

# Some news about some monitoring tools

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Virgo detchar meeting 26 sept 2014

- Channel Database (for information)
- Detector Monitoring System (for information)
- dataDisplay (for discussion)
- MonitoringWeb (for discussion)

# Channels Database

## Virgo Channels List



Search

Documentation




### Channel list

Current available channels : 1986

Search criteria

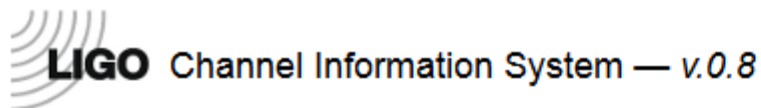
Channel Name: V1:INJ\_IMC\_RE\*

> EDIT

Channel	Number	Units	Rate	Mean	Min/Max	Slope	Bias
 V1:INJ_IMC_REFL_DC	641	Watt	20000	-0.354169	-0.934017/ 0.258005	1	0
Source							Type
							ADC
Channel	Number	Units	Rate	Mean	Min/Max	Slope	Bias
 V1:INJ_IMC_REFL_I	642	V	20000	-359.35	-373/ -347	-1.91242e-05	-0
Source							Type
							ADC
Channel	Number	Units	Rate	Mean	Min/Max	Slope	Bias
 V1:INJ_IMC_REFL_PD	643	V	20000	1505.9	1150/ 1843	-1.91583e-05	0.0249057
Source							Type
							ADC



# Channels Database



Home	I/Os	Subsystems	Channels	Tree
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## Channels

398831 channels found

Current Channels Only

I/O	Subsystem	Channel Name	Data Rate	Units	Acquire	Offset	Slope	Model	Modified
L1	IOP	<a href="#">L1:IOP-SEI B1 ADC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSEIB1	2013-08-19T16:00:07
L1	IOP	<a href="#">L1:IOP-SEI B1 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSEIB1	2013-08-19T16:00:07
L1	IOP	<a href="#">L1:IOP-SUS AUX H56 ADC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSUSAUXH56	2013-08-19T15:58:34
L1	IOP	<a href="#">L1:IOP-SUS AUX H56 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSUSAUXH56	2013-08-19T15:58:34
H1	IOP	<a href="#">H1:IOP-SEI H23 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	H1IOPSEIH23	2013-08-19T16:21:26
H1	IOP	<a href="#">H1:IOP-SEI H23 ADC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	H1IOPSEIH23	2013-08-19T16:21:26
L1	IOP	<a href="#">L1:IOP-SUS H56 ADC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSUSH56	2013-08-19T16:10:43
L1	IOP	<a href="#">L1:IOP-SUS H56 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSUSH56	2013-08-19T16:10:43
L1	PSL	<a href="#">L1:PSL-DBB CTRL0 ADD OUT DQ</a>	65536	V	0	0	3.0518e-4	L1PSLDBB	2013-08-19T16:08:05
L1	PSL	<a href="#">L1:PSL-DBB CTRL CTRL0 OUT DQ</a>	65536	V	0	0	3.0518e-4	L1PSLDBB	2013-08-19T16:08:05
L1	IOP	<a href="#">L1:IOP-SEI H45 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSEIH45	2013-08-19T16:00:07
L1	IOP	<a href="#">L1:IOP-SEI H45 ADC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPSEIH45	2013-08-19T16:00:07
L1	IOP	<a href="#">L1:IOP-OAF0 ADC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPOAF0	2013-08-19T15:56:50
L1	IOP	<a href="#">L1:IOP-OAF0 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	L1IOPOAF0	2013-08-19T15:56:50
H1	IOP	<a href="#">H1:IOP-PSL0 DAC DT OUT DQ</a>	65536	V	0	0	3.0518e-4	H1IOPPSL0	2013-08-19T16:15:29

# Channels Database

- We start a new development
- Keep in the requirements some of the previous structure and features
- Have a look at the CIS developed in LIGO
- Step 1: Write a document describing the database structure, the access tools, the links with hardware database, the organization of channels insertion (first draft already done)
- Step 2: Do a pre-review of channel names and have a channels database ready
- Step 3: Insert channels in the database
- Step 4: Do a review of the channels inserted
- Step 5: Have an automatic and periodic reading of raw data and trend data and insert automatically most of the information.
- Timeline is: step 1 in october 2014, step 2,3,4,5 before february 2015
- Gary's priority until ER6 is DQSEGDB

