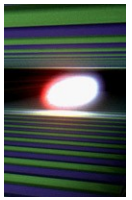
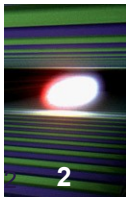


The AMTF cryo-module test software preparation status

W. Cichalewski, K. Gnidzinska, J. Branlard, A. Piotrowski

Agenda



- Motivation
- Identified components
- Software breakdown
- „Auxiliary” software components
- Components status
- Preparation status

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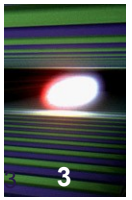
Motivation



- XFEL cavities parameters determination
- Verification of measured factors (eq. quench limit)
- Cavities subsystems performance characterization
- Module regulation performance measurement
- Data analysis towards module acceptance/rejection decisions making

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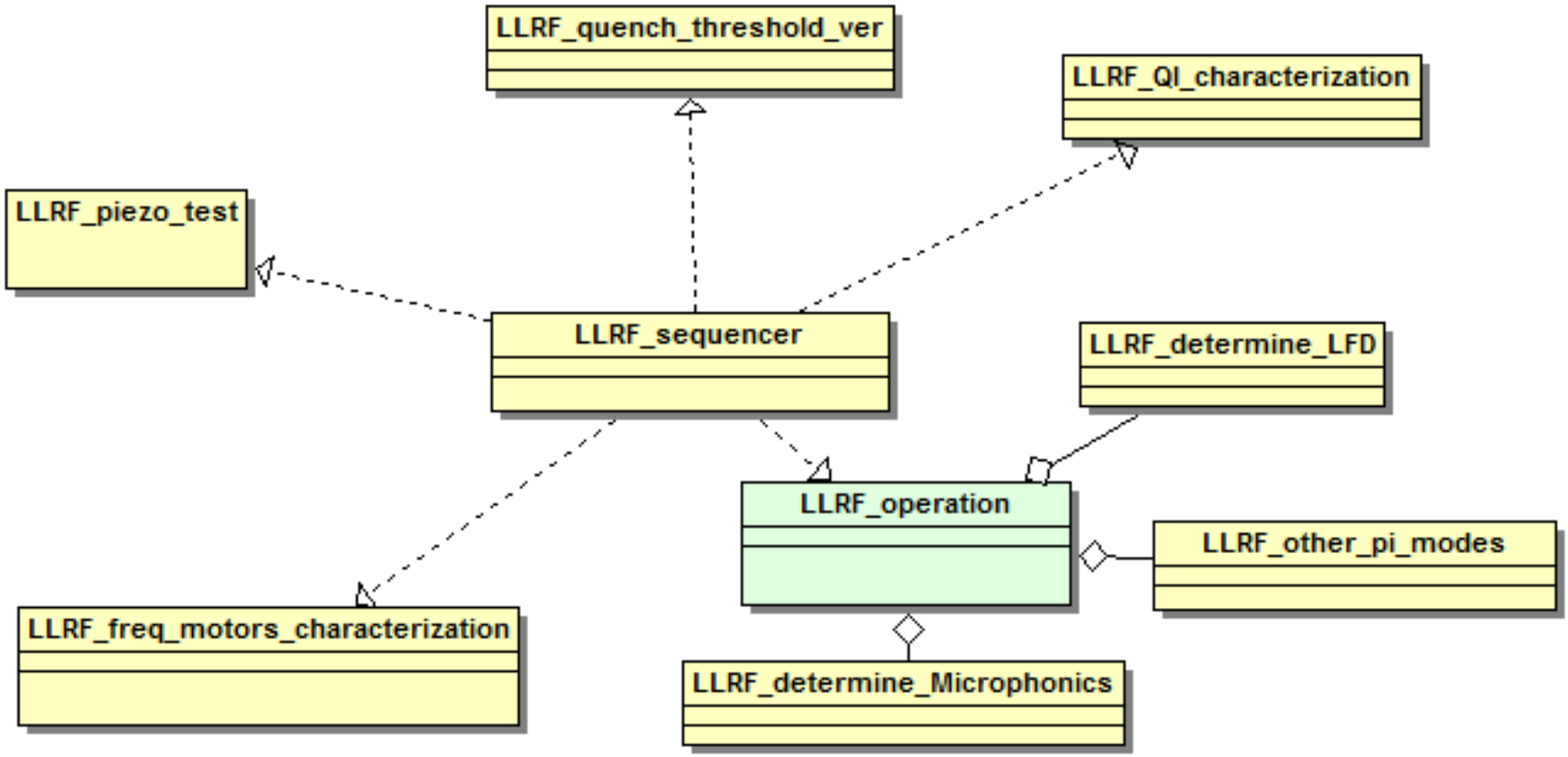
Identified components

