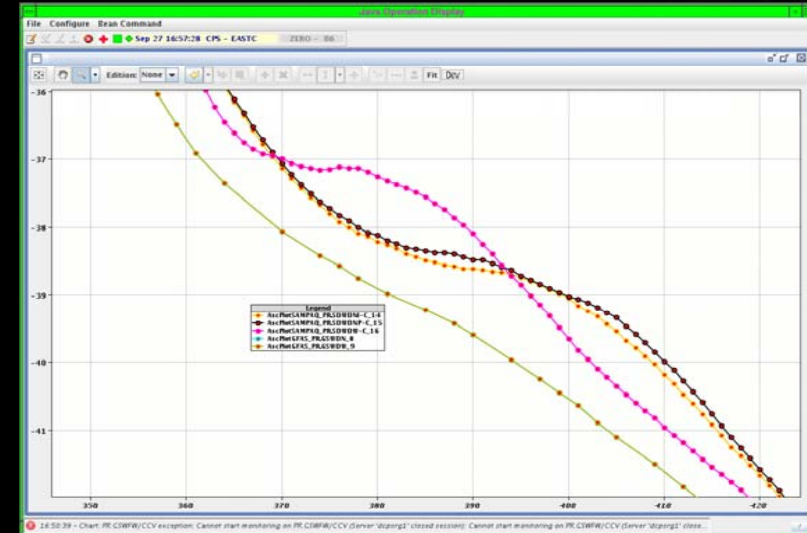
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- Samplers and OASIS

- New Controls Platform & Strategy

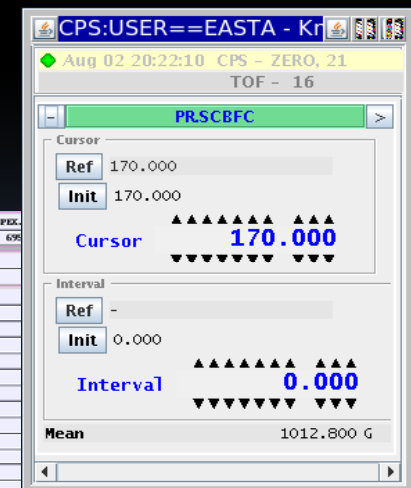- CTF3 Mini Pilot Project

- Concluding Remarks

Samplers and Their Use

- Fixed settings (x and y)
- Calibrated signals
- Acquisition is always done
  - Last value always available
  - Can be logged
- All samples of arbitrary signals are aligned with general 1 kHz train
- Pre-defined cursors
- Mathematical operations
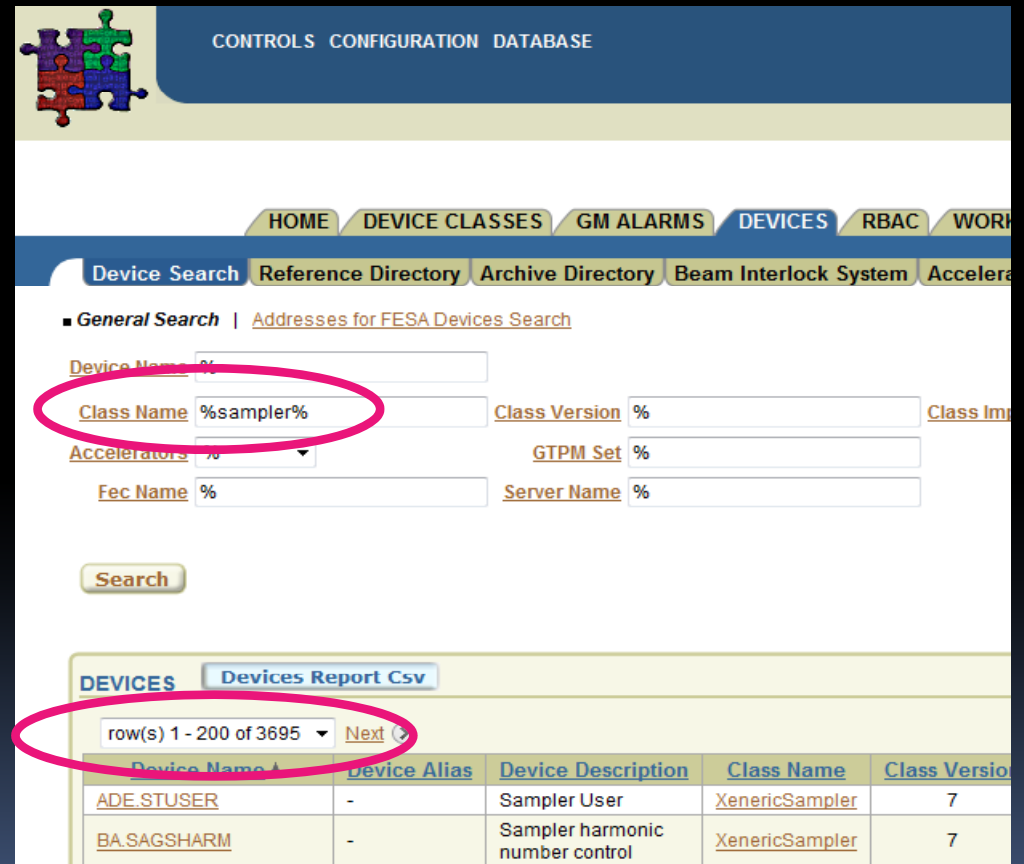 - Statistics
  - Virtual samplers

