# Action follow-up: Latency in consolidated PM system

Status & Benchmarking tests

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#### Follow-up action from the MPP

workshop: "Define data volume and latency requirements for XPOC, IQC, and SPSQC use-cases within PM so that it can be used for operation and interlocking."

"J. Uythoven commented on the SPS quality check and the required interlocking. He stressed that it is crucial that the data is available when required, e.g., in case of an incident. Therefore, one needs a fundamental check, which doesn't require a complex analysis but makes sure that the data is properly stored. J.-C. Garnier answered that one has to distinguish between whether the data is correctly stored and whether the data is visible by the users. V. Kain emphasised that also for the operation of the machine it is important that the information is readily available. The required data includes the XPOC analysis for the new SPS beam dump system, but even without beam dump analysis, the quality check data is required for machine operation within a reasonably short time delay. It has, thus, to be avoided that the data is received only several cycles later, which would reduce its purpose and make the work impractical."

- Post Mortem architecture consolidation status update
- PM data flow & benchmarking tests
- PM storage for SPSQC (and eventual interlocking for SPS beam dump) use-case

See ass well LIU-SPS Coordination meetings:

- O <u>https://indico.cern.ch/event/888976/</u>
- O <u>https://indico.cern.ch/event/864835/</u>

#### PM in a nutshell – legacy architecture



#### Original PM architecture with NXCALS storage



- PM storage implementation using NXCALS pipeline is ready, but does not meet the IPOC/XPOC/SPSQC latency constraints
- Mitigated through the implementation of parallel storage Oracle database
  - o Milestones:
    - implemented database reading and writing for all PM entities DONE
    - PRO database for LHC needs is ready DONE
    - Benchmarking tests with the PRO database were performed DONE
    - For LHC XPOC, IQC LHC service will be used, separate database for SPSQC to be provided based on the final requirements (storage volume vs retention policy)

#### Updated PM architecture with new database storage



### PM data flow + benchmarking tests

#### Sending of the PM dumps

- Devices create PM dumps and send them to Data Collectors via RDA3

   responsibility of equipment groups
- PM dump is acknowledged by Data Collectors after the data are persisted in the database
- 3. Event collection window starts
- 4. Event building based on PM headers
- 5. Storage of event into to DB
- 6. Trigger with PM event info for analysis
- 7. Analysis reads PM raw data files



#### SPSQC event + benchmarking

- Number of dumps in typical SPSQC event:
  - o 2017: 16-20 data dumps
  - o 2018: 23-24 data dumps
- SPSQC data are published between cycle start and cycle end
- We do not have yet exact format and size of all SPSQC data for Run 3, but typical file sizes i the order of 100kB – 2 MB
- Benchmarking tests performed with different number of dumps and data sizes

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Event time stamp	System	Class	Source					
01/06/18 08:08:18.135+000000	PME	SPSQC	PM.BE-SPS					
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01/06/18 08:08:32.535+000000	PME	SPSQC	PM.BE-SPS					
01/06/18 08:08:38.535+000000	PME	SPSQC	PM.BE-SPS					
01/06/18 08:08:42.135+000000	PME	SPSQC	PM.BE-SPS					
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	da	ta dumps						
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01/06/18 08:08:43.140+343062	5PS	OasisChannel	SR.SCOPE11.CH02					
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#### Writing time for PM data dumps



Writing 10 entries (in parallel)





Writing 30 entries (in parallel)



11

#### Reading time for PM raw data values



Reading 10 entries





#### Database reading & writing time

• Overall latencies imposed by database reading & writing for 'typical' event:

Component	Step	Example for 1 MB dumps	
Devices	Writing 30 data dumps	470 ms	
Event builder	Writing event info	118 ms	
Analysis modules	Reading event info	42 ms	
	Reading 30 data dumps	674 ms	
	Writing 8 analysis results	200 ms	
		*1504 ms	

• \*not included: PM dump generation, event building, analysis time, network delays, other factors...