DOOCS ML servers dedicated for test scenarios realization



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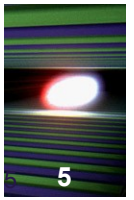
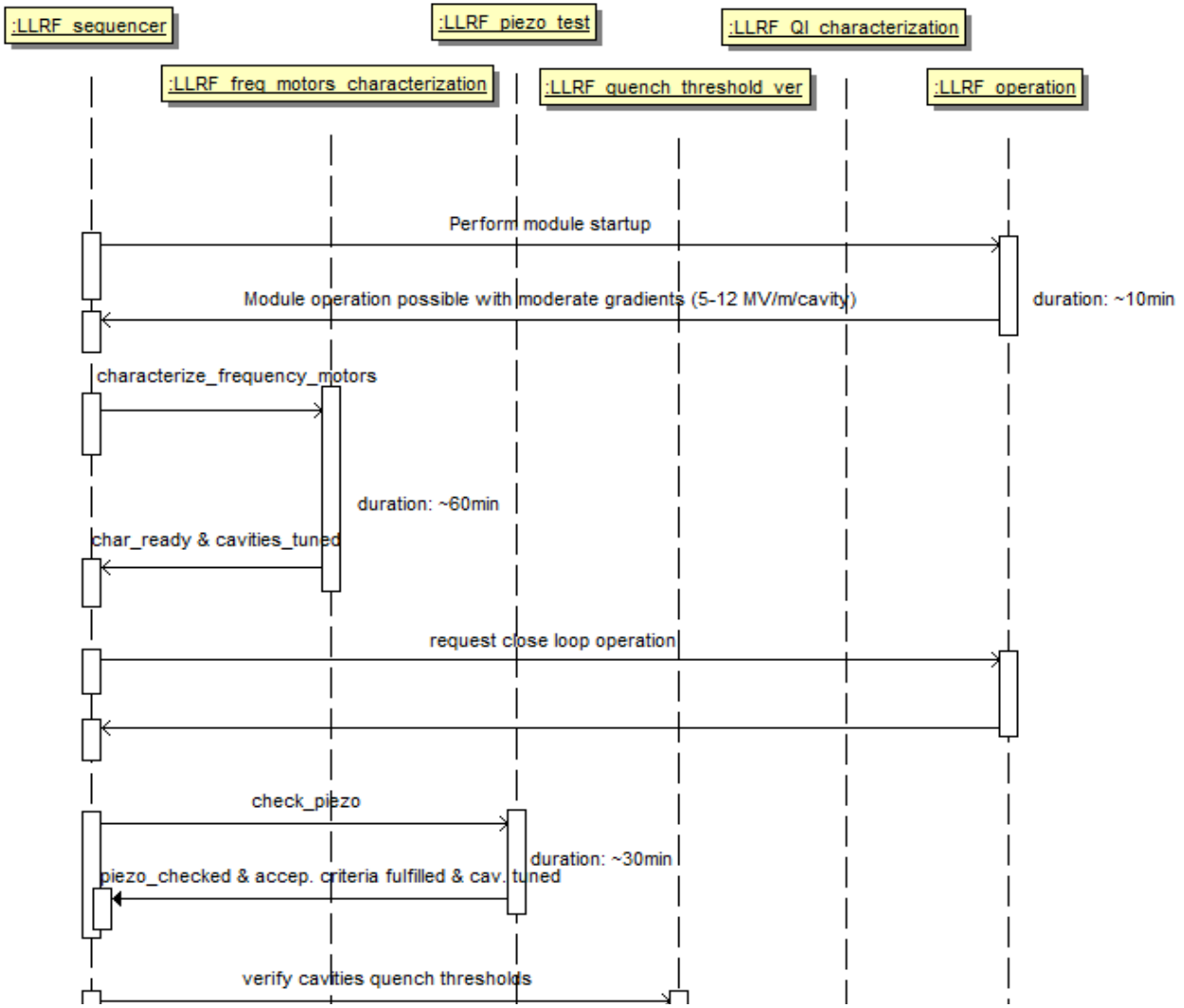
AMTF studies sequence diagram