Where are Samplers Used

- Make a query in the CCDB and 3695 instances of sampler classes are found

- Used in the majority of the facilities:
  - CTF3
  - PSB, ISOLDE
  - PS, TT2, EA
  - SPS, CNGS
  - AD, LEIR

- Originally OP development used since years

Sampler "Architectures"

Client Application

Client Application

Client Application

Client Application

Client Application

Client Application

Proxy

Front end

Front end

Front end

Front end

- In principle a 2-tier system
- In order to reduce the load on the front ends proxies are used for the most "popular" samplers

OASIS as Generally Seen by OP

- OASIS is seen as the OASIS viewer, but there is much more...

- Many signals are multiplexed to fewer channels

- Variable settings

- Signals not always acquired, only when connected

- When settings are changed the user has to wait until next update

- Signals are not calibrated as signal path can vary
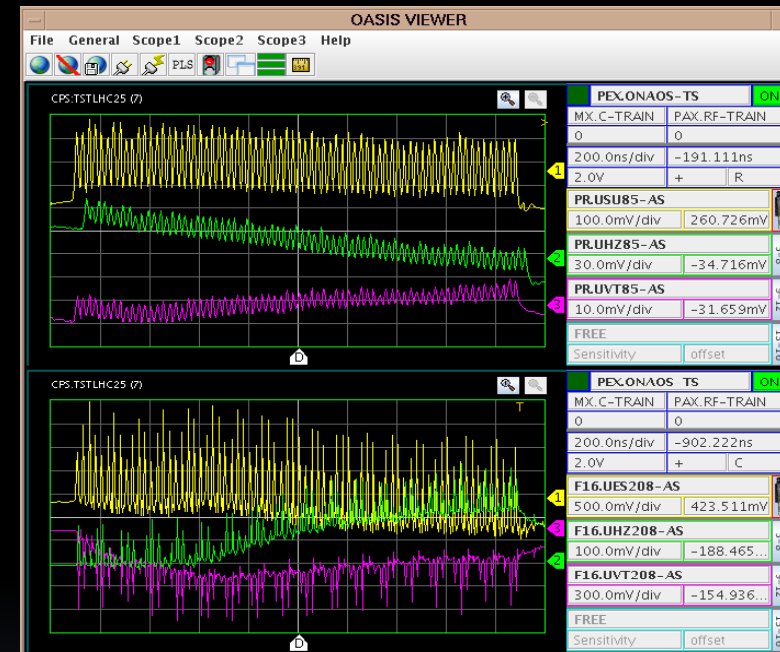
OASIS Architecture & possibilities

