# GLOBAL RUN PARAMETERS

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- GRP stands for Global Run Parameters.

- With this virtual detector we are monitoring the parameters that are not detector but rather ALICE related.

- The main motivation was to fill the different metadata fields on both the file catalogue and the event tags:

  - For example, the file catalogue structure is:

    - for 'real' data: /data/<Year>/<AcceleratorPeriod>/<RunNumber>/

    - for simulated data: /sim/<Year>/<ProductionType>/<RunNumber>/

- Apart from the file catalogue and the tags, it would be good to store some global variables which are not directly related to the detectors, yet are important for everybody.

GRP :: **G**lobal **R**un **P**arameters

ECS

DAQ

DCS

HLT

SHUTTLE

GRP | ITS | TPC | TRD | TOF | ....

OCDB
File catalog
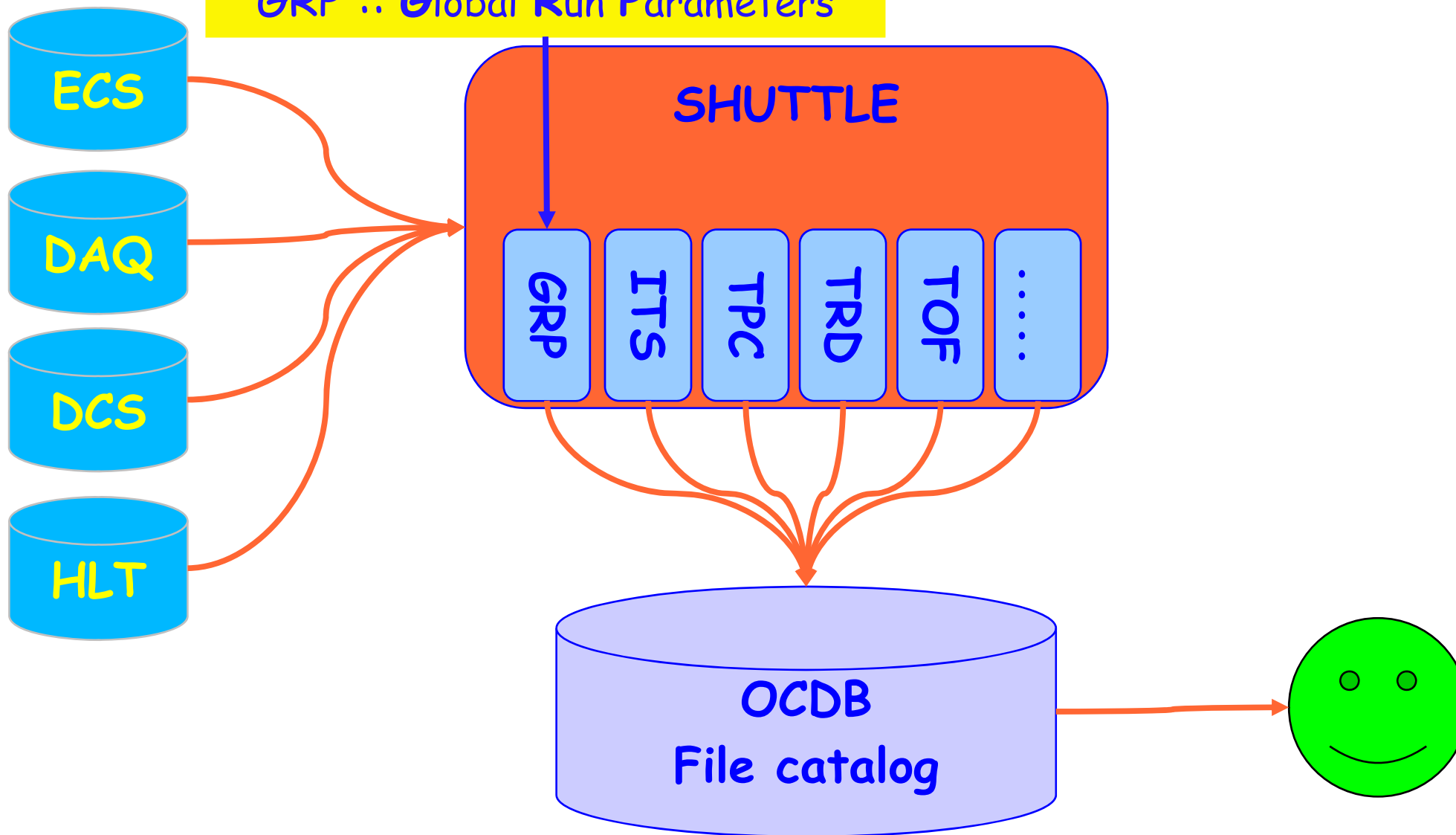
Offline alias	Source	Type	Comment
fRunStartTime	DAQ (lb)	TString (date)	The start time of the run
fRunStopTime	DAQ (lb)	TString (date)	The stop time of the run
fBeamEnergy	DAQ (lb)	Float_t	The beam energy in TeV
fBeamType	DAQ (lb)	TString	The beam type ("p+p" - "Pb+Pb",...)
fNumberOfDetectors	ECS-DAQ (lb)	Short_t	The number of active detectors per run
fDetectorMask	ECS-DAQ (lb)	Short_t	The detector mask per run
fLHCPeriod	ECS-DAQ (lb)	TString	e.g. LHC08a etc

