



# Tools and procedures for data sharing

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# Outline

- Tools at CERN
- Section strategies
- Testing facility case
- Carpenter introduction
- Summary



May 7, 2018

# Tools at CERN

for storing and sharing a data

## Document managers: EDMS & MTF

### Engineering Data Management Service & Manufacturing And Test Folder

Systems to store, manage, organize and distribute large amounts of engineering information. Provide traceability of large quantities of complex parts; include part identifiers and manufacturers, workflow tracking capabilities, handling data and documentation about the different steps in the manufacturing and test processes.

## Data/sensor loggers: CALS/Timber

### CERN Accelerator Logging Service

The logging service of close to 1 million pre-defined signals coming from heterogeneous sources. These signals range from data related to core infrastructure such as electricity, to industrial data such as cryogenics and vacuum, to beam related data such as beam positions, currents, losses, etc.

## Technical spec & drawings: CDD

### CERN Drawings Directory

Web application which manages engineering drawings made either at CERN or in an external company

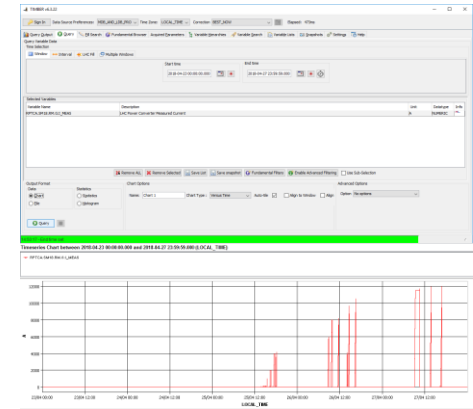
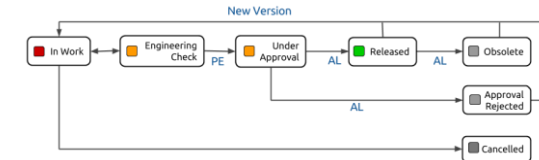
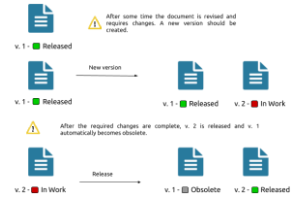
## Shared network drives

### EDMS Document

#### Meta-Information:

- Title
- Author
- Status
- Document Type
- Version Number
- Keywords, etc...

#### Attached Files:



May 7, 2018

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# What does the other do with their data

Section	Raw data	Res data	Documents
Cryogenic	CALS		
Superconductors	ND & DB	section DB	EDMS
Manufacturing	ND & CDD	website & ND & EDMS/MTF	EDMS/MTF
Mechanical measurements	raw files on ND	res files on ND	
Magnetic measurements	raw files in EDMS	section DB	EDMS/MTF
Cold powering	raw files on ND	res files on ND & section DB	EDMS/MTF

- data preservation is the responsibility of each section
- raw data - there is no need for sharing
- res data - shared within the collaboration

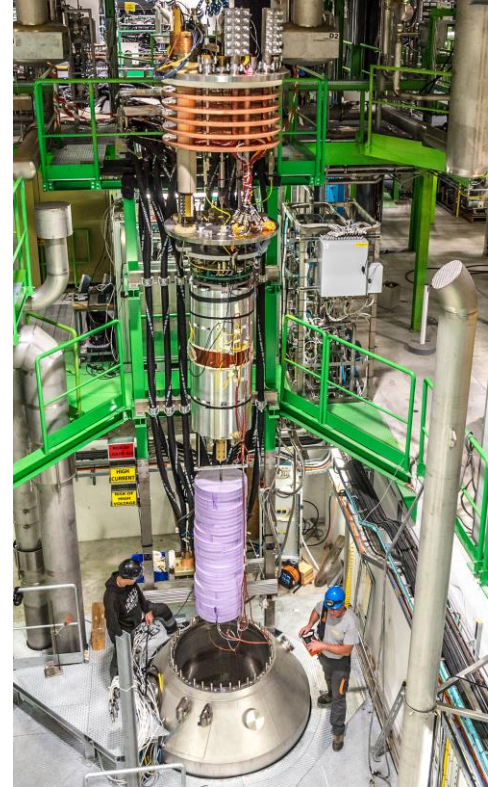
# Magnet is a complicated device

## Where to look for a data?

- Testing facility needs an input from other sections about
  - Superconductor limits
  - Max allowed HV for insulation test
  - Magnet inductance
  - Details about powering ( $I_{max}$ ,  $dI/dt$ )
  - Max hotspot temp., quench integral
  - Magnet instrumentation