Client Application	Client Application	Client Application

Middle Tier

Front end

MUX

Scopes

Front end
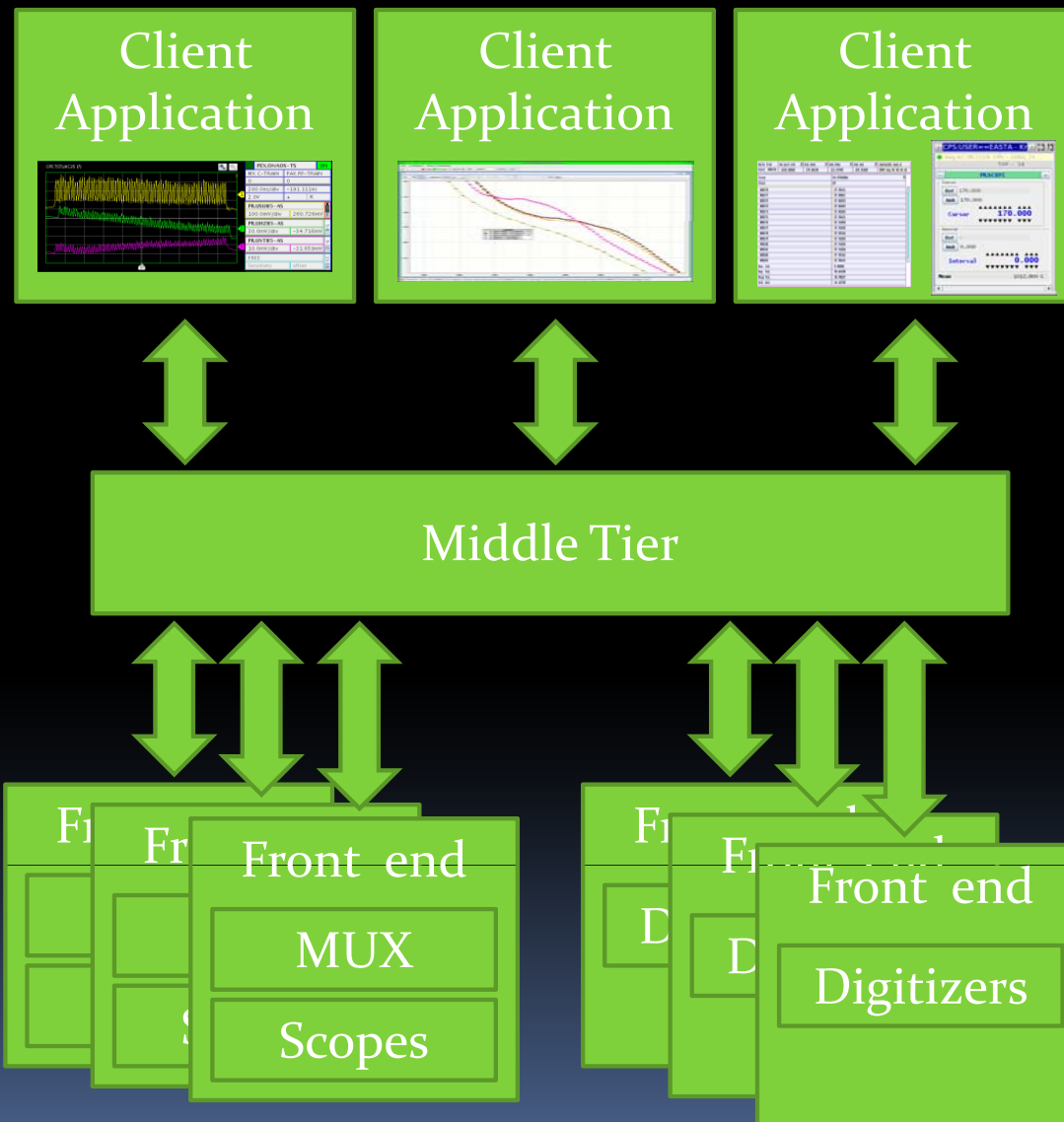
Digitizers

- OASIS is a 3-tier "open" system

- It can interface with digitizers and work with fixed settings

- It can calibrate signals

- It can perform mathematical operations

- It can connect to the logging data base

- It can digitize and align samples using the standard 1 kHz clock

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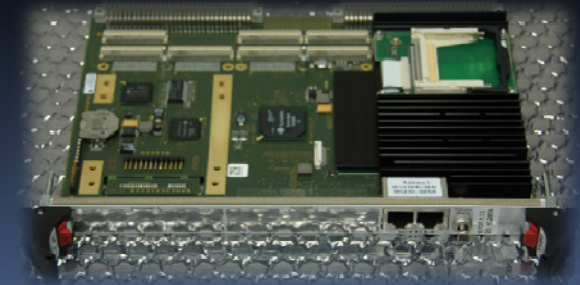
New Controls Platform

