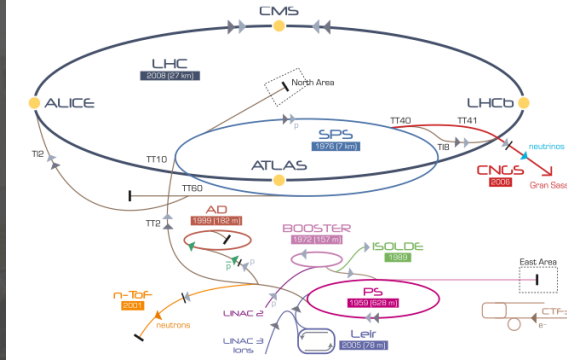


Maintenance seen from the control room

P. Sollander, CERN BE-OP-TI

Outline

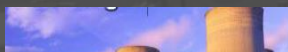
- Technical Infrastructure operation at CERN
- Maintenance workflow and processes
- Tools
 - Centralized data for all systems
 - Professional tools for professionals
- Future improvements



TI operation
24*365¼

1 operator
on shift

- Intervention management
- Corrective Maintenance
- Response coordination



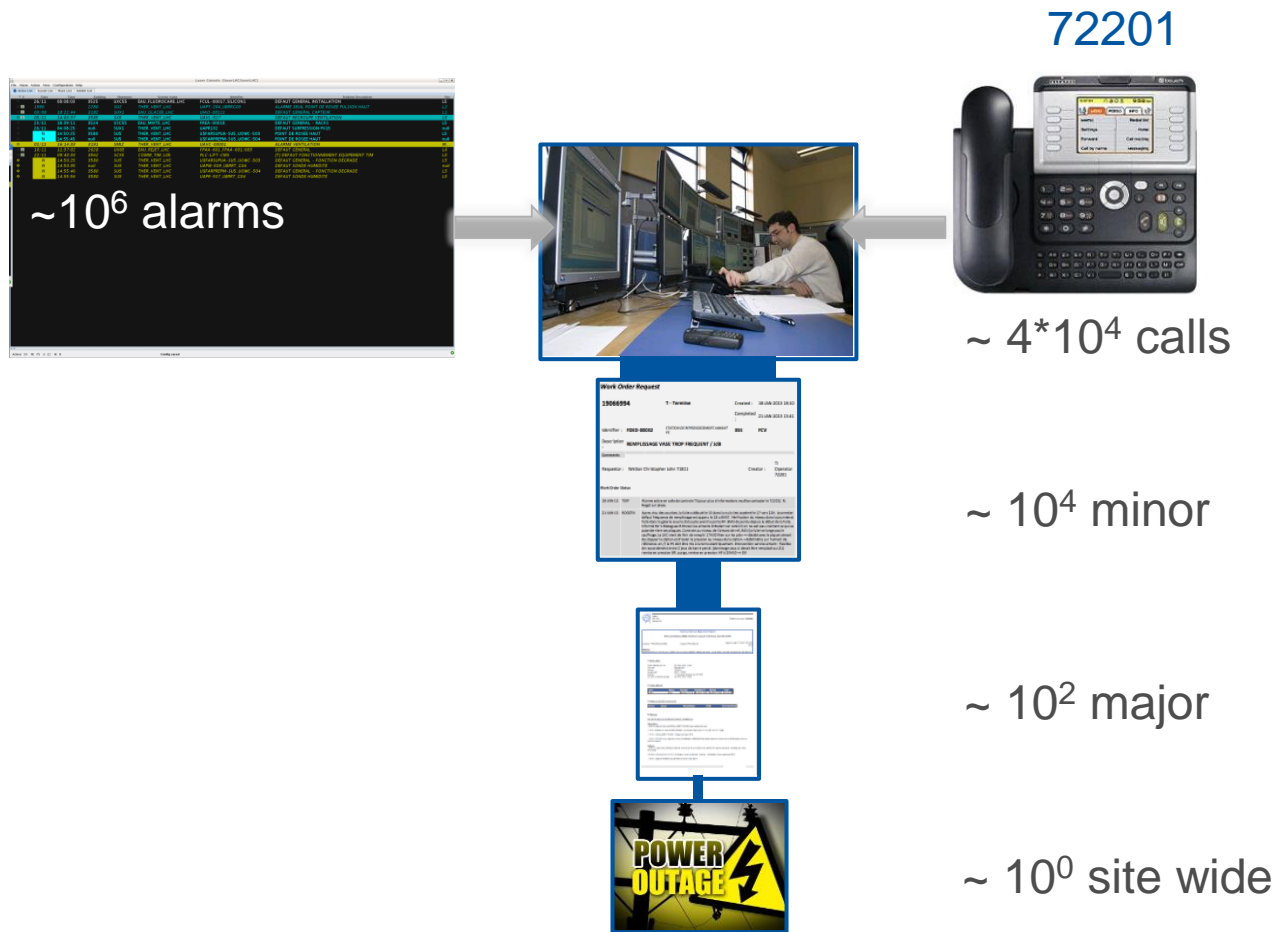
Safety
Systems



Controls
Hardware



Types and typical numbers of events yearly



Workflow

11/11 17:11:38 TZ76 SECU_FEU_LHC SFDIN-00298 DEFAUT CENTRALE DETECTION INCENDIE - CABLEE

European Laboratory for Particle Physics

News | L

Ongoing work

Yesterday's Ongoing Work

	Location	Site	Subject	Contact	Start	End	Author	
✗ Edit	ME9	----	EBS11 et EBS12 en maintenance	163750	10:07	----	JESPERN	
✗ Edit	ME9	----	EMD3*9 maintenance pour la semaine (MP6 Hors tension, etc.) ouverture de boucles	163750	10:51	----	JESPERN	
✗ Edit	ME46	----	ERD14-15-16*46 Alimentes depuis ERD1..	160595	14:55	14:27	JESPERN	