## How to share a data?

- Many people interested in progress and results

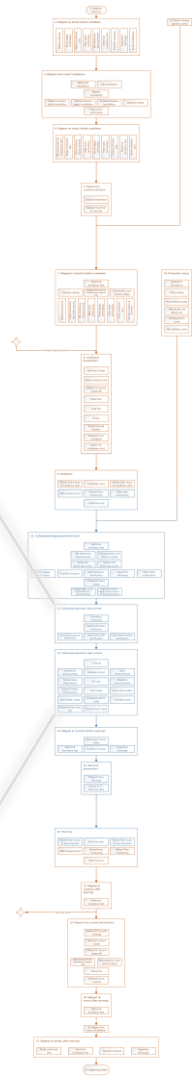
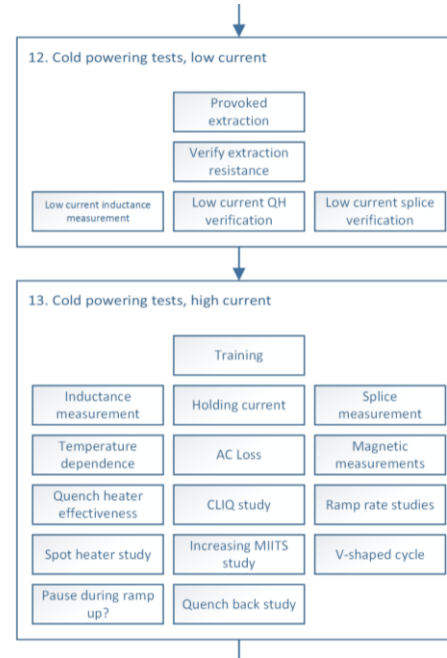


# Testing is a complicated process

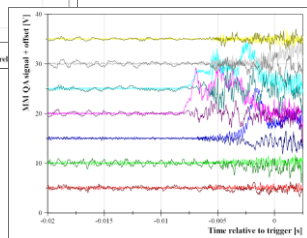
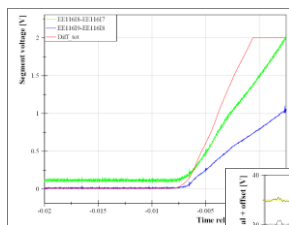
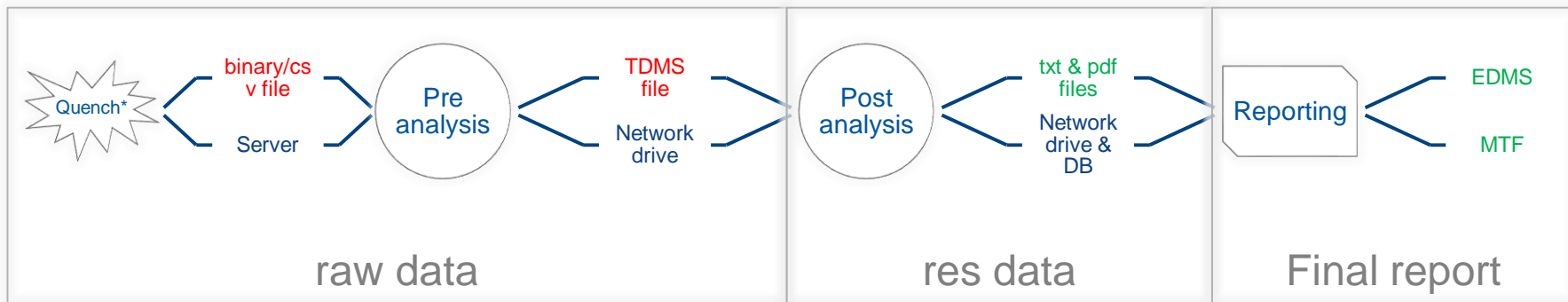
What do we want to store and share?



- Magnet basis info
- Testing team & setup
- Test plan procedure
- Measurements data
  - Raw data
    - high precision data (RRR, splices)
    - high freq data (quench)
    - other data (insulation, resistance)
  - Results
- Reports



# Measurements and analysis



```

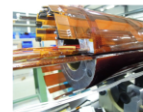
##Processed by: FRANKLAR
##Comment

##Reading
#file name unit
#HCBMSP001_0000106_M180309141_000(2)
#magnet name unit
#HCBMSP001_0000106
#test data unit
#07/07/2018 17:01:00
#analysis name unit
#18.03.2018 09:19:23
#...
#MagGrad unit
#11.09 kA
#dIB (t < 0) unit
#0.000+00
#dIB (t = 0) unit
#-93.30 kA/s
#MagGrad unit
#11.18 T
#MaxField unit
#0 T/m
#...
##Q.Det
#Q.Det name Q_det voltage Q_det Time
#units [V]
#Auto_0 1.8112-01 0.0000+00
#Auto_1 1.8112-01 0.0000+00
#Auto_2 1.8112-01 0.0000+00
#Auto_3 1.8112-01 0.0000+00
#Auto_4 1.8112-01 0.0000+00
#...
##Q.Loc Automatic
#Q.Coll flags Q_coll voltage Q_coll Time Q_coll Inexp
#units [V]
#DIFF 110 2.0342-01 0.0000+00 not in DIFF Loc
#DIFF 117 7.4086-01 0.0000+00 not in DIFF 117
#...
##Quench heaters
#Qp_name Qp voltage Qp current Qp status Qp start time
  