- ## MEN A20 is the new controls platform being introduced
    - Present samplers/drives would need to be re-developed as well as OASIS classes
    - Good occasion to homogenize both technologies
- ## ACCOR strategy for analogue signal acquisition was defined in December 2010 EDMS 1134213
    - Background
    - Strategy
    - Implementation
- ## OP together with CO are defining the functional specifications for the (new) samplers
- ## CO will take care of implementation and support

- Samplers and OASIS

- New Controls Platform & Strategy

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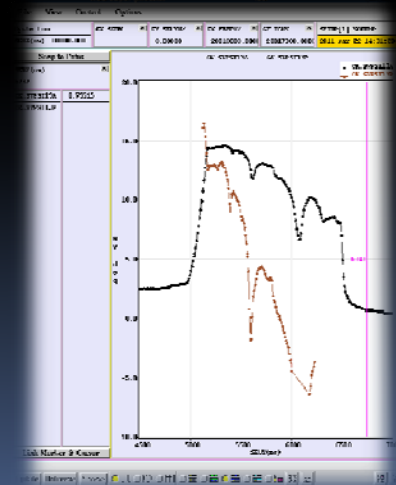
CTF3 Mini Pilot Project

- Due to serious performance problems in CTF3 with the RIO 2/3 sampler front ends a mini pilot project based on the new strategy was launched

- Out of the 104 BPM's the signals of 45 BPM's in TL2 and CLEX are now acquired using the CO OASIS FESA class in the new MEN A20 front-ends

- The OP Virtual samplers have been instantiated in the middle layer to dialogue with the OASIS classes

- The "old" client applications can be used.