✗ Edit	ME25	----	RTU	162843	11:30	11:43	JESPERN	
✗ Edit	ME81	----	Consignation EBD1.08*81	162720	14:21	----	PRUNEAUX	
✗ Edit	ME23	----	RTU	160595	14:27	16:16	PRUNEAUX	
✗ Edit	L1	LHC 1	SU1 + SUX1 couper cooling	162142	08:04	----	JESPERN	
✗ Edit	US15	LHC 1	egaz 154	166316	10:21	10:41	JESPERN	
✗ Edit	UX15	LHC 1	SGGAZ-153	166320	15:07	15:26	PRUNEAUX	
✗ Edit	SX2	LHC 2	Distribution 48V	160383	13:35	16:32	JESPERN	
✗ Edit	SF2	LHC 2	EPR282 Tour de refroidissement	162906	15:01	----	JNONGLAT	
✗ Edit	PM32	LHC 3	Ventilation CV1 176 ET 177 arrete jusqu'a Lundi soir	164036	17:07	----	FHEBERT	Caution: 3 days ago
✗ Edit	PM32	LHC 3	passage d'urgence par pompiers	74444	10:09	----	JESPERN	
✗ Edit	UJ33	LHC 3	egaz 156	166334	10:18	12:55	JESPERN	
✗ Edit	SZ33	LHC 3	test Diesel	162720	10:19	----	SMASSOT	
✗ Edit	UJ33	LHC 3	RTU37-EL/CO for 1 hour	166014	15:03	16:32	JNONGLAT	
✗ Edit	UJ33	LHC 3	SGGAZ-156	166314	15:08	16:20	PRUNEAUX	
✗ Edit	SU4	LHC 4	Arret technique eau glatee --> Janvier SU4+UW45	Juban	08:12	----	JESPERN	
✗ Edit	L6	LHC 6	EHT102	162951	10:15	----	JESPERN	