```



File: HCBMSP001\_0000106\_M180309141\_nab1701\_computed(0)

HCBMSP001_0000106	
Test Date	2017-Dec-08 12:19
Analysis Date	2017-Dec-08 12:18
Temperature	4.5 K
Current	11.09 kA
dIB (t < 0)	40.68 kA
dIB (t = 0)	-93.30 kA/s
MagField	11.18 T
MaxGrad	0 T/m



12/08/2017 TELM&C-TP Operator: JEROME

Automatic Quench Analysis

Quench status	Q_det [V]	Q_coll [V]	Q_coll [ms]
ERROR	946	162	ERROR
ERROR	947	169	ERROR
ERROR	916	154	ERROR
ERROR	911	165	ERROR

Triggers	Trig. Time [ms]
Trigger_HF	0
Thy_Sw	0
Mag_Sw	0
Trigger_PC	0
Trigger_QH1	0
Trigger_QH2	0
Trigger_LF	0
Trigger_LF	0

Equivalent Circuit	Value at 18 ms
R_Dump	60.00 mΩ
R_Magnet	24.76 mΩ
L_Magnet	3.15 mH



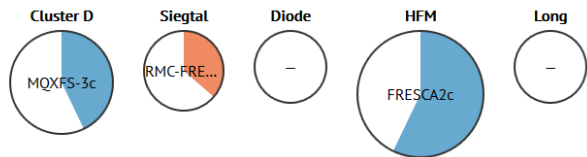
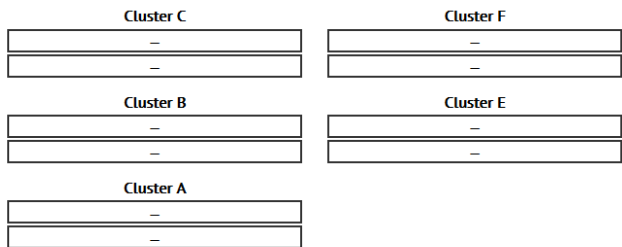
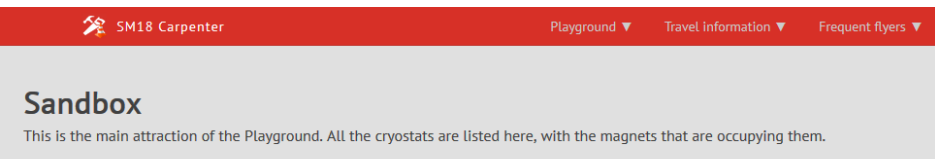
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# Carpenter

New MSC-TF database system



<https://sm18-carpenter.web.cern.ch>



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## Quality Assurance

Efficient communication between ourselves (i.e. in case of vacation) and other groups (i.e. with cryo team, strain measurements team)

## Data processing and storage

Automatic reporting for EDMS/MTF (faster than manual reporting)

Easy statistics and data mining

## Quality Control

Show what we're doing to interested people in real-time  
Internal/external users follow-up of activities at SM18  
(access for regular and lightweight CERN accounts)

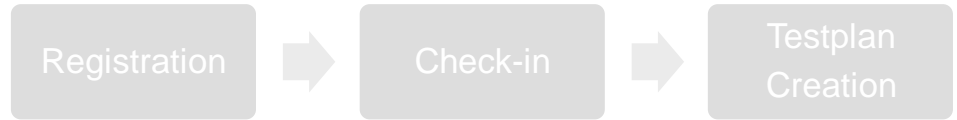
# Carpenter main functionalities

- Web browser tool – universal and easy access from anywhere (local or remote)
- User management and privileges for controlled access
- All kind of testing data storing place
- Follow-up test tool
- Easy sharing (web link)

		Notif	admin	engineer	operator	mechanic	electrician	ergonomist	hierarchy	owner	user	visitor
resp_NAME	resp_ID	a	e	o	m	l	c	h	w	u	v	
Access to location:												
	Sandbox	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rooms	Warehouse	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
	VIP Lounge	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
	Customs	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
FreqFlyers	Magnets	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
	Users	Y	Y	Y	Y	Y	Y	Y	Y	n	n	n
	Reports	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
	Yearly view	Y	Y	Y	Y	Y	Y	Y	Y	Y	n	n
Individual	Magnets	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
	Users	Y	Y	Y	Y	Y	Y	Y	Y	n	n	n
	Reports	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
Testplan view	Access	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
	Submit result	e	Y	Y	Y	Y	Y	Y	n	n	n	n
	Accept result	e,o	Y	S	S	n	n	n	n	n	n	n
	Update result values	e,o	Y	S	S	n	n	n	n	n	n	n
Reporting	Itinerary	Y	Y	Y	Y	Y	Y	Y	n	n	n	n
	Internal	Y	Y	Y	Y	Y	Y	Y	n	n	n	n
	External	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n
Administration	MagnetRegistration	Y	Y	n	n	n	n	n	n	n	n	n
	EditMagnetRegistration	Y	Y	n	n	n	n	n	n	n	n	n
	MagnetCheckin	Y	Y	n	n	n	n	n	n	n	n	n
	EditMagnetCheckin	Y	Y	n	n	n	n	n	n	n	n	n
	EditMagnetCheckin w/TP	e	Y	n	n	n	n	n	n	n	n	n
	InsertInspection	Y	Y	n	n	n	n	n	n	n	n	n
	TestplanCreation	e,o	Y	Y	n	n	n	n	n	n	n	n
	ThermalCycleCreation	e,o	Y	S	n	n	n	n	n	n	n	n
	EditTestplan	e,o	Y	S	n	n	n	n	n	n	n	n
	ReportCreate	e,o,h,w	Y	S	n	n	n	n	n	n	n	n
	AddUser	a,self	Y	n	n	n	n	n	n	n	n	n
	EditUser	a,self	Y	n	n	n	n	n	n	n	n	n
	Delete	Y	n	n	n	n	n	n	n	n	n	n
	ToDo	Y	n	n	n	n	n	n	n	n	n	n
	Palette	Y	n	n	n	n	n	n	n	n	n	n
	Cookie	Y	n	n	n	n	n	n	n	n	n	n