# Detector Monitoring System (DMS)

Detector Monitoring System SHELVED PAGE		v8r6		MUTE DMS [current status: NOT MUTED]		ITF STATUS		Step: -1		Last event ( 2011-11-09 09:16:58 LT ): Lock sequence reset	
UTC	Tue Sep 23 08:32:29 2014	Latency	2.12	Switch to UNSHELVED page Stop refresh Switch to internal view Contacts / HELP		Admin DMS flag list Alarm Log DMS / FLAG Log View XML files		Mode: 1173 h 32 mn		- AutoRelock: OFF - AutoScience: OFF - Horizon_NSNS AVG: 0.0	
GPS	1095496365	Frame No	29357								
Injection	IB_ID		IB_Vert		IB_LC		IB_RIOs				
	MC_ID		MC_Vert		MC_LC		MC_RIOs				
	Laser		LaserAmpli		LaserChiller		LaserChillerDiodes			Inj_RIOs *	
	MC_Power										
Environment	CB_Hall		MC_Hall		NE_Hall		WE_Hall		LaserLab		
	Env_hosts		External		Env_ADCs		EERoom				
Infrastructures	UPS_TB	UPS_MC *	UPS_NE	UPS_WE *	ACS_CB *	ACS_TB *	ACS_MC *	ACS_NE *	ACS_WE *	Generator	
Vacuum	LinkValves *	TowerServers	TubeServers	TurboPumps *	ScrollPumps *	TubePumps	Pressure	BackPressure *	1500N		

# Detector Monitoring System (DMS)

- Current DMS is based on
  - a set of Moni processes producing flags sent to trend data and to XML files (but flags contain information in their bits and are difficult to interpret for data analysis use)
  - php scripts reading the XML files and producing the DMS web page with some interesting features like alarms and plots of recent data (but use its own database instead of using the frame formatted data)
- A document will be written describing the XML format used by any process which wants to see its information included into the DMS web page
- Moni processes will produce only 0/1 flags (no bits coding) to be used also by data analysis
- Will include VirgoCAM information
- VPM will provide a XML page containing the status of all the processes it monitors
- We will investigate on the possibility to read trend data frames with php script.
- Main workers: F. Berni and D. Verkindt
- Discussions with: B. Swinkels and V. Dattilo
- No timeline for now (level of priority of this work is yet TBD)

# dataDisplay upgrade

The screenshot displays the 'Data Display v10r1' application window. The title bar reads 'Data\_Display\_v10r1' and the menu bar includes 'File', 'Edit', 'View', 'Options', 'Tools', and 'Help'. A status bar at the top indicates 'dataDisplay v10r1 ; started by verkindt on Sep 23 2014 08:28:20 UTC'. The main area contains two plots of data versus frequency (Hz) on a logarithmic scale. The left plot shows a signal with a peak around 10<sup>-3</sup> and a noise floor around 10<sup>-5</sup>. The right plot shows a similar signal with a peak around 10<sup>-1</sup> and a noise floor around 10<sup>-3</sup>. Both plots are labeled with '1095495310,00 ; Sep 23 2014 08:14:54 UTC dt:10,00s'. Below the plots is a control panel with a title bar 'Data\_Display\_v10r1 <@sl6test64.virgo.infn.it>'. The panel features a 'QUIT' button, 'Help Ballons', and a menu bar with 'Input', 'Config', 'Data/Plots', 'User Fct', 'Dump', 'Output', 'Options', 'Debug', 'Checks', 'Clean', 'Reset', and 'Help'. The 'Options' menu is currently selected. The control panel includes fields for 'StartGPS / duration' (1095495300.000 | -1), 'Start date (UTC)' (Tue Sep 23 08:14:44 2014), 'GPS / Size / latency' (1095495320.00000 | 0.0 kB), and 'Current date (UTC)' (Tue Sep 23 08:15:04 2014). There are buttons for 'Start', 'Pause', 'Continue', 'Next Refresh', 'Next Frame', and 'Stop'. A status bar at the bottom of the control panel reads 'Using one file: /virgoData/fll/raw.fll' and 'STATUS\_23\_Sep\_2014\_10:28:25 : Stopped. Config saved in file dd.car'. A small window titled 'gDDCanvas\_2' is visible in the bottom left corner, showing 'Flag' and 'STATUS\_2'.