Menu

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BEOPTI

Recent searches

Tue Nov 11:15:24

<input type="checkbox"/>	★	36808	↓ ⇒	In progress	EN-CV-DOW	LHC Machine	F - Fluids	Projet R2E-LHC - P7
<input type="checkbox"/>	★	35889	↓ ⇒	In progress	EN-STI-ECE	LHC Machine	T - Targets and Dumps	Collimator Control System upgrade (Phase 2) P7
<input type="checkbox"/>	★	25394	↓ ⇒	In progress	EN-EL-CF	LHC Machine	E - Electricity	R2E - Préparation et suivi des travaux pt7 - LS1



Workflow – telephone calls

Ongoing work



MTF
Equipment Management Folder

Home | Help | E2M8 Portal | News | Login
User: SOLP

Actions | Show MCF Reports

⊖ SFDIN-00298 - CENTRALE D'ALARME FEU Z507

- ⊖ SFDPE-00496 - LUTR BOUCL protégé Z507
- ⊖ SFDIC-00038 - TABLEAU DE RAPPEL Z507
- ⊖ SFDPE-15489 - ALARME PRELEVEMENT PLAFOND N
- ⊖ SFDPE-15470 - ALARME PRELEVEMENT PLAFOND N
- ⊖ SFDPE-15471 - ALARME PRELEVEMENT PLAFOND N
- ⊖ SFDPE-15472 - ALARME PRELEVEMENT PLAFOND N
- ⊖ SFDPE-15473 - ALARME PRELEVEMENT PLAFOND N
- ⊖ SFDPE-15474 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15475 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15476 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15477 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15478 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15479 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15480 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15481 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15482 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15483 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15484 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15485 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15486 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15487 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15488 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15489 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15490 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15491 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15492 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15493 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15494 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15495 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15496 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15497 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15498 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15499 - ALARME FEU PRELEVEMENT COTE L
- ⊖ SFDPE-15500 - ALARME FEU PRELEVEMENT COTE L

Slot Identifier: SFDIN-00298
Other Identifier: None
Description: CENTRALE D'ALARME FEU Z507

Activity ID	Activity Name	Installation & Commissioning	Operation	Equipment	Status	Start
1312724	T1 - Travaux divers	05/15/04			Done	2007-03-20
1316095	T1 - Travaux divers	10/27/05			Done	2007-01-15
1320090	T1 - Travaux divers	10/27/05			Done	2007-01-26
1322208	T1 - Travaux divers	10/27/05			Done	2007-02-14
1322710	T1 - Travaux divers	10/27/05			Done	2007-02-14
1325219	T1 - Travaux divers	10/27/05			Done	2007-02-26
1325257	T1 - Travaux divers	10/27/05			Done	2007-02-26
1328257	T1 - Travaux divers	10/27/05			Done	2007-03-08
1328272	T1 - Travaux divers	10/27/05			Done	2007-03-08
1335517	T1 - Travaux divers	07/31/02			Done	2007-03-16
1336144	T1 - Travaux divers	10/27/05			Done	2007-03-20
1344007	T1 - Travaux divers	07/31/02			Done	2007-04-03
1343201	T1 - Travaux divers	10/27/05			Done	2007-04-10
1346680	Installation	05/15/04			Done	2007-04-19
1346674	T1 - Travaux divers	10/27/05			Done	2007-05-23

European Laboratory for Particle Physics
IMPACT

PETER SOLLANDER | Help | Exit

Menu | Search Activities By

Create Activity

Activity List

Activity Scheduler

Access Control

Favorite Activities

Quick Search

VLS Search

Work Orders Search

Search By

On selected activities

Activity | Status | Res. Group | Facility | System | Title

37785 | In progress | EN-REF-SE | LHC Machine | P - Personnel safety | dipose d'ethalolage T2 76 point 7

37791 | In progress | EN-CL-CP | LHC Machine | E - Electricity | VIC in point 7 for cable connector between L25 and 307

37472 | In progress | EN-EL-ET | LHC Machine | E - Electricity | T2N1 (R02) - Travaux EN-EL Power dans le T2N1 (Power d040)

37136 | In progress | EN-EL-ET | LHC Machine | E - Electricity | T2N1 (R02) - Travaux EN-EL Power dans le T2N1