# Frequent flyers

- Magnets
- Registration
- Check-in
- Testplan Creation
- Users



SM18 Carpenter

Playground | Travel Information | Frequent flyers | Admin tools | Signed in as: mduda (CERN) | Sign out

### Magnets

List of all the magnets registered in SM18 Carpenter.

Register new magnet.

#	Magnet name	Magnet MTF Code	Magnet owner	Number of testplans	Last location	Last station, cryostat
1	AQA-zero_test	N/A	Franco Julio MANGIAROTTI	1	Customs	Cluster D, Cluster D
2	FRESCA2c	CRMHFRA001-CR000003	Paolo FERRACIN	1	Sandbox	Cluster G, HFM
3	MBHSP106	HCMBHSP0001_0000106	Frederic SAVARY	1	Customs	Cluster G, Long
4	MCBRDS1b	N/A	Glyn KIRBY	1	VIP Lounge	Cluster G, Long
5	MCBY-43	HCMCBY001-TE000043	Sandrine LE NAOUR	1	Customs	Cluster G, Siegtal
6	MCDXFP1	HCMCDXFP01-11000001	Andrea MUSSO	1	Customs	Cluster G, Long
7	MCDXFP1	HCMCDXFP00-11000001	Andrea MUSSO	1	Customs	Cluster G, Long
8	MQXF5-3c	HCMQXF5003-CR000001	Paolo FERRACIN	0	Warehouse	
9	RMC-FRESCA2-04	CRMHRMC001-CR000004	Juan Carlos PEREZ	1	VIP Lounge	Cluster G, Siegtal
10	SMC4	N/A	Juan Carlos PEREZ	0	Warehouse	
11	Wiggler	N/A	Paolo FERRACIN	0	Warehouse	

# Frequent flyers 1

Registration

Check-in

Testplan  
Creation

SM18 Carpenter Playground Travel information Frequent flyers Admin tools Signed in as: miduda (CERN) Sign out

## New Magnet Registration

**Magnet General Information**

Magnet name*	<input type="text"/>
Magnet mtf #	<input type="text"/>
Magnet edms #	<input type="text"/>
Magnet owner*	-- select an option --
Magnet comment	<input type="text"/>
Magnet type*	-- select an option --

**Magnet Attributes Information**

attribute	value
Weight [kg]	<input type="text"/>
Diameter [m]	<input type="text"/>
Length [m]	<input type="text"/>
Max allowed dT [K]	<input type="text"/>
Max stored energy [J]	<input type="text"/>
Maximum voltage @ 300K [V]	<input type="text"/>
Maximum voltage @ 4.5K [V]	<input type="text"/>
Low current Inductance [H]	<input type="text"/>
High current Inductance [H]	<input type="text"/>
Max quench integral [A^2 s]	<input type="text"/>
Max hotspot temperature [K]	<input type="text"/>
Apertures #	<input type="text"/>
Coils #	<input type="text"/>
Superconductor (1-Nb3Sn, 2-NbTi, 3-other)	<input type="text"/>
Type of cable (1-PIT, 2-RRP, 3-other)	<input type="text"/>

# Frequent flyers 2

Registration

Check-in

Testplan  
Creation

SM18 Carpenter Playground Travel information Frequent flyers Admin tools Signed in as: miduda (CERN) Sign out

## Edit Magnet Check-In: SMC4

**Magnet General Information**

Magnet setup name*	SMC #4 - PIT - 201-202
--------------------	------------------------

**Magnet Setup Information**

attribute	value
Volume of filling pieces [m3]	
Position of heaters from bottom [m]	
Magnetic measurement shaft	
CLIQ	
Quench antenna #	
PLC	
Dump resistor [Ohm]	
Diode	
Temperature sensor #	
Pressure sensor #	
Fiber optics #	
Strain gages #	22
Quench heaters #	8
Voltage taps #	56
Accelerometers #	