# dataDisplay upgrade

- A new version (v10r1) that uses ROOT v5r34p5 is working under SL6 64 bits
- This new version has for now only FFT plots
- Several internal changes made (use of Xform, channels management, use of Frv, central engine no more based on Siesta and on frame format...)
- For now, no beautiful text, no detection of missing channels, no operations on channels, no superposition of plots...
- New features (like computing brms values or doing glitchgrams or getting information from channel DB) will be added only once old features are back.



# dataDisplay upgrade

- Remark1: previous version v9r12p13 using ROOT v5r34p5 compiles under SL6 and runs correctly when doing plot 1D, but crashes for plots FFT or TIME, when function Paint() is called. Origin of the problem not found.
- Remark2: previous version v9r12p13 runs fine under SL6 when using ROOT v5r26p0
- New version v10r1 and old version v9r12p13 to be tested with latest version of ROOT (v5r34p5 is quite old now) under SL6 and SL5. This may provide hints...
- A review of dataDisplay current state and of the features requested will be welcome
- Aim is to release Dy v10r1 within one month  
(but not yet with all the features that were available in previous version)

# MonitoringWeb

- [MonitoringWeb](#)
[Logbook](#)
[General](#)
[NoiseBudget](#)
[Spectro](#)
[Reconstruct](#)
[Inspirals](#)
[Bursts](#)
[Pulsars](#)
[Noise](#)
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## Sept 2014

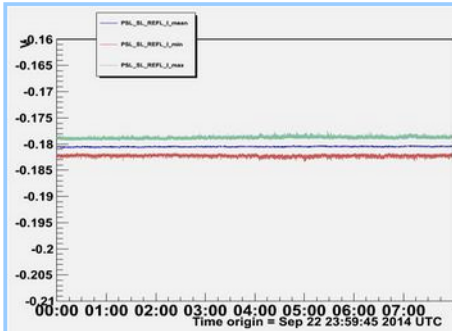
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## October 2014

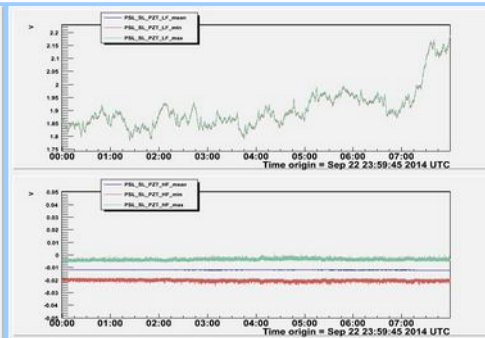
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## Laser and input mode cleaner

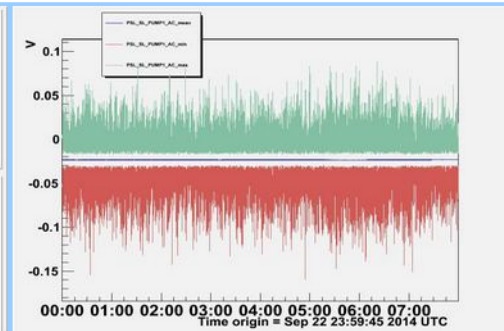
[Last 7 days](#)
[Last day](#)
[Last hour](#)
[Short archive](#)



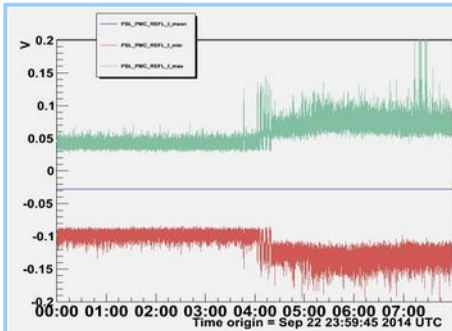
Pound-Drever-Hall error signal of the Slave Laser