36808 | In progress | EN-CV-ODM | LHC Machine | F - Fluids | Projet R2E LHC - FF

36889 | In progress | EN-ET-ES2 | LHC Machine | T - Targets and Detectors | Gulliver Control System upgrade (Phase 2) FF

22384 | In progress | EN-CL-CP | LHC Machine | E - Electricity | R2E - Preparation de suite des travaux 07 - L3

Recent searches

Task View: 11/13/14

Ongoing work

Activity ID	Activity Name	Status	Res. Group	Facility	System	Title	Start	End	Assignee
1312724	T1 - Travaux divers	Done	05/15/04				2007-03-20		JPERRIN
1316095	T1 - Travaux divers	Done	10/27/05				2007-01-15		JPERRIN
1320090	T1 - Travaux divers	Done	10/27/05				2007-01-26		JPERRIN
1322208	T1 - Travaux divers	Done	10/27/05				2007-02-14		JPERRIN
1322710	T1 - Travaux divers	Done	10/27/05				2007-02-14		JPERRIN
1325219	T1 - Travaux divers	Done	10/27/05				2007-02-26		JPERRIN
1325257	T1 - Travaux divers	Done	10/27/05				2007-02-26		JPERRIN
1328257	T1 - Travaux divers	Done	10/27/05				2007-03-08		JPERRIN
1328272	T1 - Travaux divers	Done	10/27/05				2007-03-08		JPERRIN
1335517	T1 - Travaux divers	Done	07/31/02				2007-03-16		JPERRIN
1336144	T1 - Travaux divers	Done	10/27/05				2007-03-20		JPERRIN
1344007	T1 - Travaux divers	Done	07/31/02				2007-04-03		JPERRIN
1343201	T1 - Travaux divers	Done	10/27/05				2007-04-10		JPERRIN
1346680	Installation	Done	05/15/04				2007-04-19		JPERRIN
1346674	T1 - Travaux divers	Done	10/27/05				2007-05-23		JPERRIN

European Laboratory for Particle Physics
IMPACT

IMPACT Search: 10/27/05 | Search in: 10/27/05

Activity ID: 1346674

Activity Name: T1 - Travaux divers

Status: Done

Res. Group: 10/27/05

Facility: LHC Machine

System: P - Personnel safety

Title: dipose d'ethalolage T2 76 point 7

Start: 2007-03-20

End: 2007-05-23

Assignee: JPERRIN

Activity Description: ...

Equipment: ...

Installation & Commissioning: ...

Operation: ...

Equipment: ...