- Total time to produce analysis results can only be measured with final SW stack in place
  - Delay for raw data sending by clients + analysis to be carefully considered
  - Pre-LS2 events showed PM dumps with send time difference of ~4 seconds
  - Tests with final SPSQC data dumps needs to be performed
- DB reading and writing speed depends (strongly) on the number and size of data dumps (recommend not to exceed 1-2 MB per dump file)
- Clearly defined use-cases SPSQC = Performance and anlysis != XPOC for SPSBD. Separate analysis processes!
- PM Event builder is waiting specified time window until the data dumps arrive
  - Dedicated SPSQC event builder as for IQC, XPOC
- Optimize reading of data dumps by analysis modules
  - Read multiple raw data values much more efficient than 1 by 1

- Proposal for SPSQC low-latency pipeline
  - Separate database
  - Separate data collectors
  - Periodical cleaning of the stored data
    - for example 50TB database is estimated by IT at 80kCHF initial cost (+HW renewal every 4-5 years), BC required from BE-OP
  - Analysis framework needs to be adapted & tested by BE-CO and BE-OP

no impact on LHC service

- Performance of low-latency pipeline for PM confirmed to meet XPOC/IQC requirements and implementation being finalized
- Latencies of data sending by clients and analysis process largely exceed the latency for data persistence and need to be carefully considered for each use-case
- Provision and correctness of (critical) data is responsibility of client, event builders or dedicated analysis module can be used to confirm presence of file for each event

- If anybody wants to try out the new system please take a look: <u>http://docs.pm.cern.ch/pm-docs/</u>
- In case of any questions do not hesitate to contact te-dep-mpe-ms@cern.ch

## Thank you

Any questions?

## Backup slides

#### PM consolidation status summary

Client API

Storage

Headers Publisher

Data Migration

Ì	NxCALS	Ready	
	Oracle DB for LHC	Ready	
	Oracle DB for SPSQC	To be provided based on final requirements	
	Data collector	Ready	
	Event builder	Ready for NxCALS, under development for DB	
	Java Client	Ready for NxCALS, under development for DB	
	C++ Client	Ready	
	REST API	Ready for NxCALS, under development for DB	
	Kafka (NxCALS)	Ready	
	RDA server (DB)	Ready	
	Offline	Ready	
	Online	Ready	
	Visualisation tools	Need to be adapted to the new storage	