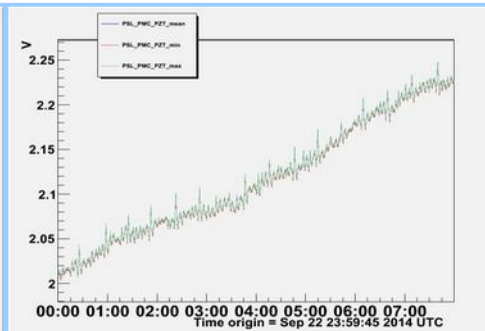
Correction sent to the slow piezo and to the fast piezo



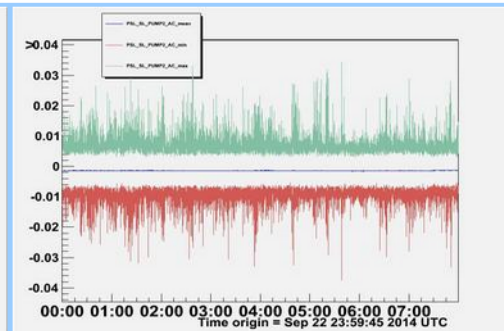
AC signal of the photodiode monitoring slave pump1



Pound-Drever-Hall error signal of the PMC

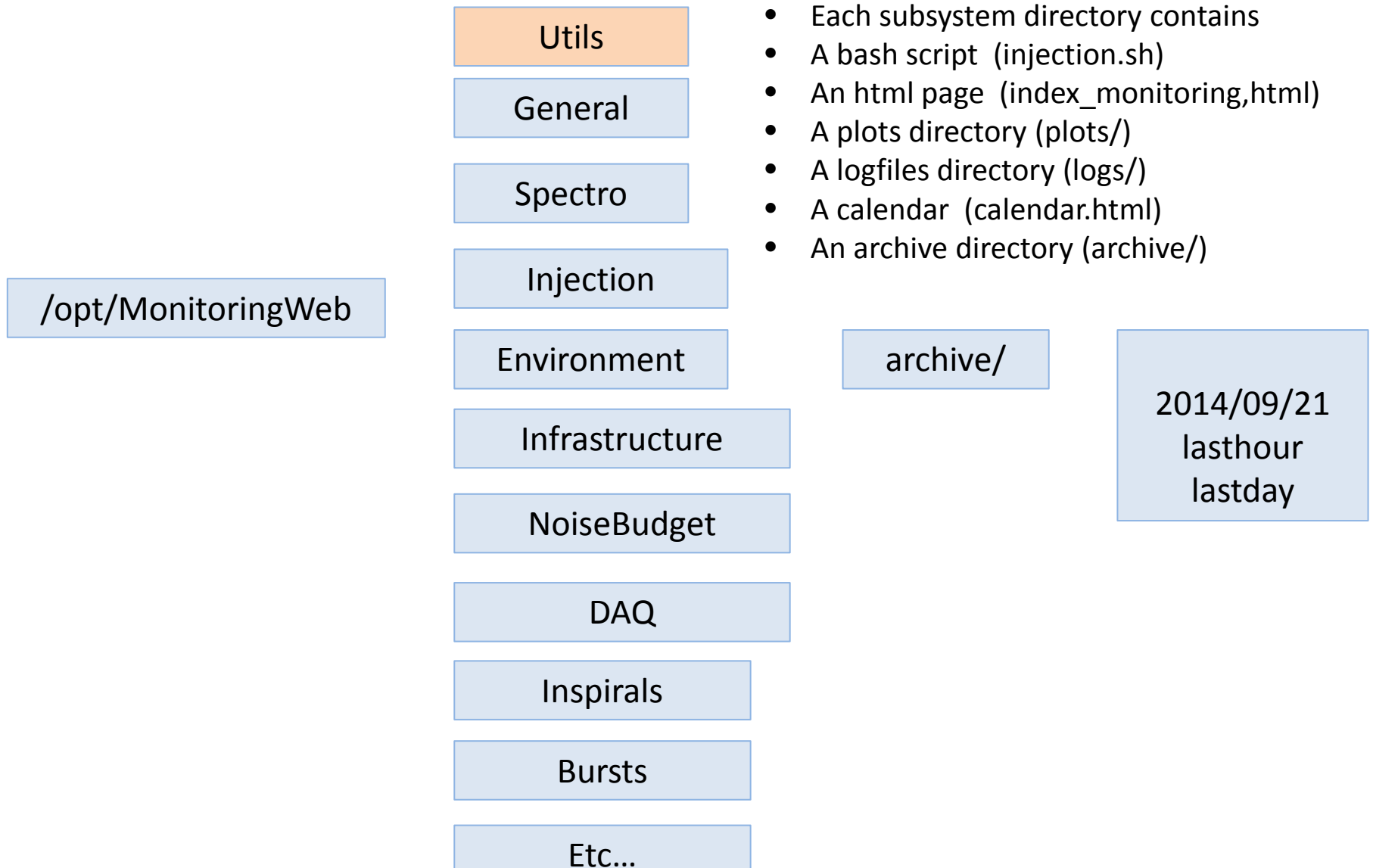


Correction sent to the PMC piezo



AC signal of the photodiode monitoring slave pump2

# MonitoringWeb main engine

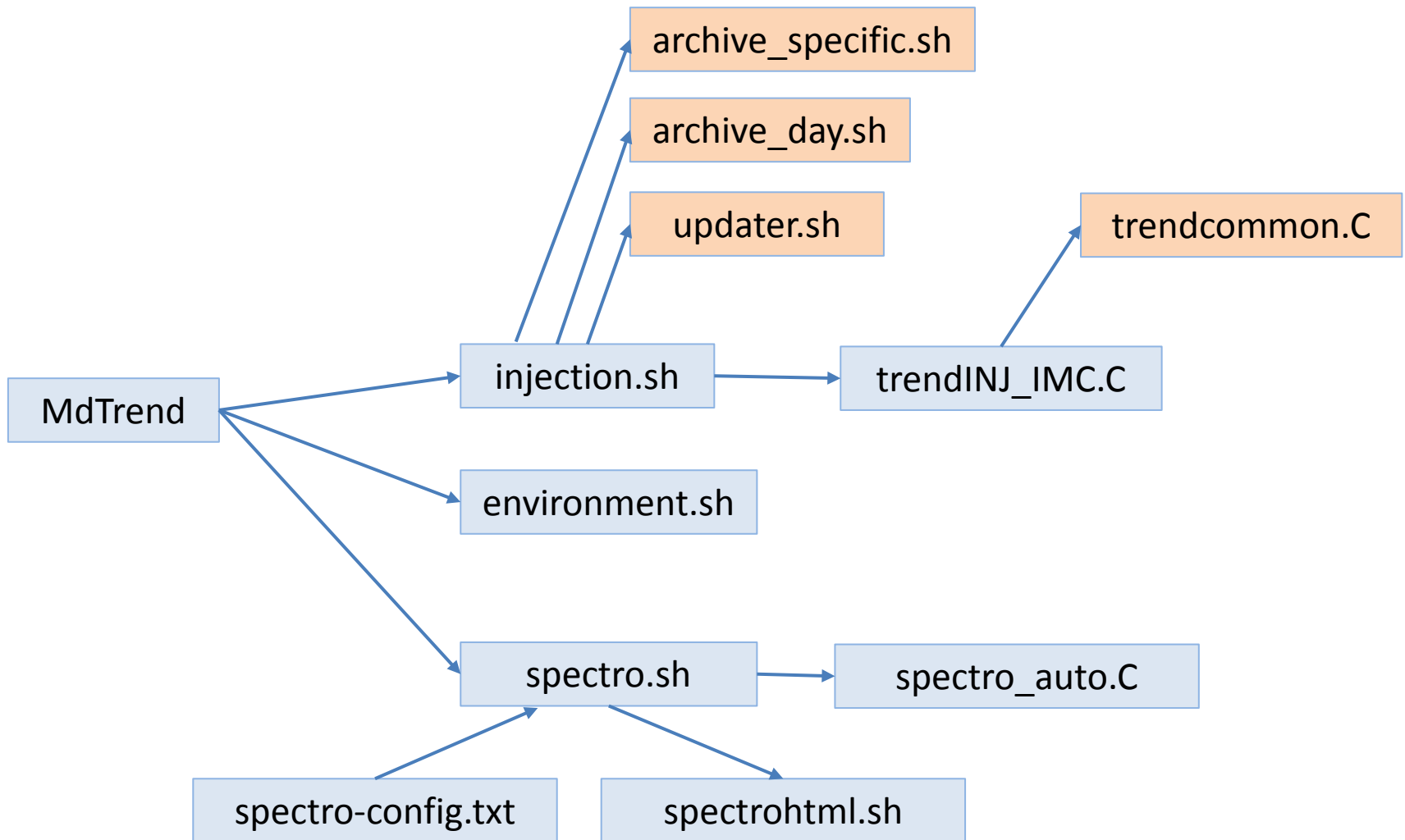


# MonitoringWeb main engine

Some of MonitoringWeb pages have specific features or plots or tables (no use of the trendcommon.C, specific organization of the archive...). This makes difficult any standardization of the MonitoringWeb pages

Spectro	archive specific web pages, use of a config, auto rebuild of html web pages
NoiseBudget	archive every 5 mn, specific ROOT macros
DQ	refresh every 4 mn, redo html web page
Inspirals	specific ROOT macros
Bursts	only update calendar, use Omicron web pages
Reconstruction	specific ROOT macros

# MonitoringWeb main engine



# MonitoringWeb

- The MonitoringWeb engine has been restarted on Environment, Injection and Laser, Spectro
- On short term: welcome any request of new channels and proposals of improvements
- On short term: reduce the number of manual operations done each time a subsystem needs to be included or a new set of channels needs to be monitored