Status: Done

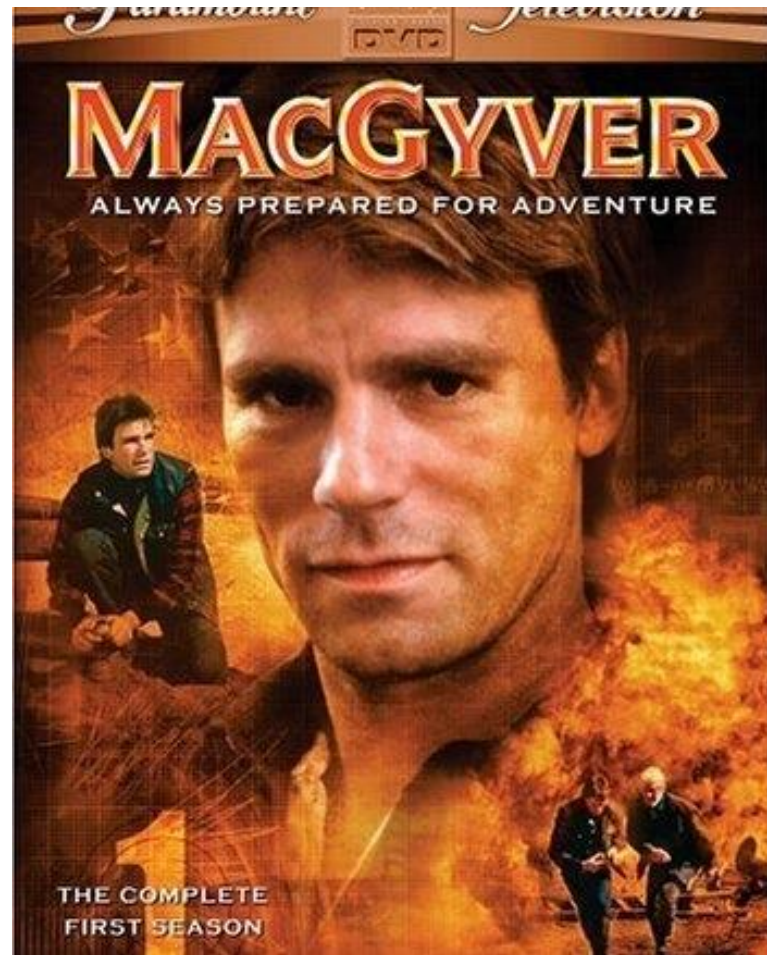
Start: 2007-03-20

End: 2007-05-23

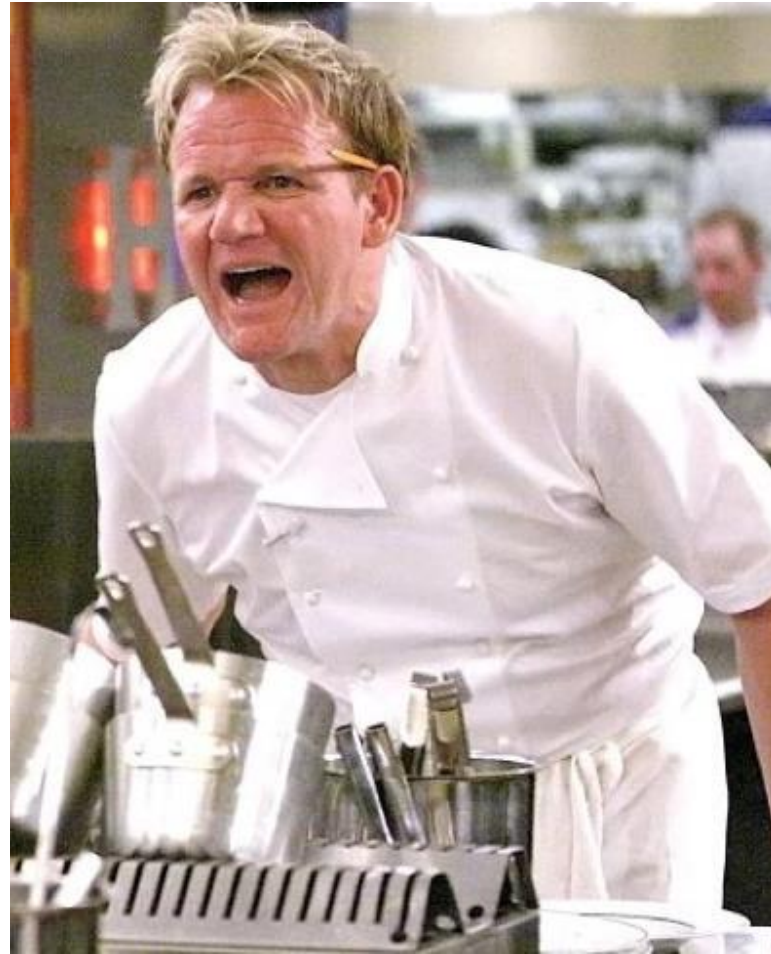
Assignee: JPERRIN



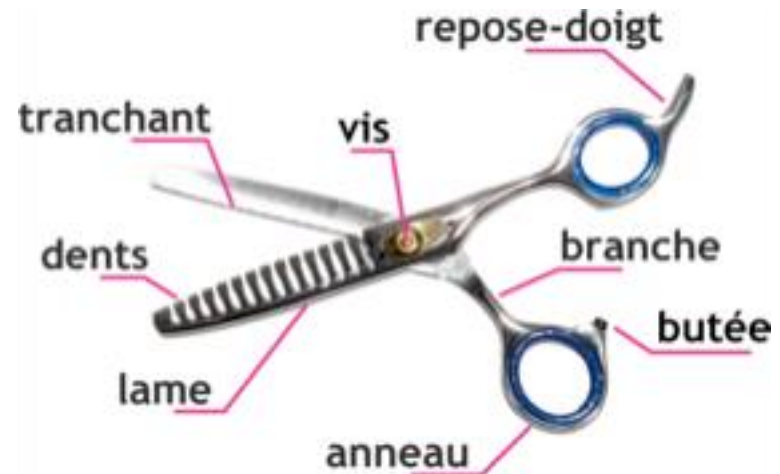
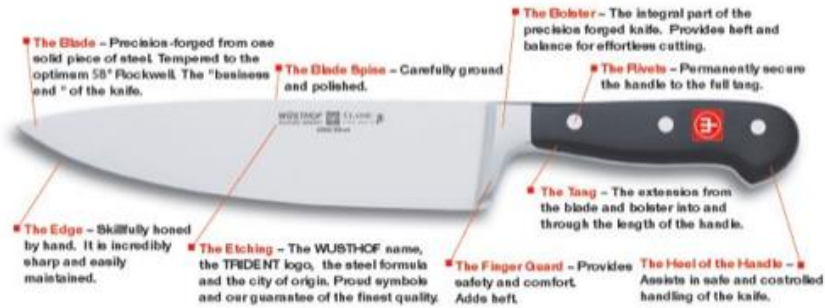
One tool for any job...



... will not please everybody



Professionals need tailor made tools



Infor EAM

- Standard tool box but
- Open for access
 - Oracle tables and views
 - Webservices API

Control room & Service Desk



Workflow

11/11 17:11:38 TZ76 SECU_FEU_LHC SFDIN-00298 DEFAULT CENTRALE DETECTION INCENDIE - CABLEE

SECU_FEU_LHC TZ76-2743 SFDIN-00298 DEFAULT CENTRALE DETECTION INCENDIE - CABLEE

Alarm Instructions No alarm instructions. Last instruction: 04/09/2013 to 09/09/2013 [History](#)

GMAO	SFDIN-00298 CENTRALE D'ALARME FEU ZS07 - Installe et Maintenu MTF Make ODM	Creation date	MRC	Description	Status	Created by	Comm..
	19721688 EDIT	11/11/2013	SAS	DEFAULT CENTRALE DETECTION INCENDIE - CABLEE	RT	TIOP	1