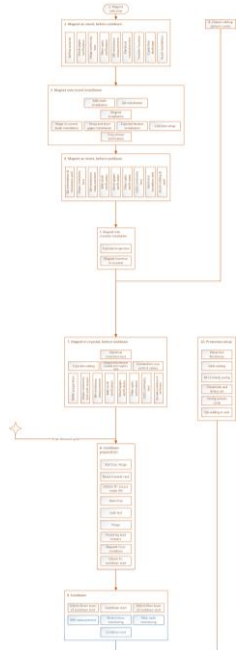
Cancel UPDATE

# Frequent flyers 3

Registration

Check-in

Testplan  
Creation



SM18 Carpenter    Playground ▼    Travel information ▼    Frequent flyers ▼    Admin tools ▼    Signed in as: miduda (CERN)    Sign out

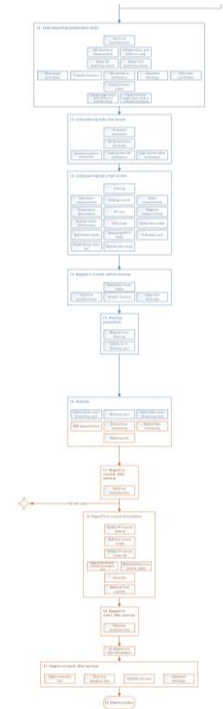
## New Testplan Creation: SMC4 (SMC #4 - PIT - 201-202)

**Testplan General Information**

Testplan engineer*	-- select an option --
Testplan operator*	-- select an option --
Cryostat name*	-- select an option --
Testplan comment	

**Testplan Activities Information**

Order & Activity Name	Special instructions
<b>Magnet welcome</b>	
1.1.1 Magnet reception in SM18	<input checked="" type="checkbox"/>
<b>Magnet on stand, before cooldown</b>	
2.1.1 Define polarity	<input checked="" type="checkbox"/>
2.1.1 Voltage taps continuity test	<input checked="" type="checkbox"/>
2.1.1 Electrical insulation test	<input checked="" type="checkbox"/>
2.1.2 Strain gages verification	<input checked="" type="checkbox"/>
2.1.2 Fiber optic verification	<input type="checkbox"/>
2.1.2 Quench heater resistance measurement	<input checked="" type="checkbox"/>
2.1.2 Accelerometer installation	<input type="checkbox"/>
2.1.3 Transfer function	<input type="checkbox"/>
2.1.3 Capacitive discharge	<input type="checkbox"/>
<b>Magnet onto insert installation</b>	



# Frequent flyers 4

SM18 Carpenter    Playground ▼    Travel information ▼    Frequent flyers ▼    Admin tools ▼    Signed in as: miduda (CERN)    Sign out

## Magnet: FRESCA2c

MTF code: CRMHFRA001-CR000003 –

### Magnet Information

Magnet owner: Paolo FERRACIN  
CRMHFRA001-CR000003 in MTF

Weight	8.5e3 kg
Diameter	1.1 m
Length	1.6 m
Max allowed dT	150 K
Max stored energy	5e6 J
Maximum voltage @ 300K	200 V
Maximum voltage @ 4.5K	1e3 V
Low current Inductance	120e-3 H
High current Inductance	70e-3 H
Max quench integral	40 A <sup>2</sup> s
Max hotspot temperature	200 K
Apertures #	1
Coils #	4
Superconductor (1-Nb3Sn, 2-NbTi, 3-other)	1
Type of cable (1-PIT, 2-RRP, 3-other)	2
RRR of witness sample	250
Number of strands	40
Strand diameter	1e-3 m
Copper to superconductor ratio	1.28

### Setup "FRESCA2c"

Magnetic measurement shaft	1
Quench antenna #	21
Dump resistor	80e-3 Ohm
Strain gages #	1
Voltage taps #	90

Testplan #601 - in Sandbox

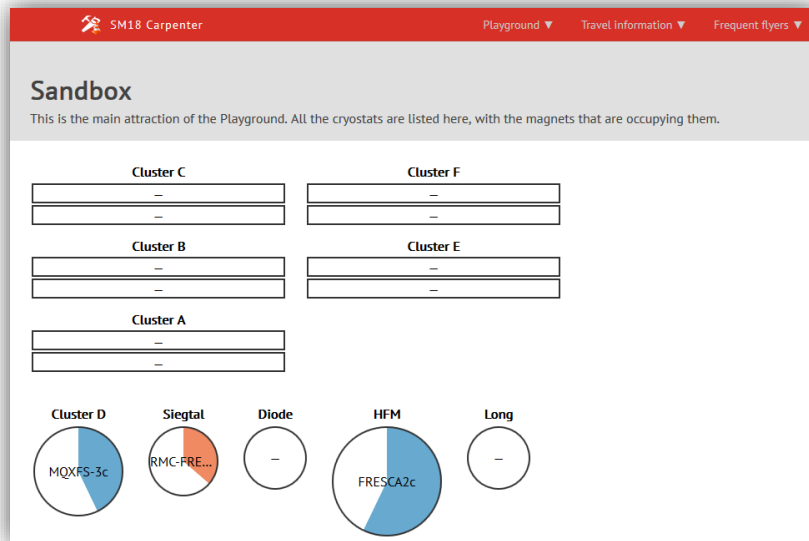
Test engineer: Gerard WILLERING  
Test dates: 12/04/2018 – ongoing  
Test comment: –

