

# DAQ Status and Plans

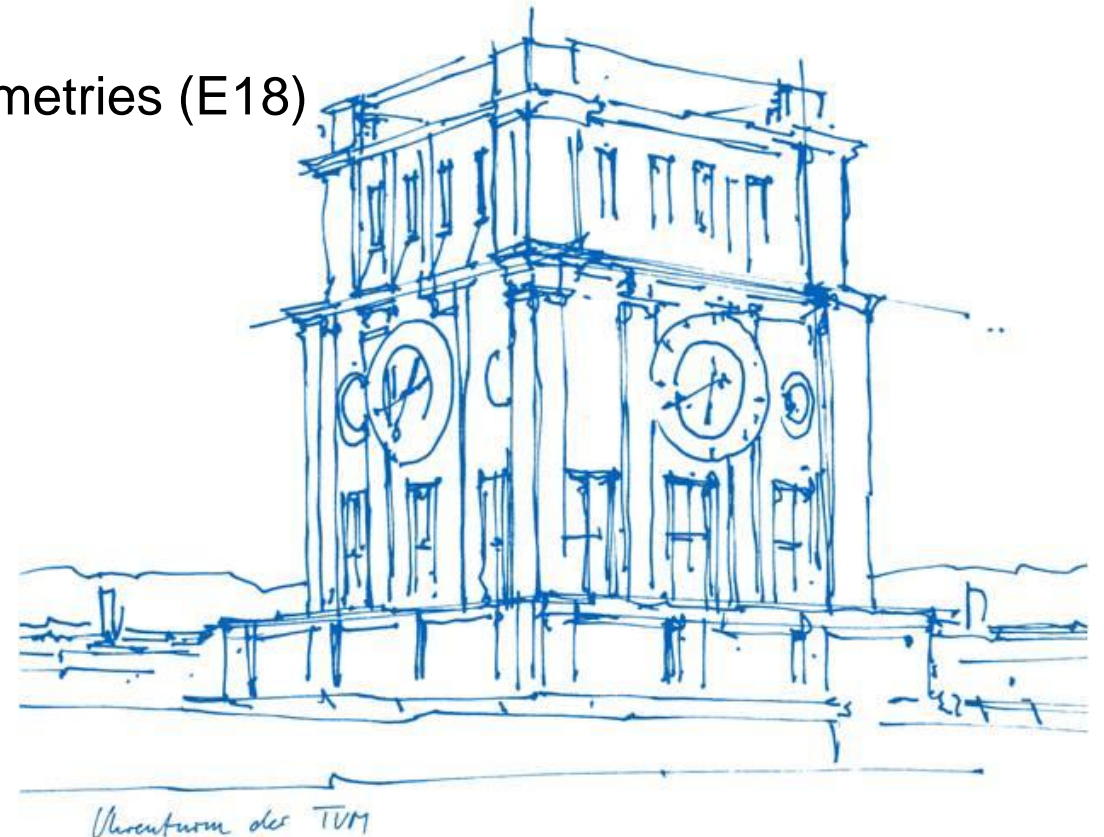
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# Dry Run 9.11-11.12.2020

## Important test of DAQ

- Remote access for shifts
- New Start of Run script
- New DAQ GUI
- New DAQ libraries
- MurphyTV, COOOL, User programs recompiled with UDP monitoring ctalibrary
- New Juniper Ethernet network switch integrated, all subnetworks are interconnected via the switch.  
Switch configuration
- Test of CTA(CERN Tape Archive) new storage facility. During Dry run the were transmitted to CTA .

# Remote Access to COMPASS PCs for Shifters and Experts

Access proposed : X2GO session to pccoczm (X2Go server)

- Some instability of the server due to many ghost processes
- Improved by resetting all remaining X2GO sessions every night
- Stable remote work with MATE desktop
  
- Usually shifters execute GUI on pccoczm, risk to overwhelm PC with processes
- Define usage of PCs for DAQ GUI, MurphyTV, COOOL

# Mattermost Integration

Channels :

- General
- Logbook
- Shift
- DAQ
- GEM
- ...
  
