



# EVOLUTION OF THE ELECTRONIC LOGBOOKS AT ESRF

PCAPAC 2008 - SLOVENIA Tuesday, 21<sup>st</sup> October 2008

The European Light Source

PCAPAC 2008 - L. Hardy - Evolution of the electronic logbooks at the ESRF

Slide: 1



European Synchrotron Radiation Facility

## France – Grenoble

# ESRF = X-ray source produced with 6 GeV electrons



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PCAPAC 2008 - L. Hardy - Evolution of the electronic logbooks at the ESRF

Slide: 4



- 1. WHY GET RID OF PAPER? ...
- The Control Room has accumulated 30 logbooks / year ! =>
- No easy way to find information: mostly based on memory
- No way to <u>filter</u> the information
- Sometimes difficult to <u>read</u> handwritten information !
- Generally no room to write « post event » information or add a post comment
- « Never » available when you need it !
- •And ... no online (and fast ) information flow to a group



2. 2004: Three-level (in time) SPECIFICATIONS FOR NEW E-LOGBOOKS

The decision to move to an electronic logbook was based on us being able to obtain All <u>SPECS of LEVELS 1 & 2</u>

**LEVEL 1 : WHAT WE WANTED IMMEDIATELY** – the minimum required

- Accessibility from any PC/station at the ESRF on a Web Browser or from anywhere outside the ESRF (provided the user has an ESRF account !...)
- No nominal licence and <u>no software to install</u> / run to access the e-Log
- Must be <u>be easily configured by a non-expert</u> in programming
  - add the fields you want where you want
  - a list of options in a field could depend on another option in another field without any limits (equipment sub equipment sub sub ...)
  - = parent children structure



- Must have powerful filter criteria possibilities
  - one or more fields
  - keyword(s)
  - indexation in a pdf file
  - a part of a word in a field
  - and a mixture of the above possibilities
- Attachments: ANY file with any extension can be attached

MY USER'S - (future) ADMINISTRATOR'S - POINT OF VIEW :

•A LOGBOOK DESIGNER SHOULD NOT ENTER IN ANY CODE: A USER-FRIENDLY INTERFACE IS NEEDED FOR CONFIGURATION

• THE « administrator » SHOULD NOT BE AN EXPERT IN DATABASES: THE DATABASE SHOULD BE TRANSPARENT (or almost !).



LEVEL 2 : WHAT WE WANTED BUT CAN WAIT for 'some time' TO OBTAIN

A powerful mailing system:

• an automatic email of the log could be sent to one or more predefined person(s) DEPENDING on one or more options in one or more fields.

#### **Examples**:

'meyer@esrf.fr':"Keyword='Software' and Beam\_Line='ID14-3'

Jens Meyer will receive all logs concerning software problems on ID14-3 only operation@esrf.fr': "Event='Failure (NO BEAM)

The Operation Group receive an email when the beam is lost.

Screenshots: easy to get into the log and visualise it as a thumbnail

Modular enough to add any future possibilities on request (tailored to ESRF requirements !)



## LEVEL 3 : IT WOULD BE NICE IF ....

- Many logbooks could be structurally organized in tabs sub tabs etc
- A log could contain sub-logs (to put related events together)
- A log in a logbook could be linked to another log in another logbook

• A log could be AUTOMATICALLY created when a predefined criteria is matched (ex: if lifetime drops by 20 %, record pressure / gaps / intensity / etc)

• A log could be AUTOMATICALLY created every X hours (all beam parameters at the beginning of a shift)

Which means a link to TANGO



### 3. Who will do it ?

- Software available from other Institutes ?
  - We investigated this option but our requirements couldn't be met
- Develop it internally ?....
  - Will it ever be finished according to the specs ? ...
  - Will it be documented ? ...
  - Who will maintain / upgrade with newer platforms ?...
  - 2 programmers / 1 year =~ 80 000 euros. Is it a good idea ??

We concluded that this kind of software must be provided by a reactive company.

Only 1 small company offered such a software application for which most of the constraints were already being taken into account and the remaining constraints could be easily added on request :

ST James Software in South Africa (14 people).

Experience of e-logbooks for Control Rooms for large energy Power Plant + Airport + Mines, etc

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### FIRST TEST ! Let's create a logbook to store all Control Room Procedures !

### From the template, this first logbook was created in two hours (it would now take 30 mins !)

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Second test ! A logbook to gather technical information within a group.

# In the Power Supply Group, a record of who has done what on which equipment can be retrieved in a second, years later !