Last updated by Gerard WILLERING on 12/04/2018 10:47:16  
[Edit setup information](#)

# Playground



- Actual on-line situation @ testing facility
  - Warehouse
  - VIP Lounge
  - Sandbox
  - Customs





# Playground 1



The screenshot shows a web application interface with a red header bar. The header contains the user name 'SM18 Carpenter' with a wrench icon, and several navigation menus: 'Playground', 'Travel information', 'Frequent flyers', and 'Admin tools'. On the right side of the header, it says 'Signed in as: miduda (CERN)' and 'Sign out'.

## Warehouse

Here are the magnets waiting for a testplan. These magnets either don't have setup, or have a setup without a testplan.

[Register new magnet](#)

#	Magnet Name	Magnet MTF Code	Setup name	Magnet owner	Actions
1	SMC4	N/A	SMC #4 - PIT - 201-202	Juan Carlos PEREZ	<a href="#">Edit check-in info</a> <a href="#">Create testplan</a>
2	Wiggler	N/A	WigglerInDiode	Paolo FERRACIN	<a href="#">Edit check-in info</a> <a href="#">Create testplan</a>

# Playground 2



SM18 Carpenter

Playground | Travel information | Frequent flyers | Admin tools | Signed in as: miduda (CERN) | Sign out

## VIP Lounge

The place where magnets rest while the first few checks are done. Once they are put on an Insert, they move to the Sandbox.

#	Magnet Name	Magnet MTF Code	Assigned station, cryostat	Progress	Test engineer	Test operator	Current step
1	MCBRDS1b	N/A	Cluster G, Long		Franco Julio MANGIAROTTI	Vincent DESBIOLLES	Magnet onto insert installation

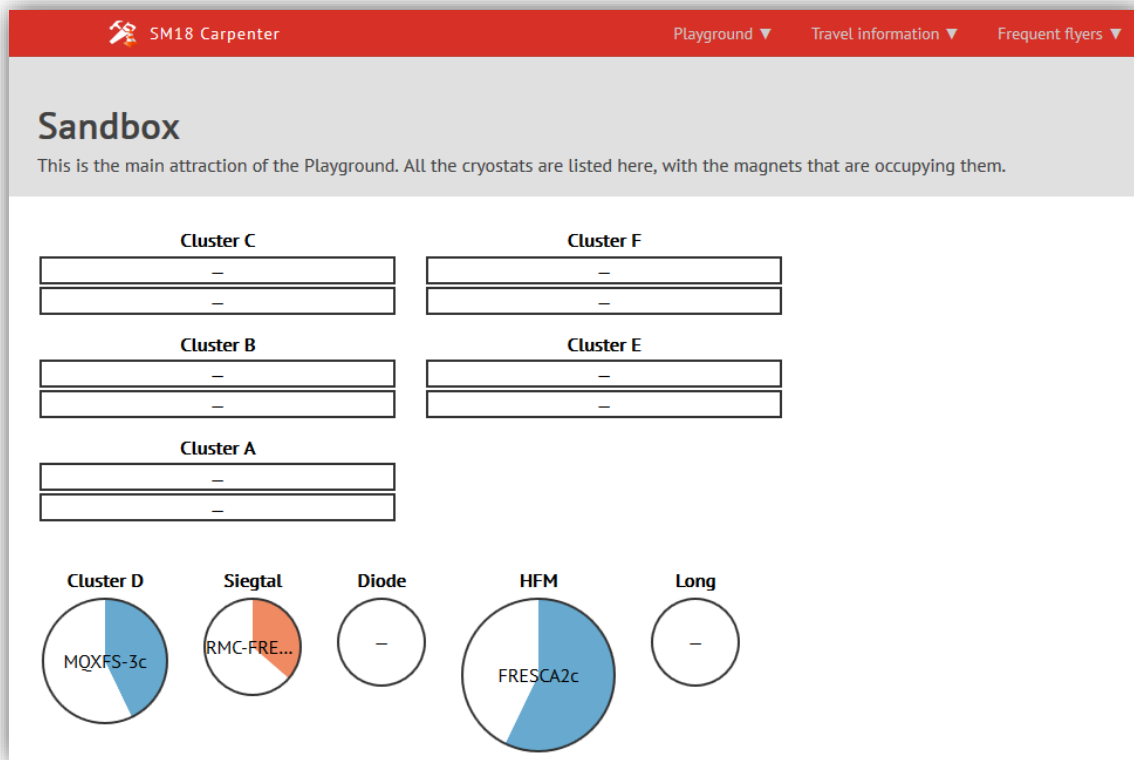
# Playground 3

Warehouse

VIP Lounge

Sandbox

Customs



SM18 Carpenter Playground Travel information Frequent flyers

## Sandbox

This is the main attraction of the Playground. All the cryostats are listed here, with the magnets that are occupying them.