	19696977 EDIT						2
	19537890 EDIT						2
	19051178 EDIT						2

Action	HO: Make ODM + c
Cause	No cause informati
Consequence	No consequence inf
Comp Info	No complementary
Responsible	<input type="checkbox"/> RAFFOURT DE
Point Details	Point Id: Equip. Code: Location : Status:
Alarm Details	AlarmID: 12823 Alarm Value: FALSI ANS id: Categorie 1: CERN
Modesti	Update: 1112870

nobody

Create an ODM for alarm: SFDIN-00298

Gmao code

Description

Comments

Mrc

Loc

* **Piquet Call?** Yes No

[Create ODM](#)

type	location
CD	TZ76
T1	TZ76
CD	TZ76
T1	TZ76
T1	TZ76
T1	TZ76
OM	TZ76
PS	UJ76
T1	TZ76
MO	TZ76
PS1	TZ76
T1	TZ76
T1	TZ76
T1	TZ76

AlarmID	Creation date	Description	Status	MRC	Location
19499173	2013-07-23 15:55:34	IS37 N?5371588 bat 3718	RA	SAS	T1 TZ76
19496694	2013-07-19 07:51:56	IS37 N?5368412 bat 2737	T	SAS	T1 TZ76
19495097	2013-07-18 14:19:46	IS37 N?5367728 et 5367728 bat 2703	RA	SAS	T1 TZ76