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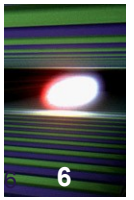
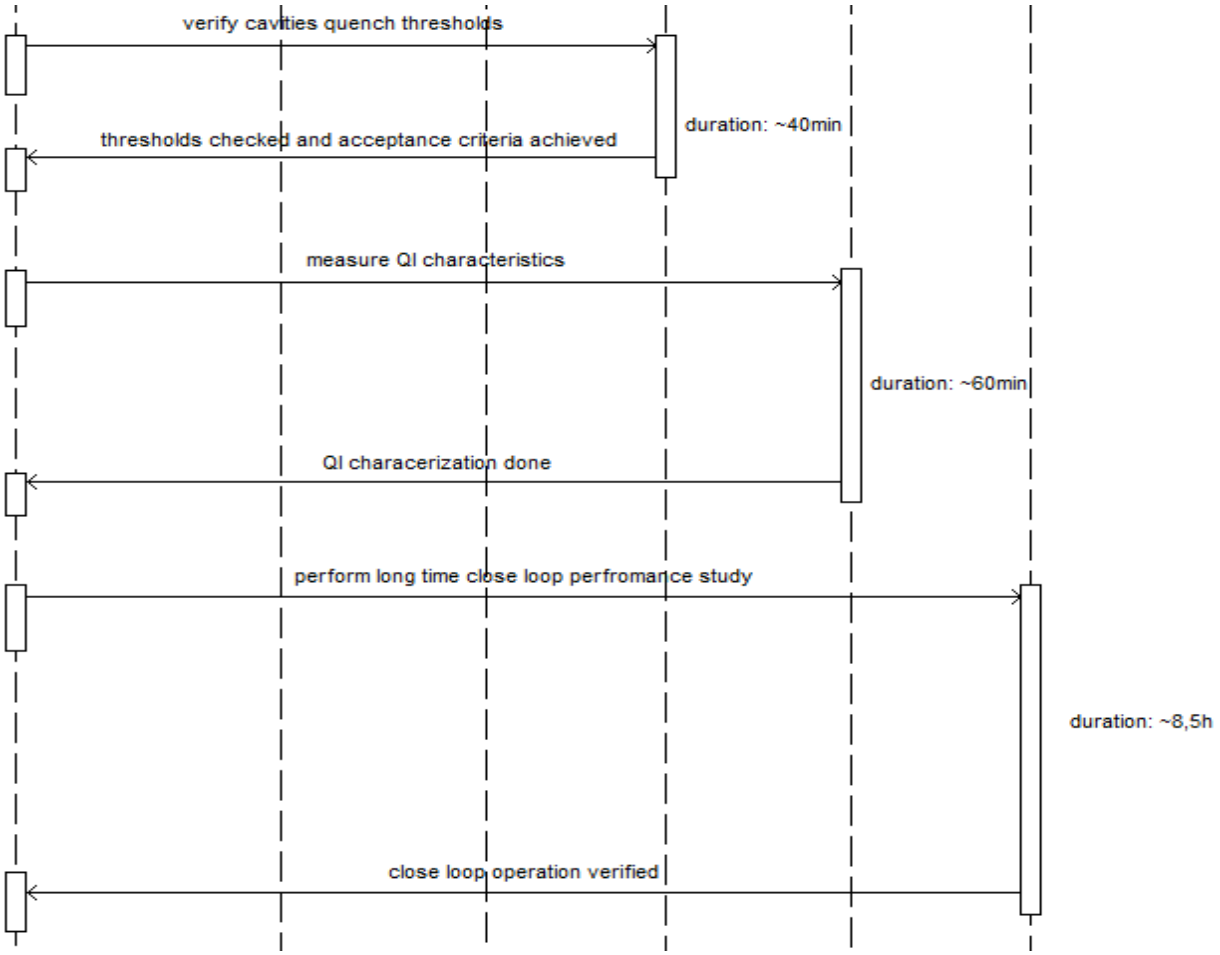
AMTF studies sequence diagram