**Cluster C**

-
-

**Cluster F**

-
-

**Cluster B**

-
-

**Cluster E**

-
-

**Cluster A**

-
-

**Cluster D** MOXFS-3c

**Siegtal** RMC-FRE...

**Diode** -

**HFM** FRESCA2c

**Long** -

# Sandbox



SM18 Carpenter Playground Travel information Frequent flyers Admin tools Signed in as: miduda (CERN) Sign out

## Testplan for FRESCA2c (CRMHFRA001-CR000003, TP\_ID #601)

Assigned station: Cluster G, HFM

**People in charge:**  
Magnet owner: Paolo FERRACIN (☎ 169094)  
Test engineer: Gerard WILLERING (☎ 169478)  
Test operator: Max Andre PASCAL (☎ 162925)

**General information:**  
Testplan comment: –  
Magnet information  
PDFs: testplan summary, partial internal report (logbook type), partial external report

▼ Color code explanation

Welcome Stand Ins Inst Ins, BC Cryos Chassis Cryos, BC CD prep Cooldown Prot CP prep CP low CP high Cryos WU prep Warmup Cryos Ins, AW Ins inst Stand Goodbye

### Cold powering tests, high current

Quench Hold current MgM Inductance Splice V-I

### Quench

**General instructions:** Upload here the quench result test file from AQA-zero

**Special instructions:** –

Submit new result

User: **miduda**  
Date: 27/04/2018 11:49:33  
Result file:  No file selected.  
Result comments:

Not OK OK, repeat OK, finished! (hover for hint)

Existing results (table)

OK  
Vincent DESBIOLLES on 27/04/2018 10:39:00  
Training @ 11708 A. File: CRMHFRA001-CR000003\_H1804271039\_a005(0). 4th quench  
See results



# Playground 4



SM18 Carpenter    Playground ▾    Travel information ▾    Frequent flyers ▾    Admin tools ▾    Signed in as: miduda (CERN)    Sign out

## Customs

The place where magnets are held hostage for a few last checks. Magnets that don't have their paperwork (report) finished are also delayed here.

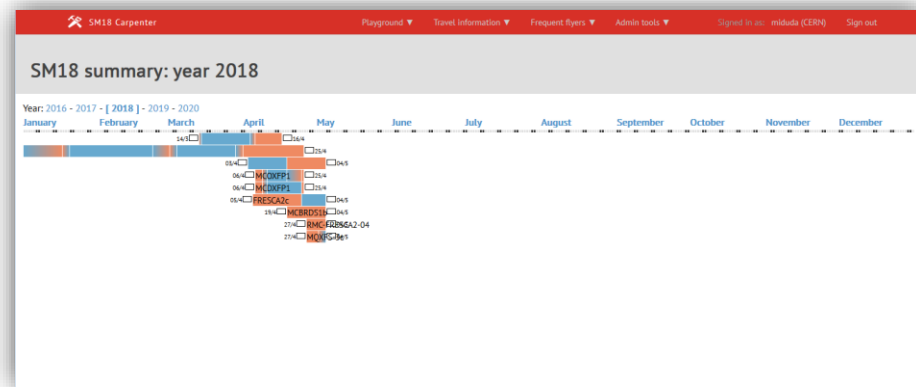
#	Magnet Name ▾	Magnet MTF Code	Progress	Test engineer	Test operator	Current step	Ready for report?
1	AQA-zero_test	N/A	95%	Franco Julio MANGIAROTTI	Jerome FEUVRIER	Magnet on stand, after warmup	Not ready
2	MBHSP106	HCBHSP0001_0000106	100%	Gerard WILLERING	Jerome FEUVRIER	Magnet goodbye	<a href="#">Create Report</a>
3	MCBY-43	HCMCBYB001-TE000043	100%	Franco Julio MANGIAROTTI	Max Andre PASCAL	Magnet goodbye	<a href="#">Create Report</a>
4	MCDXFP1	HCMCDXFP01-I1000001	100%	Franco Julio MANGIAROTTI	Jerome FEUVRIER	Magnet goodbye	<a href="#">Create Report</a>
5	MCOXFP1	HCMCOXFP00-I1000001	100%	Franco Julio MANGIAROTTI	Jerome FEUVRIER	Magnet goodbye	<a href="#">Create Report</a>