20

#### Analysis session time

SPS Analysis Data Browser         SPS Event Data Browser         SP           Image: Construct State	F	PM Data Collection and S	storage Toolkit							
Image: Control of the session info data for Fri 1 Jun 2018           Started at         Started by         Confirmed by         Analyzed event         Event stamp           23:59:50 31/05/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:01:35:50:50:50:50:00000           0:00:001 01/06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:01:43:55:000000           0:00:022 01/06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:02:37:73:5-000000           0:00:023 01/06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:24:13:5-000000           0:00:024 01/06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:24:13:5-000000           0:00:120 10:06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:24:13:5-000000           0:01:10:10:06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:24:13:5-000000           0:01:10:10:06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:34:35+000000           0:01:10:10:06/2018         PMSFSQC-ONLINE-PRO         PMSFSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:34:35+000000	SPS Analysis Data Brows	er 💥 🛛 SPS Event Data B	rowser 💥							
Started at         Started by         Confirmed by         Analyzed event         Event stamp           23:59:50 31/05/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO </th <th colspan="8">Loaded session info data for Fri 1 Jun 2018</th>	Loaded session info data for Fri 1 Jun 2018									
33:59:03 31/05/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:1.335+000000       F         00:00:01 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:0.1.335+000000         00:00:22 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:2.4.35+000000         00:00:22 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:2.4.7.35+000000         00:00:22 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:2.4.7.35+000000         00:00:24 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:01:3.7.35+000000         00:01:01 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:01:3.33+000000         00:01:01 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.7.33+000000         00:01:01 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.7.33+000000         00:01:01 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.33+000000         00:01:12 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSSQC	Started at	Started by	Confirmed by	Analyzed event	Event stamp					
0:00:00:01:01:06:2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:01:335+000000 00:00:02:2012622018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:27.335+000000 00:00:27.0126/2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:27.335+000000 00:00:27.0126/2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:27.335+000000 00:00:27.0126/2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:27.335+000000 00:00:10.0126/2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:335+000000 00:00:10.0126/2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:00:335+000000 00:01:01.0126/2018 PMSPSQC:ONLINE-PR0 PMSPSQC:ONLINE-PR0 SPSQC 0106/18 00:01:335+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:01:00:27.035+000000 00:01:00:01:00:01:01:00:01:01:35+000000 00:01:00:01:00:01:00:01:00:01:00:01:00:01:00:01:00:01:00:00	23:59:50 31/05/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	31/05/18 23:59:50.535+000000					
0:0:0:0:40 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO         0:0:0:27 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO         0:0:0:27 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SFSQC       01/06/18 0:0:0:24.135+000000         0:0:0:42 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SFSQC       01/06/18 0:0:0:24.135+000000         0:0:0:1:0 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SFSQC       01/06/18 0:0:0:04.21.35+000000         0:0:0:1:0 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SFSQC       01/06/18 0:0:0:0.4:335+000000         0:0:0:1:1 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SFSQC       01/06/18 0:0:0:1:3.35+000000         0:0:0:1:2 01/06/2018       PMSPSQC-ONLINE-PRO       SFSQC       01/06/18 0:0:0:1:3.35+000000       0:0:0:1:3.0:1:0:1:0:1:0:1:0:1:0:1:0:1:0:1:0:1:0:1	00:00:01 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:00:01.335+000000					
00:00:24 01:06/2018         PMSPSQC-ONLINE-PRO         PMSPSQ	00:00:04 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:00:04.935+000000					
0:00:27 01:06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:27.735+000000         0:00:23 01:06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:24.735+000000         0:00:01:20 10:06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:24.135+000000         0:01:01:01:06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:21.35+000000         0:01:01:01:06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:40:355+000000         0:01:01:01:06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:40:355+000000         0:01:13:01:06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:40:355+000000         0:01:13:01:06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-0NLINE-PRO       SPSQC       01/06/18 00:01:35:535+000000         0:01:12:01:06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-0NLINE-PRO       SPSQC       01/06/18 00:01:32:035+000000         0:01:12:01:06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-0NLINE-PRO       SPSQC       01/06/18 00:01:22:035+000000         0:01:12:01:06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-0NLINE-PRO       SPSQC       01/06/18 00:01:22:035+000000         0:01:12:01:06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:22:035+000000       00:0	00:00:24 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:00:24.135+000000					