## European Synchrotron Radiation Facility

And ... many other examples ! The introduction of the JLogBook at ESRF was such a success that most groups wanted their own logbook !





## 2006, the final step: the Control Room e-logbook including all sophisticated functionalities !









## • <u>Powerful filters</u>: Retrieve anything which has been logged concerning « Cavity 5 » for n years

	Run 2008-0	02		Log Date	6/05/2008	Lo	g Date Friday		Time 05:36	Run http://pclog2	90/demo/main
lachine	Mode USM			Message F	. Henrissat :	Vacuum bel	aviour of	avity 5 over	the last 3 days in 10-bun	ch mode with various ma	ximum inter
Filling	Mode 16 bur	nch	_								
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08.02	Monday	28/04/2008	10:44	LISM	Information	SD.	SDE	CAVATV 5.6	I M Marciar where: Covity 5 Wine	ow 2 ic in alarm due to	
00-02	monuay	20/04/2000	10.44	0.0141	momation	UN	J.	CANIT DO	coupler temper ture to high (incre	asing from 40 deg C up to 85	
									deg C) when we dow 2 air temper C. The persistent vacuum problem	ature has increased of 2 deg 🖿	
									correlated with ver heating of its	coupler 2	
									Alarm level is set to 150 Deg in o cavity 5.	der to unmask problem on	
08-02	Saturday	26/04/2008	21:48	USM	Information	SR	RRF	CAVITY 5-6	M. Paulin:we chick the temperat	ure history for this coupler by	
									staticmon, in fair the temperature thursday, to be meck regularly	starts rising regularly since	-1
									indicad in the point of the second se	Ē	
08-02	Wednesday	23/04/2008	05:49	MDT	Information	SR	S RF	CAVITY 5-6	G. Garnodon : Cavity 5 Behaviour	for this night.	
											Sector.
08-02	Tuesday	08/04/2008	00:13	MDT	Information	SR	SP	CAVITY 5-6	Jom Jacob wros: Between 23h1	and OOh15, we have	Sala S
									in the best pursible conditions. S	en in order to start the USM ee 1st attached graph. When	
									moving the tolers too fast, we im	nediately had a strong A3. We then restarted TRA3	
									teressere is polled and though it.	no. The men restance more r	

# Or retrieve all logs where a part of the word 'scraper' has been mentionned ...

IP. Jodar : We observed pressure peaks where the scraper was opened at 17:24	
B. Ledrappier: Bear is scrapped to 150 mA to check topping up mode (INT4 set to 1.3 mm)	
Gilles Chazot writes: SRINJ ON did't not move the scrapers to the injection value. We need to reload SRINJ File Is there a link with matlab routine (It stopped SRINJ when refill is finished).	
P. Jodar : We observed all scrapers jaws at a wronght value during a new fill or topping up. The values of SRINJ file are : int4 => 40, ext4 => 13, Upp5 => 7.5, Low5 => 7.5, Upp22 => 13, Upp25 => 9.4, Low25 => 9.4 The values seen during the fill was : int4 => 40, ext4 => 36, Upp5 => 6,9, Low5 => 6.5, Upp22 => 9.2, Upp25 => 7, Low25 => 7 ???	
Reload systematically the operation file on SRini before	And the second

### Or any tricky combination of filters you want !



• <u>Powerful mailing system</u>: The operator can decide to mail a log to one or several persons (or predefined groups of persons)



Or the 'designer' decides that an email of the log will be sent <u>automatically</u> to: (examples !)

- Operation managers for all failures
- RF engineer for all RF failures
- 'J. Meyer' for all computing failures which occur on the beamline ID14 only, etc .

DI: TM:	14:33:29
IM:	14:33:29
FVENT.	Instruction in progress
ACCELERATOR:	
EQUIPMENT:	HOPS
SUB EQUIPMENT:	-
URATION:	0
IESSAGE:	Jean-François Bouteille writes: Implementation of an alarm in the HQPS status button.
When the power of	consumed is above $760 \text{k}$ per unit of HQPS2 the system turns orange.
Waiting for an u	update of the HQPS2 PLC software which will launch an anti-blackout sequence, (killing the beam and the
largest consumer	rs), the only thing to do is to stop the injector and / or the test-stand to avoid an electrical cut whi or the charge SOUNCE of SOUNCE of MONS?
When the nower (	any chief above source and the provision of the system turns red.
The possibility	to have an electrical cut before going to by-pass is imminent.
The software ind	dication has been implemented this afternoon by Olivier Goudard.
orange alarm is	set for
8.36MW for 11 un	nits
9.12MW for 12 un	nits
9.88MW for 13 un	hits
10.0100 101 11 0	antes
REPLY:	
-mages:	
ercier@esrf.fr,	, barbier@esrf.fr, boilot@esrf.fr, dedonno@esrf.fr, nmichel@esrf.fr, vial@esrf.fr
To view more det	<pre>tails, click on this url rf.fr/CTRM e Logbook/form.htm?faction=viewfrowid=2008100214332900fusername=anonymousfpassword=anonymousfi</pre>
Just ( log a	click on the link to access the s a 'guest' (no need to login /
Just log a use p	click on the link to access the s a 'guest' (no need to login / assword)