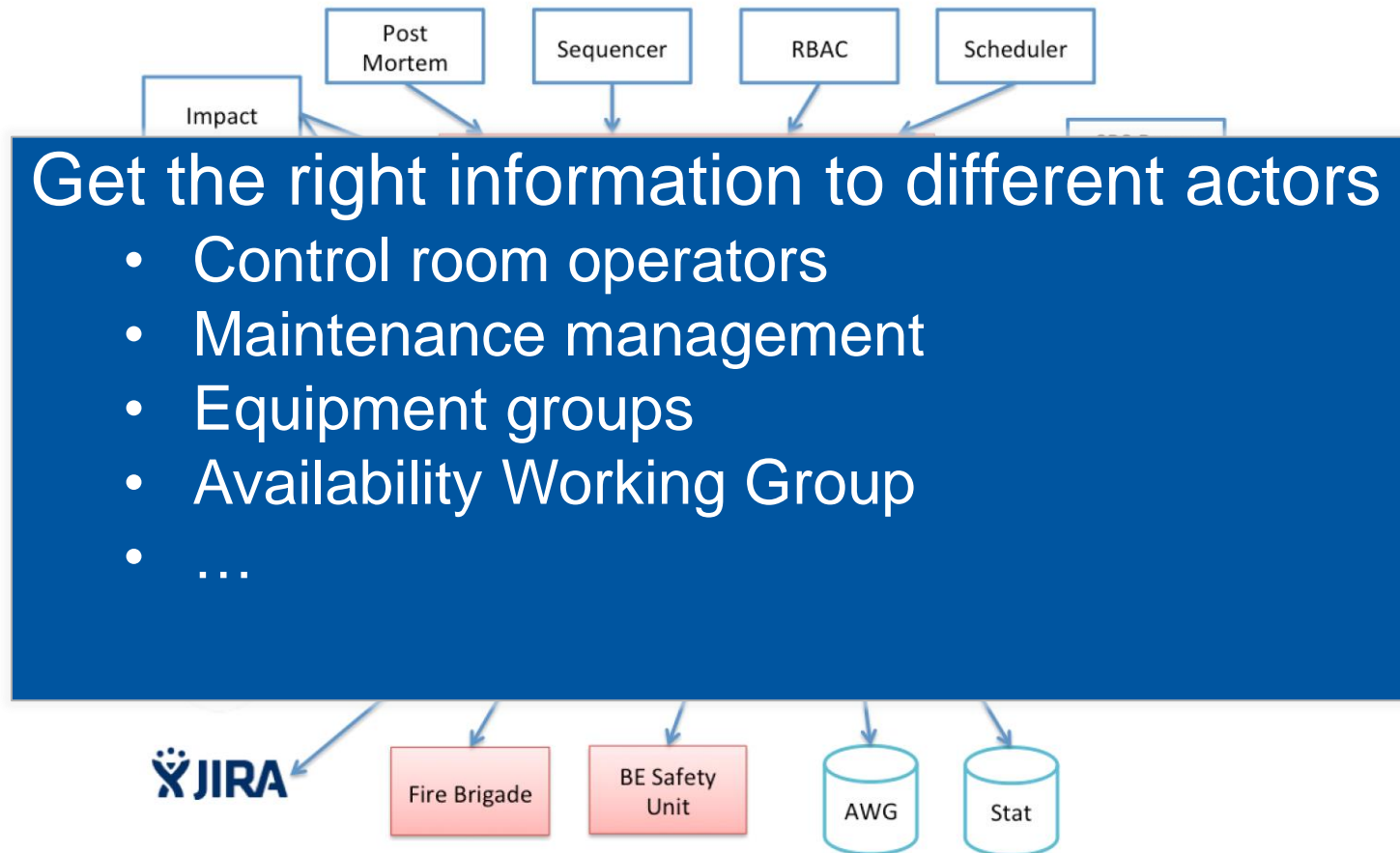
Future plans

- Integrate and link information even further
- Operational Issues Management
 - In collaboration with
 - Maintenance Management Project
 - Availability Working Group
- Operators design own tools