Foreseen time period: ~12h/module

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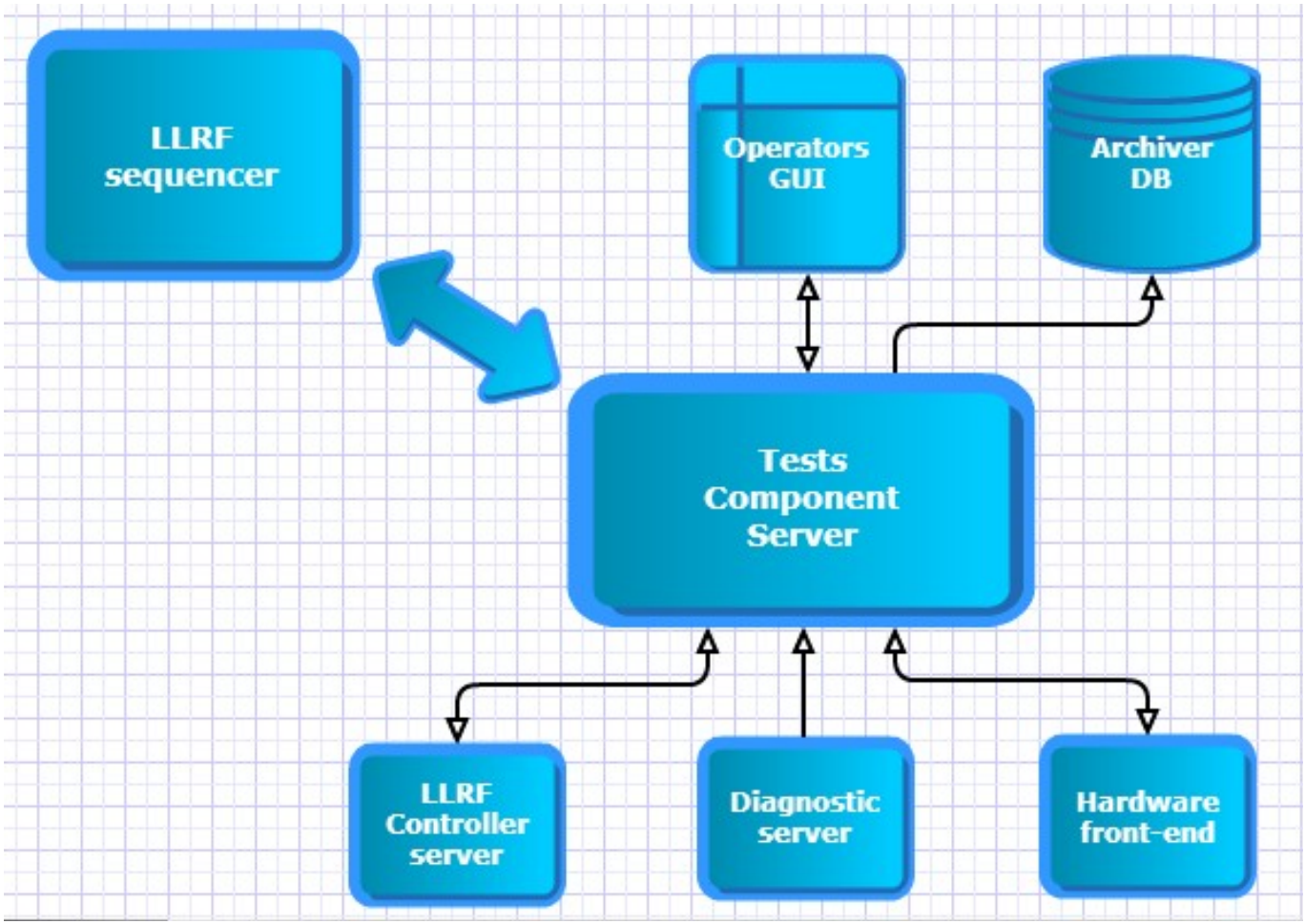
Component server interfaces