# Travel information

- Yearly summary
- Data chopping
- Test reports\*

utils table(s) for: MBHSP106

File Name	Strip Name	Serial ID	File name	Test Date	Analysis Date	Test Type	Stripper Type	Provenance	Quench Color	Temperature [K]	Current [kA]	dI/dt [kA/s]	Max dI/dt [kA/s]	Max dI/dt [kA/s]	Max dI/dt [kA/s]
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 17:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1022	114	10400	1027	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 18:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1076	114	10470	1038	0.08
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 19:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	103	10400	1032	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 20:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1077	103	10470	1032	0.08
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 21:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1087	103	10570	1047	0.08
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 22:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1076	103	10470	1040	0.08
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 23:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1089	103	10570	1041	0.08
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 00:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1015	117	10200	1038	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 01:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1039	102	10470	1037	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 02:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1027	102	10400	1040	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 03:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1039	102	10470	1039	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 04:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1038	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 05:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 06:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 07:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 08:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 09:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 10:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 11:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 12:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 13:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 14:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 15:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 16:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 17:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 18:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 19:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 20:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 21:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 22:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 23:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07
MBHSP106	Coll. assembly coil, high current	1001	MBHSP106_000001_4713302791_448700	07.11.2017 00:00:00	12.04.2018 09:10:00	Training	Helveticus-argenti	no	Helveticus-argenti	471	1040	102	10470	1041	0.07



### Data Chopping

Carpenter chopping plane..

#### Data Groups

- HV Test
- QH res
- RRR meas
- Prov. Extraction
- Low I Induct
- Low I QH verif
- Low I splice
- Quench
- Hold current
- Inductance
- Splice
- AC Loss
- V-I

#### Magnets

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 MBROFPP3  
 MBROFPP4  
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 MBROFPP98  
 MBROFPP99  
 MBROFPP100

DATA QUERY

#### Results

Download full result table: [html](#), [txt](#)

or

*No data found for HV Test*

Download Quench result table: [html](#), [txt](#)

Download Hold current result table: [html](#), [txt](#)

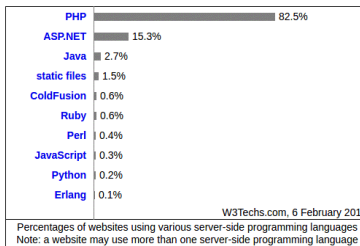
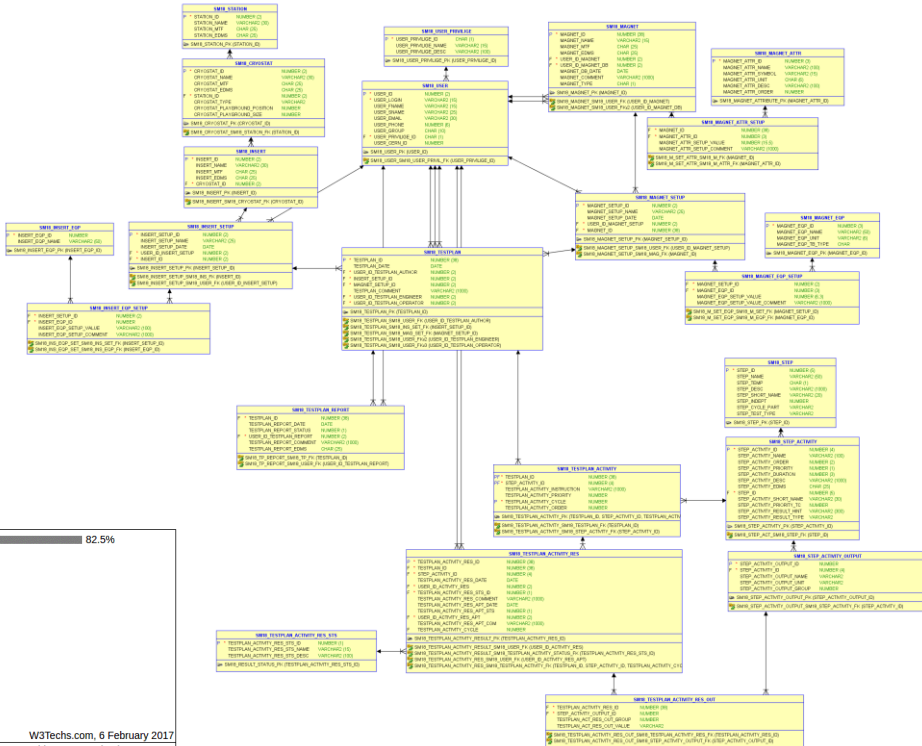
# How's it done?

- CERN IT infrastructure
- CERN authentication system
  
- 2 section developers
- Few months from an idea to working version
- Now maintenance and new functionalities if needed
  
- System will be used at collaborating facilities (i.e. FREIA) and ongoing projects (i.e. FAIR)

# Under a hood



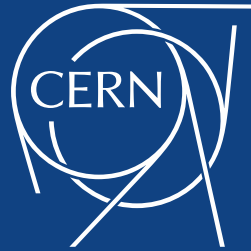
- Oracle – it is the world's most popular database for running online transaction processing and data warehousing
- PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML





# Summary

- Sections are responsible for their data and everyone has a different approach to store it
- Clear solution for final results and reports
- Making a decision – how to store - one needs to be aware about limitation of the solution (files vs DB)



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