Offline alias	Source	Type	Comment
fLHCState	DCS	TString	State of the machine
fLHCLuminosity	DCS	Float_t	Relative luminosity between bunches
fL3Current	DCS	Float_t	The current measured in the L3 magnet
fDipoleCurrent	DCS	Float_t	The current measured for the dipole magnet
fL3Polarity	DCS	Bool_t	The polarity of the L3 magnet (+ : kTRUE)
fDipolePolarity	DCS	Bool_t	The polarity of the dipole magnet
fBeamIntensity	DCS	Float_t	The total intensity of the beam
fCavernTemperature	DCS	Float_t	The temperature of the cavern
fCavernAtmosPressure	DCS	Float_t	The atmospheric pressure of the cavern

*** The last two parameters were requested by the TPC people but yet they don't come from some TPC probes.

	GRP	ACORDE	EMCAL	HMPD
Preprocessor				
DAQ DA				
DAQ FXS output files				
DCS DP names				
Preprocessor reads DPs				
DCS DA	O			O
DCS FXS output files	?			O
HLT DA	O			O
HLT FXS output files	O			O

	GRP
Preprocessor	
DAQ DA	
DAQ FXS output files	
DCS DP names	
Preprocessor reads DPs	
DCS DA	O
DCS FXS output files	?
HLT DA	O
HLT FXS output files	O

	T0	TOF	TPC	TRD	V0	ZDC
					O	
					O	
					O	
					O	
	O	O			O	O
	O	O			O	O

O = nothing to be done but OK   = OK, but dependency missing

- DAQ DA: Everything is ready from the DAQ side. The new "detector" was renamed from DAQ to GRP.
- DAQ FXS:
  - We will retrieve the tag files for the raw data (Cvetan)
    - Irina Makhliouva and Roberto Divia implemented this feature.
    - Everything is delivered and we are able to access and retrieve the files.
- DCS DPs: The aliases were sent to Peter - DCS implemented them in their random generator scheme.
- Reading of DPs: This step was validated.
- DCS FXS: We will retrieve the scalers monitored by CTP.
  - Status still not really clear (see next slides).

- Cross section calculation:
  - Counters are read by CTP and are published by DIM once per minute.
  - They will be published by DAQ as part of the EOR file and by DCS in their archive DB as a function of time.
  - The CTP will tag the scaler values with a time stamp:
    - Bunch crossing number
    - Orbit marker
    - LHC Period counter
  - The intention is to store them in ESDs and AODs (run level)
- Trigger configuration file:
  - Needed for offline reconstruction.
  - Several configurations will be pre-defined and available for CTP at the beginning of the run
  - ECS triggers the loading of the appropriate configuration

*** For further info see the talk of Roman Lietava @ previous Physics Board

- A dedicated task was registered in the task management tool assigned to Roman.
  - The finish date was initially set to the end of August.
  - This was changed in agreement between the offline and CTP to the end of December (I guess it can't go beyond that).
- The status is not really clear since it is also related on how CTP will handle the memory snapshots. Latest decision is:
  - "**The scalers will be registered by CTP in the FXS of DCS from where the GRP preprocessor will retrieve them**".
  - "**The configuration file will be retrieved from DAQ**".