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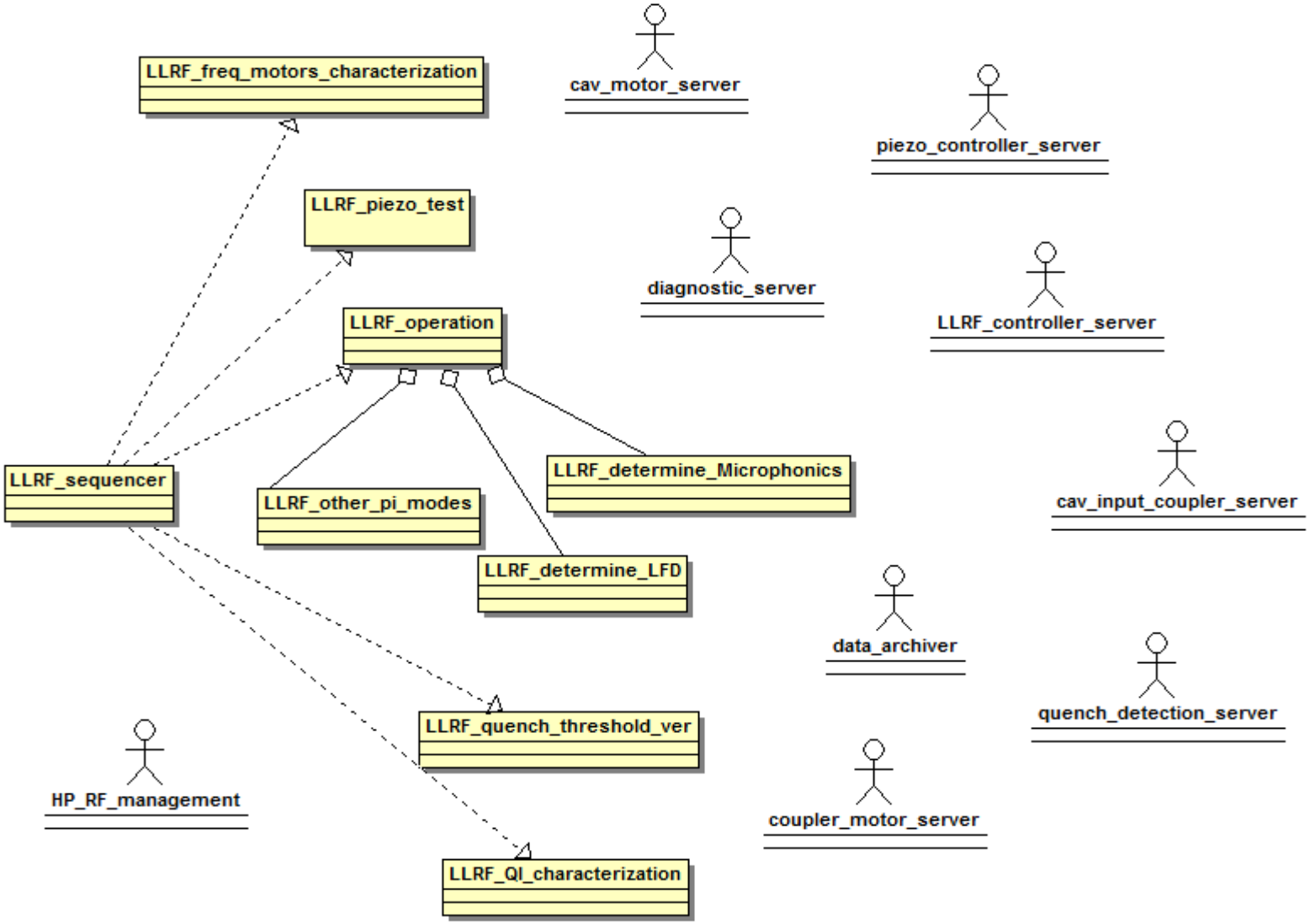
Important actors