Pilot Project Architecture

Client Application	Client Application	Client Application
Logging		

Virtual Samplers

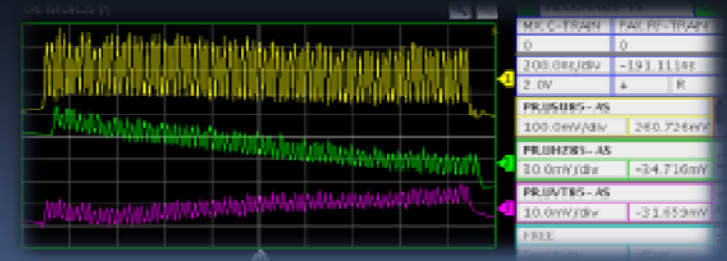| MEN – A20	MEN – A20
Digitizers	Digitizers
Digitizers	Digitizers
Digitizers	Digitizers
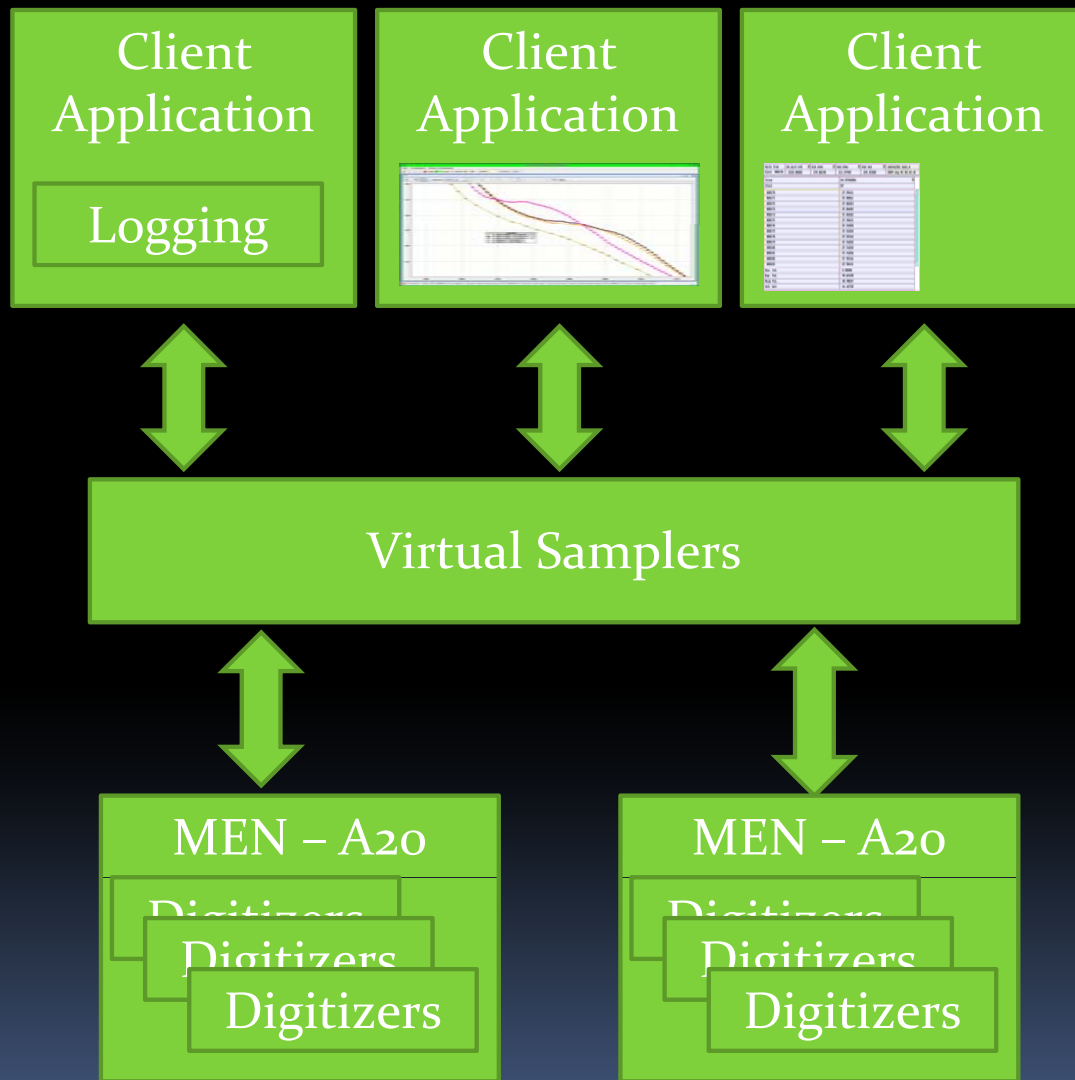
- Δh, Δv and Σ are acquired using ADC's and OASIS FESA class
- Virtual samplers calculate and calibrate measured positions
- Client applications use position and sometimes also Δh, Δv and Σ data
- Statistics calculations are made like average and standard deviation

First Return on CTF3 Experience

- The installed configuration works well for the 1.2 second repetition rate
  - Typical process delay ~100 ms, sometimes ~500 ms in particular for statistics calculations
  - Final aim is to go to 5 Hz operation !
- User are cautiously content with the system
  - Worry about 5 Hz performance
  - Request for improvement on diagnostics
  - Correct time stamping is essential to be able to synchronize signals for analysis (precision < 50% of the rep. rate)
- System is very new and does not yet contain all the required functionalities
- CTF3 users would like to go quickly to MEN A20 for the remainder of the BPM's

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Concluding Remarks

- Samplers with permanent settings are indispensable for OP
- The introduction of the new MEN A20 platform is the occasion to homogenize the sampler and OASIS systems with OASIS as baseline
  - OASIS support team (best effort)
  - OASIS viewer not the only application
- OP and CO are defining the functional specifications for the (new) samplers
- CO will ensure implementation and support
- First result of CTF3 pilot project very encouraging
- Seen the total number of sampler instances there is quite some work ahead