- We would like to monitor also the:
  - Vertex diamond.
  - Luminosity calculated by ALICE (not the one sent by the machine).
- A new sub task was created and assigned to Tapan who is in charge of these measurements:
  - The vertex diamond will be calculated online using the SPD aliroot code.
  - The luminosity will also be calculated online.
- It is still unclear where the values will be retrieved from although the source is DCS:
  - The obvious candidate is DCS's AMANDA.
- A sub task was created and assigned to Tapan – we will hear from him soon.

- $ALICE_ROOT/GRP/Calib/MeanVertex
  - The vertex diamond
- $ALICE_ROOT/GRP/CTP/Trigger
  - The trigger descriptions for pp, muon and PbPb
- $ALICE_ROOT/GRP/Align/Data
  - The zero, full and residual misaligned objects.
- $ALICE_ROOT/GRP/Geometry/Data
  - The ideal geometry

- We are monitoring the Global Run Parameters using the GRP preprocessor in the SHUTTLE framework.
  - DAQ DA: DAQ renamed the "detector" from DAQ to GRP.
  - DAQ FXS: We are retrieving the raw data tag files (Irina - Roberto).
  - DCS DPs: A complete table with the offline and DCS proposed aliases was sent and it was accepted by both sides.
  - Reading of DPs: The reading of the proposed dps has been validated.
  - DCS FXS: Waiting for the scalers that CTP will register in the FXS.
- The updated GRP classes including the latest implementations (access to all DAQ lb info and DCS's dps) are in STEER. What is still missing is:
  - The trigger information (Roman)
  - The vertex diamond and the luminosity measurement (Tapan).

BACKUP

- LHCState: Describes the current position of the machine
  - Possible state values: "PREPARE" - "PREINJECTION" - "INJECTION" - "FILLING" - "RUMP" - "ADJUST" - "UNSTABLE BEAMS" - "STABLE BEAMS" - "BEAM DUMP" - "RECOVER" - "PRECYCLE"

- LHCPeriod: Gives a top level description of the status of the machine
  - Possible period values: "SHUTDOWN" - "CHECKOUT" - "PROTON RUN" - "ION RUN" - "HIGH BETA RUN".

- For the parameters the returned type of which is a TString DCS registers one value per run:
  -   Once the machine publishes a new value the run will be stopped.

- The LHC parameters that are going to be published are not fully defined!!!

- Counters are read 1/minute
- Counters can be interpolated between readings
- The counters of all trigger classes for given run can be saved on
  - event level (ESD): large redundancy $50 \times 6 \times N_{events}$
  - run level ☺
  - read OCDB during analysis: against rules

Word	[31..16]	[15]	[14]	[13..12]	[11..0]
1			Err	0	**Orbit** number [23..12]
2			Err	1,1	**Orbit** number [11..0]
3			0	**Int[2..1]**	**BC** number [11..0]
4			0	**Int[2..1]**	**BC** number [11..0]
...	*Don't care* (read 0)	**BlockID** = 1 (*Interaction Record*)	...	...	...
n			0	**Int[2..1]**	**BC** number [11..0]
...			...	...	...
251			0	**Int[2..1]**	**BC** number [11..0]
252			0	**Int[2..1]**	**BC** number [11..0]
253			0	1,1	*Incomplete record* (hFFF)

***Every ORBIT the list of interactions including BC is send via DDL to DAQ.**

- To be used for the reconstruction of pile-up in TPC
- For every ESD the list of interactions +/- 88 µs around it is added
- The Interaction record is extracted from EOR in the same way as counters

- used for trigger efficiency studies
- Sampled by reading CTP snapshot memories (SSM) SSM=1Mword of BC = 27msecs   SSM reading ~ 1.2 sec
- Content: L0 inputs, TrigMask before L0 vetoes, L0 vetoes, TrigMask after L0 Vetoes, L1 inputs, …
- Extracted from EOR as counters