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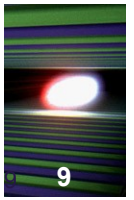
Additional software



Piezo relaxation	Piezo regulation range optimization. Automatic reduction of DC voltage by means of frequency motors position correction.
QI adjustement	Automatic cavity external quality factor adjustment. Slow feedback algorithm for fundamental coupler position regulation.
Quench detection	Server developed for regular operation for fast quench events detection by means of QI drops observation.
Archiver DB and data transfer	DOOCS server for DB data extraction, front-end servers parameters configuration and visualization

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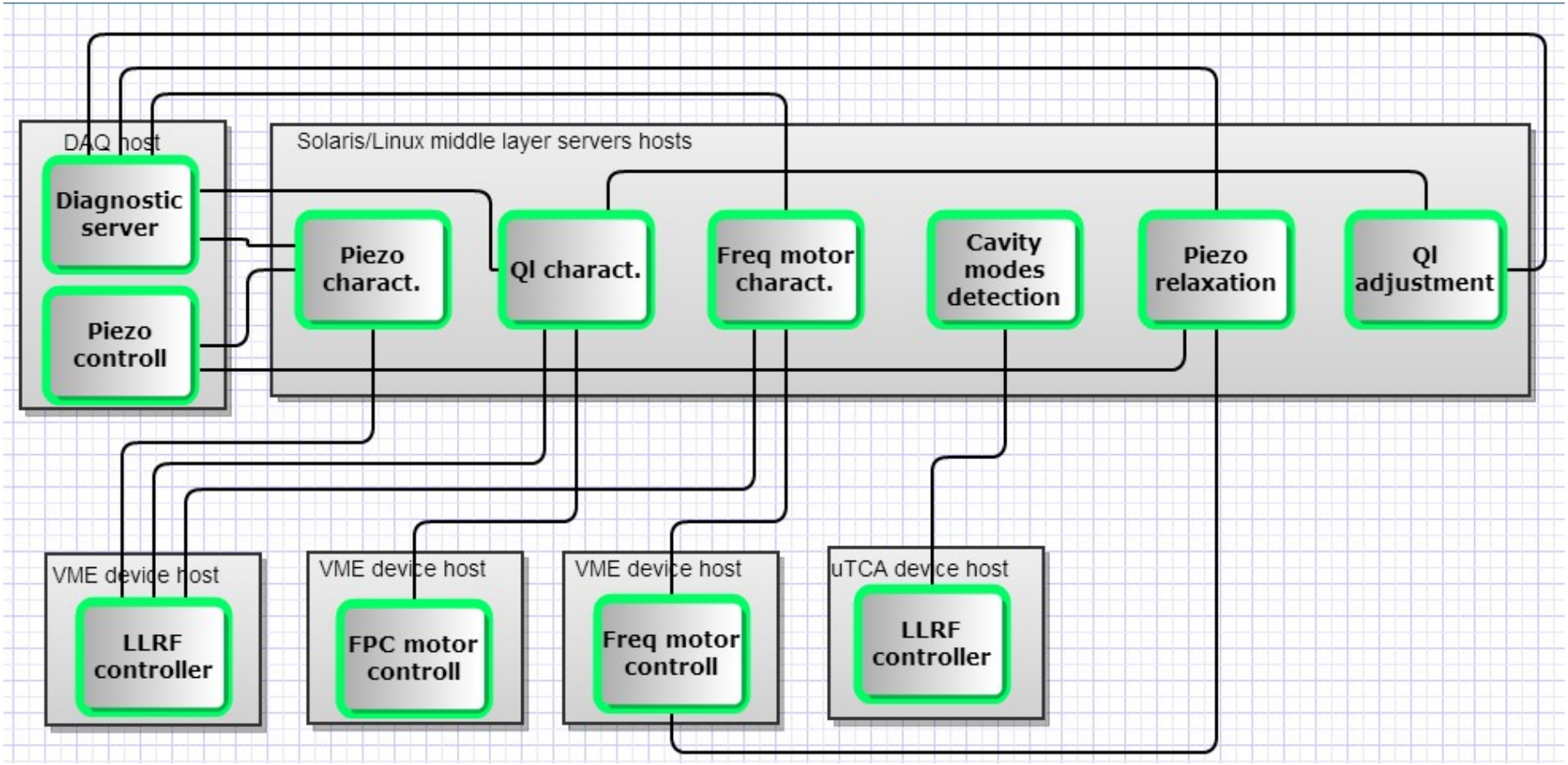
Current software deployment – FLASH/CMTB evaluation studies