- On a longer term: Keep the main engine (based on bash scripts and ROOT macros)
- On a longer term: provide a better way to display the information on web pages
- This includes new features like:
  - Access to channels database information
  - Navigation tools separated from plots web pages
  - Possibility to look simultaneously to plots of different subsystems at a given time
  - Possibility to look simultaneously to plots of different times for a given subsystem

# MonitoringWeb

- Work done with Gary Hemming
- A first picture will be proposed by Gary in October
- While developing the new display and its interface with the MonitoringWeb main engine: keep compatibility with plots and web pages archived up to now
- Any development of this new display will be done after DQSEGDB, HW database and channels database completion.
- Second step will be to include « On demand » plots based on tools like NMAPI.
- TBD: updates and maintenance done by Didier and Gary, with requests of new plots or new features coming from subsystem managers  
Or plots and web pages updates done by subsystem managers

# Requirements to include a new monitor, new plots or new channels in MonitoringWeb

**Provide a code or a set of codes with the following requirements:**

- Output plot or set of plots should be stored in files in jpg, png or gif format
  - Output directory should be user defined
  - Naming of output files should be user defined
  - It can produce a html page (output directory and file name should be user defined)
  - It can have some documentation in html or pdf
  - It does not take more than 5 minutes to complete on an olnode (or a set of olnodes)
- 
- **This code can be written in bash, C, C++ (compiled or ROOT macro), python, matlab... or a combination of those (for instance a bash script calling a python code and a ROOT macro)**
  - **This code will be either in virgoApp or put under virgorun account in the concerned MonitoringWeb subdirectory**
  - **You must then contact the MonitoringWeb responsible to include**
    - a call to this new code in the main bash script of MonitoringWeb/xxx
    - a list of new channels to be monitored in the config of MonitoringWeb/xxx
  - **If this implies the creation of a new MonitoringWeb subdirectory**
    - ask first to the MonitoringWeb responsible to prepare this new directory



# Conclusions

- Several tasks to be done in the coming months!  
(dataDisplay, MonitoringWeb, DMS, channelsDB, DQSEGDB, HW database, online DQ...)
- Regular update presentations on those works will be done in detchar meetings
- Need clear statement about priorities and completion schedule
- I plan also to work on data analysis and glitch investigations  
(not just developing tools for commissioning and detchar)