0:00:38 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:00:38.53+00000           0:00:01:01 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:01.335+00000           0:01:01 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:01.335+00000           0:01:10 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:01.335+000000           0:01:13 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:31.535+000000           0:01:13 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:38.535+000000           0:01:142 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:38.535+000000           0:01:15 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:56.535+000000           0:01:15 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:56.535+000000           0:01:15 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:56.535+000000           0:01:15 01/06/18         Confirmed by: <t< th=""><th>00:00:27 01/06/2018</th><th>PMSPSOC-ONLINE-PRO</th><th>PMSPSOC-ONLINE-PRO</th><th>SPSOC</th><th>01/06/18 00:00:27.735+000000</th></t<>	00:00:27 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:00:27.735+000000					
0:00:0:42 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:00:42:135+00000         0:0:0:1:0 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:01:335+000000         0:0:1:1:0 10/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:01:335+000000         0:0:1:1:0 10/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:19.335+000000         0:0:1:1:0 10/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:19.335+000000         0:0:1:3:8 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42:135+000000         0:0:1:3:8 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42:135+000000         0:0:1:5:2 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42:135+000000         0:0:0:1:5:2 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42:135+000000         0:0:0:1:5:2 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42:135+000000         0:0:0:1:5:2 01/06/18       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42:135+000000       <	00:00:38 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:00:38.535+000000					
0:01:01 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:01.335+000000         0:01:15 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.735+000000         0:01:15 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.735+000000         0:01:13 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:13.335+000000         0:01:13 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:142.135+000000         0:01:142 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:142.135+000000         0:01:156 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:52.935+000000         0:01:156 01/06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:52.935+000000       PMSPSQC-ONLINE-PRO         Started by:       Confirmed by:       Analyzed event:	00:00:42 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:00:42.135+000000					
Color:04 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15:735+000000         Oo:01:15 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15:735+000000         Oo:01:19 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15:735+000000         Oo:01:38 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:13:835+000000         Oo:01:32 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:13:8:535+000000         Oo:01:52 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:52:393+000000         O:0:01:56 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:56:335+000000         Started by:       Confirmed by:       Analyzed event:       **         Selected session         Session ID       : PMSPSQC-0NLINE-PRO       20180601000024151_892f66a7-b2a1-4359-a159-d5a3abcac55d         Started at: : ::::::::::::::::::::::::::::::::	00:01:01 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:01.335+000000					
0:01:15 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.735+000000         0:01:18 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.735+000000         0:01:18 01/06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:15.735+000000         0:01:142 01/06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42.135+000000         0:01:152 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:42.135+000000         0:01:152 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:52.35+000000         0:0:01:55 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:55.53+000000         0:0:01:55 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:55.53+000000         Started by:       Confirmed by:       Analyzed event:	00:01:04 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:04.935+000000					
10:01:19 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:19.335+000000         00:01:38 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:36.35+000000         00:01:32 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:36.35+000000         00:01:52 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:52.335+000000         00:01:52 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:56.335+000000         00:01:52 01/06/2018       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:56.335+000000       •         Started by:       Confirmed by:       Analyzed event:         Selected session         User comments         Started from : cs-ccr-pm3.cern.ch         Confirmed by : PMSP	00:01:15 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:15.735+000000					