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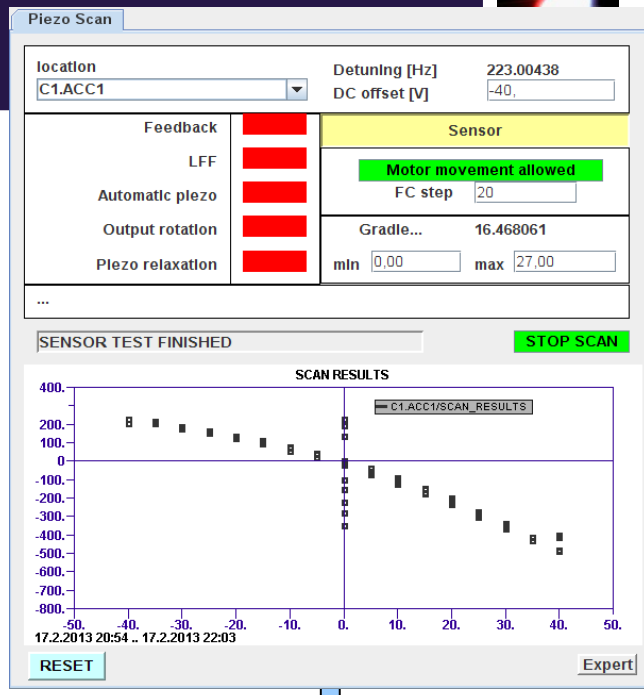
FLASH/CMTB evaluation studies

Software tests were conducted in CMTB and ACC67 @ FLASH.

Tested:

- QI characterization,
- Frequency motor characterization,
- Piezo DC scan.

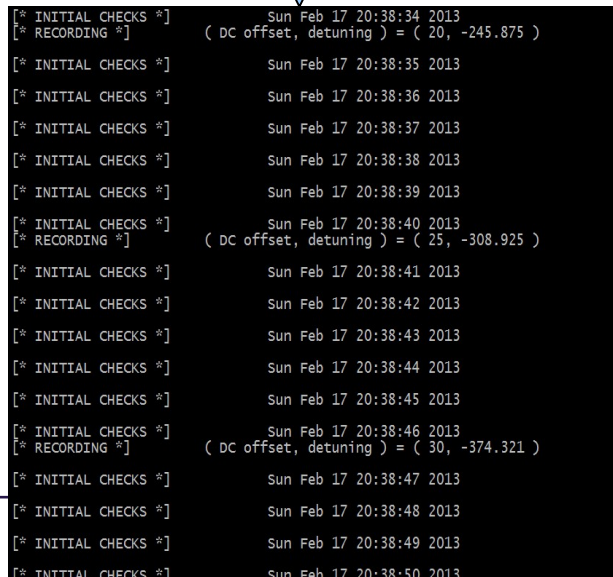


Outcome:

Software ready for module tests at CMTB and AMTF – stable hardware/firmware needed.

Test were useful not only for debugging but most of all for exception handling mechanisms design.