- Accessible in smartphones and webbrowser in any PC

The screenshot displays the Mattermost web interface. On the left, a sidebar shows the user profile for 'COMPASS @konorov' and a list of channels under 'PUBLIC CHANNELS'. The 'Logbook' channel is selected. Below this are 'PRIVATE CHANNELS' and 'DIRECT MESSAGES'. The main area shows the 'Logbook' channel with a search bar and a list of messages. A blue bar at the top of the message list says 'Jump to recents'. The messages include:

- Misha Mikhlasenko, Kamir Augsten BOT 1:21 PM: [SCI-FI Germany] HV tripped. Stations 1 and 4 were on in the morning and just tripped. [Show original comment](#)
- Moritz BOT 2:34 PM: [Trigger] MasterTime SRCid2 is missing. SRCid 2 was missing realoding gave an error that no CATCH is. [Show original comment](#)
- I.Konorov BOT 6:18 PM: [DAQ] DAQ crash. After provoked DAQ crash the GUI freezes for at least 5 minut. [Show original comment](#)
- Gavrishuk Oleg BOT 2:29 PM: [HCAL1] HCAL12 HV power is OFF. The HV power for both calorimeters was OFF due to Winter shudown. [Show original comment](#)
- V. Andrieux BOT 7:08 PM: [DC] Saclay DCs and DC05 partial winter mode. LV switched OFF. Air cooling switched OFF. VME/VXS still on for the moment. [Show original comment](#)

# DAQ Issues

- Many maintenance issues..
- Missing network in the tunnel for BMS pccofeXX
- Configuration of MUX11 on gallery : conflict by duplicated SrcIDs
- UDP monitoring: packet sizes changed from 8k to 1.5k. Caused MTV and COOOL freezing
- Safe DAQ stop was implemented
- Fixed GUI issues: dead time setting window, rights to changes GUI settings in monitoring mode, display sizes...
- .

# DAQ Issues

## DAQ

- DAQ crashed very often due to some equipment stopping delivery data. Problem pointed to TCS. Only DAQ MUX and Switch affected. Suspected **loss of light**, misbehavior of **TCS controller**, **Slow control**.  
Reason : DAQ MUX/Switch modules randomly lost TCS synchronization  
Real reason : bad LEMO cables between TCS controller and TCS encoder
- Observed loss of IPBus packets. Problem originated in configuration of Juniper Ethernet switch, packets conflicted with other ones. Network reconfigured to avoid conflicts

## Calorimeters

- LED calibration of HCAL1, HCAL2 was made working, wrong cable connections fixed, DCS displays calibration data. ECAL1 and ECAL2 still to be verified

# High Trigger and Data Rate Tests and others

- DAQ run stably with about 30kHz trigger rate and reduced event size
- Long term tests(over night) ended with DAQ crash after few completed 200 spill runs. Problem to be investigated.

Primary suspect for problem unbalanced data flow : MUX11 and MUX12 provide significantly more data than other detectors

- Final DAQ test with NOMINAL event size of 50kBytes was not done because of problems of adjusting threshold level
- Test of MWPC with F1 TDC and Test of new spill buffer cards with new Switch firmware were not done because of travel restrictions

# Plans for COMPASS DAQ in 2021

- Keep DAQ running
- Test of new spill buffers and switch firmware in end of February (**depends on travel restrictions!**)
- If run starts in July then all detector front-ends shall be switched on in end of May



# COMPASS++/AMBER DAQ Plan in 2021

## Current setup

- HLT server
- 2 pccore computers equipped with spill buffers
- TCS controller moved from DAQ room to 888
- Shared network with COMPASS

## DAQ components available:

- 9 MUX and Switches are available but not installed yet

## Next steps :

- Purchase missing computing and DAQ hardware, submit production of new DAQ hardware
- Complete prototype setup in March (**depends on travel restrictions !**)

# Items to be Ordered in January

## Urgent computing items:

|  |            |
|--|------------|
| 1x Gateway (either old pconl02 or low cost computer i5/32GB ...)   | 700 Euro   |
| 1x Webserver (either old pconl02 or low cost computer i5/32GB ...) | 700 Euro   |
| 1x File Server /online (1x Amber Server V1 + 4x 16TB)              | 3700 Euro  |
| 1x Mysql Server (1xAmber Server V1 + 4x 16TB + 64GB RAM)           | 4000 Euro, |
| 2x 1Gb Ethernet Switch 24 ports for AMBER network                  | 1000 Euro. |

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**Computing Total :** ~10 (8.7) kEuro

## Urgent DAQ hardware items:

|  |                   |
|--|-------------------|
| 2x ATCA carrier card                               | 2000 Euro         |
| 4x ATCA AMC card for optical transceivers          | 4000 Euro         |
| ATCA mechanics, fiber cables, optical transceivers | 3500 Euro         |
| <b>DAQ hardware total:</b>                         | <b>10000 Euro</b> |

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**Grand total :** **20 (18.7) kEuro**