Data Integration

_CLIM_PRE		887-HA UACW2-00514		ALARME GENERALE	
No alarm instructions. Last instruction: 02/07/2010 to 09/07/2010					
actions		History			
actions	Ongoing	IMPACT	IS37		
	EHN1 sfdin269 27/5 13:55 --- [164885]	28470 14/4/13 - 19/6/13, Gammagraphie, Aline-Marie Piguiet 71864 169363	5307699 27/05 08:00 - 14/06 17:00, electric we		
	EHN2 sggaz148 27/5 08:36 10:44 [161819]	28768 3/5/13 - 28/5/13, Coordination de chantier TCC8, Sylvain Girod 79057, 165082			
		28131 19/4/13 - 19/4/14, controles RP, Claude Pesce 62626, 168952			
UACW2-00514 CLIMATISATION LOCAL ECAL CALIBRATION HUT - Installe et Maintenu MTF Make ODM					
	ODM	Creation date	MRC	Description	Status Cre
	19280642 EDIT	16/05/2013	FCSP	DEFAULT GENERAL	RA TIOF
	19249615 EDIT	29/04/2013	FCSP	suite odm 19241635, l'odeur est toujours presente	TT RLEI
	19241635 EDIT	17/04/2013	FCSP	Air-conditioning - unpleasant smell	TT FHEI
	Search more...				
HO: Creation bon GMAO		HHO: (1) Intervention operateur Creation bon GMAO (2) Appel piquet Creation bon GMAO			
ARRET SECURITE. DEF AUT THERMIQUE DU VENTILATEUR. DISJONCTION DE LA BATTERIE ELECTRIQUE. MANQUE DE DEBIT D'AIR PULSE. SURCHA ELECTRIQUE.					
sequence	ARRET VENTILATION.				
Info	L'installation dans partie Nord-Est du EHN1. Entrez par la rampe. Experience ECAL en face de l'entree. Contournez l'experience par la droite. Acces installation p acquittement default dans armoire de commande. .				
onsible	<input type="checkbox"/> SABRI HASSANE EN-CV-OP 62139 - 6199				
s	Point Id:	47184 STL last 100	DAQ Type:	JEC	
	Equip. Code:		TIM Equip. Name:	E_JEC_AIRH4STP887	
	Location:	887-HA-	Host Name:	AIRH4STP887	
	Status:	0 (IN SERVICE)	Process Name:	P_AIRH4STP887	
AlarmID:	111372		Fault Family: THER_CLIM_PRE		
Alarm Value:	TRUE		Fault Member: UACW2-00514		

Operational Issues Management



I. Laugier BE-OP-TI Juillet 2013

Operators design own tools

Date	GMAO	MRC	LOC	Description	ODM	STATUS	IMPACT
THU 14/11 15:13	SFDIN-00298		TZ76	Fire detection unit not responding			
THU 14/11 15:14	EBD102/15A		USA15	Local power cut in ATLAS			
THU 14/11 15:26	E\$-ECLAIRAGE		UXC55	Faire point sur eclairage	19741132	R	

GMAO: [MONTE CHARGE SCHINDLER 3T PM15 \(54004403622\)](#)

MRC: HM12 - SCHINDLER (CH - TEL:08.48.821.821)

Location: PM15 - 2126=PUITS D'ACCES MACHINE DIAMETRE 9.1M PROF. 82M

Requestor: PETER SOLLANDER (BE-OP-TI) 865/2-B22Tel:78081 Cell:163985

Assigned: EMANUELE MATLI (BE-OP-PS) 865/R-C06Tel:72744 76677

Description:

Comments:

Date	GMAO	MRC	LOC	Description	ODM	STATUS	IMPACT
THU 24/10 16:53	CRAS-00714		PM15	probleme avec bouton de blocage	19684320	R	
MON 23/09 16:21	YCUTL02=PM15		PM15	defaut ouverture porte de droite	19598949	R	
FRI 20/09 09:56	YCAPG01=PM15		PM15	un des PAD ne fonctionne pas	19597490	R	

Conclusion

- Technical Infrastructure operation handles 1'000'000+ *events*, 10'000 incidents per year
- Preventive maintenance activities must be known to evaluate situations and start corrective maintenance when needed
- CERN central Maintenance Management database invaluable for control room operators
- Professionals need professional tools
- User interfaces best made by users



www.cern.ch