Still quality **suffers** from **lack of time** for studies



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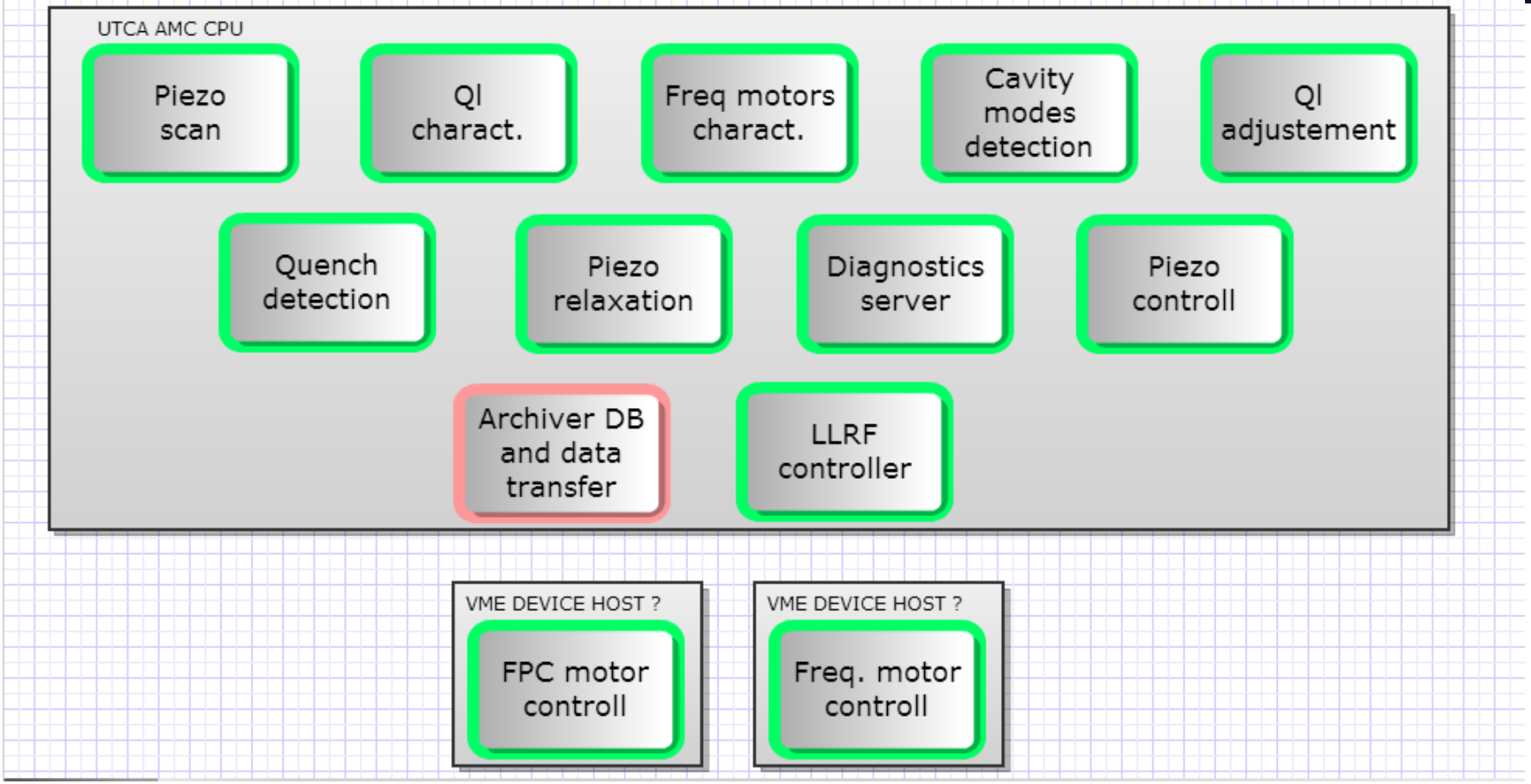
….but final software allocation?



Ql, detunig calculation - what's is going where?

Some time-line info concerning algorithm preparation ?

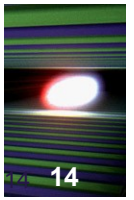
OMQ based solutions not widely implemented yet...

Summary & further activities

Summary:

- Piezo, freq. motors, QI scan – tests software prepared and tested @FLASH,
- Experience gained from *in-situ* software evaluation used for exception handling mechanism optimization,
- Auxiliary software prepared and evaluated (FLASH/CMTB),
- Important prerequisites for further activities:
  - (Flawless) hardware/firmware platform needed for system evaluation (CMTB/AMTF),
  - Module environment evaluation time (a lot of it!)

Summary & further activities



To doooooooooooooooo:

- Evaluation and integration of ArchiverDB solution and integration with existing infrastructure for long time data storage,
- Main sequencer preparation → operators team available, but main part can be automated,
- LLRF operation sequencer preparation – more detailed specification has to be worked out/updated,
- Hardware platform change VME<->UTCA,

THANK YOU

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