D0:01:38 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:38.535+000000           00:01:32 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:32.335+000000           00:01:32 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:32.335+000000           00:01:35 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:32.335+000000           00:01:52 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:52.535+000000           Started by:         Confirmed by:         Analyzed event:	00:01:19 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:19.335+000000					
D0:01:42 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:42.135+000000           00:01:52 01/06/2018         PMSPSQC-ONLINE-PRO         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:52.935+000000           00:01:56 01/06/2018         PMSPSQC-ONLINE-PRO         SPSQC         01/06/18 00:01:52.935+000000         •           Started by:         Confirmed by:         Analyzed event:           Selected session           User comments           Analysis results         Session info           Session info           Started by:         PMSPSQC-0NLINE-PRO           Started from:         cscc: rpm3.cern.ch           Started from:         cscc: rpm3.cern.ch           Started from:         cscc: rpm3.cern.ch           Started at::::::::::::::::::::::::::::::::::::	00:01:38 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:38.535+000000					
C0:01:52 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:52.935+000000         C0:01:55 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:55.335+000000         Started by:       Confirmed by:       Analyzed event:         **       Selected session         User comments         Started by:       PMSPSQC-ONLINE-PRO         Session ID       : PMSPSQC-ONLINE-PRO         Session ID       : PMSPSQC-ONLINE-PRO         Setted by:       : PMSPSQC-ONLINE-PRO         Setted by:       : PMSPSQC-ONLINE-PRO         Setted by:       : PMSPSQC-ONLINE-PRO         Setted by:       : PMSPSQC-ONLINE-PRO         Setted form:       : Corc-pm3.cern.ch         Started at:       : 00:00:30.927 01/06/18         Analysis ine:       0.0 sec         Analysis ine:       : 0.0 sec         Analysed on:       : PMSPSQC-0NLINE-PRO         Confirmed by:       : PMSPSQC-	00:01:42 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:42.135+000000					
00:01:56 01/06/2018       PMSPSQC-ONLINE-PRO       PMSPSQC-ONLINE-PRO       SPSQC       01/06/18 00:01:56.535+000000         Started by:       Confirmed by:       Analyzed event:         **       Selected session         User comments         Analysis results       Session info         Session ID       : PMSPSQC-ONLINE-PRO_201806601000024151_892f66a7-b2a1-4359-a159-d5a3abcac55d         Started by       : PMSPSQC-ONLINE-PRO_201806601000024151_892f66a7-b2a1-4359-a159-d5a3abcac55d         Started from       : cs-ccr-pm3.cern.ch         Started at       : 00:00:24.151 01/06/18         Analysis time : 0.0 sec       Analysis time : 0.0 sec         Analysed on       : PMSPSQC-0NLINE-PRO         Confirmed by       : SPSQC         Event 1D       : 1527804024135000000_bf5714d8-61aa-4072-b50e-394e7a88e983         Event t1D       : 1527804024135000000_bf5714d8	00:01:52 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:52 935+000000					
Started by:       Confirmed by:       Analyzed event:         Selected session       User comments         Analysis results       Session Info         Session ID       : PMSPSQC-ONLINE-PR0_20180601000024151_892f66a7-b2a1-4359-a159-d5a3abcac55d         Started by:       : PMSPSQC-ONLINE-PR0_20180601000024151_892f66a7-b2a1-4359-a159-d5a3abcac55d         Started from:       cs-cc-rpm3.cern.ch         Started at:       : 00:00:24.151 01/06/18         Analysis ime:       0.0 sec         Analysis ime:       0.0 sec         Analysed on:       : PMSPSQC-0NLINE-PR0_2067deba-bb69-43e3-82e1-bedcc76423df         Confirmed by:       : PMSPSQC-0NLINE-PR0_2067deba-bb69-43e3-82e1-bedcc76423df         Confirmed by:       : PMSPSQC-0NLINE-PR0         Confirmed by:       : SPSQC         Event ID:       : 1527804024135000000_bf5714d8-61aa-4072-b50e-394e7a88e983         Event class:       : SPSQC         Event stamp:       : 01/06/18         Overall result:       NOT 0K         Classification:       N/A	00:01:56 01/06/2018	PMSPSOC-ONLINE-PRO	PMSPSOC-ONLINE-PRO	SPSOC	01/06/18 00:01:56.535+000000					
Analysis results         Session info           Session ID         : PMSPSQC-ONLINE-PR0_201806601000024151_892f66a7-b2a1-4359-a159-d5a3abcac55d           Started by         : PMSPSQC-ONLINE-PR0           Started from         : cs-ccr-pm3.cern.ch           Started at         : 00:00:24.151 01/06/18           Analysis time         : 0.0 sec           Analysis time         : 0.0 sec           Confirmed by         : PMSPSQC-0NLINE-PR0_20e7deba-bb69-43e3-82e1-bedcc76423df           Confirmed by         : PMSPSQC-0NLINE-PR0_20e7deba-bb69-43e3-82e1-bedcc76423df           Confirmed by         : PMSPSQC-0NLINE-PR0           Confirmed by         : PMSPSQC-0NLINE-PR0           Confirmed by         : SPSPSQC           Event ID         : 1527804024135000000_bf5714d8-61aa-4072-b50e-394e7a88e983           Event tSa         : SPSQC           Event type         : SPSQC           Event type         : SPSQC           Event type         : SPSQC           Event traump         : 01/06/18 00:00:24.135+000000           Overall result : NOT 0K         Classification : N/A	**	Selected session User comments								

#### New PM architecture - with NxCALS