## Powerful USER RIGHTS:

All Users can be attributed extremely powerful User rights at a glance (many more combinations than in the most expensive industrial software applications !)

**Examples:** 

- Operators are forced to read the latest instructions in progress when they login (automatic filter on login) but not other people's.
- User 'alpha' can access logbooks for which only he is authorized.
- User 'alpha' has or doesn't have the right to access some fields
- User 'alpha' has or doesn't have the <u>right to access some options</u> in some authorized fields
- User 'alpha' can modify / delete what he or others have entered,
- Etc without any limits !

				User	Configuration			8/1
<u>Sγstem</u> Datal	<u>base Indexer Resource C</u>	Categories Options	<u>Users</u> logged in as <b>hardy</b>					
Add User Cop	ογ User <u>Delete User</u>					· \		
Name	chazot	Password	kolokolok	LogOff Delay	35000	LogOff Shift	False	-
Configure	False	Password Change	False 💌	Active	True			100
View Scope		+-Fields		Initial Filter	Event - Unstruction in progre	Initial Period	0	
Add:	T	✓ +-Fields	+*	Defaults	Message:"Gilles Chazotwri	Options		
modify:	True	<ul> <li>Scope</li> </ul>		+-Fields	+Dt +Shift	Range	All	Jelay
Delete:	True	Scope					All	
Modify Use							MineOnl∨	
Page 1 of 6	iret Navt I set							
The Furnneau	n Light Source			du - Euclut	ion of the electronic	logbooks	at the ESRE	05 :abil2



ESRF operators now consider that a kind of « ideal » Control Room logbook has been achieved. The function most appreciated by the operators is the powerful filter possibility which allows information on any sub-equipment to be retrieved in a second and also the attachment of screenshots in a click.

But ... it would be ideal if ...

- All logbooks could be organized in tabs / sub-tabs , etc
- A record in a logbook could be Web-linked with another record of another logbook

•Ex: link a failure of in the 'Control Room' logbook with a procedure in the 'Procedure' logbook.

- A record could contain sub-record(s). Ex: after a failure, track everything which was done concerning THAT failure.
- An interface could be done with our TANGO control system in order to:
  - trigger automatic logs every 8 hours (intensity / lifetime / emittances / etc)
  - trigger « on-event » data. Ex: IF lifetime drops by 30 % → create a log with this and that parameter and attach a graph of the RF voltage vs time (ex !)

Here comes the latest logbook generation « J5 » out since 2008



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- 5. The JLogBook version 5 (j5) was released in 2007-2008.
- Improved organization in the case of many logbooks





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## Improved User interface

				Powe	r Supply Logb	ook ( <u>Designer</u> ) logged in as hardy (groups.adr		
ge nav	vigation: 1 <u>2 3 4 5 6 7 8 9 10 11</u> 47	7 (last)						
ter:	dit Filtor							
	architer							
nt Vie	<u>w</u>							
d log e	Audit Log for Deleted Rows	Mode	0 re 2	Equipment	Event	Messana		
uons	Log Time	Houe	Area	Equipment	Event	7 cartes Bruker configurees en unipolaire sont reparees et disponibles en spare pour MS6 et MS9. El		
Ð	02-10-2008 17:00	USM	SRDC	Bruker Power Supply	REPARATION	sont, pour l'instant, sur le toit de MS9. 1 carte Bruker configuree en bipolaire est reparee et disponible en spare pour MS18. Elles est, pour l'instant, sur le toit de MS18.		
<b>(</b>	02-10-2008 16:00	USM	Storage Ring Tunnel	Vacuum Vessel Cooling	INFORMATION	Compte tenu que le circuit SRA cellule 08 est en train de se boucher (65 l/h au lieu de 200 l/h), sur demande de l'Operation (Ph.R) pour ne pas perdre le faisceau, le contact du debimetre FL12 cell 08 ( strape a l'entree du rack "Magnet & Vacuum cooling Interlock" (+24V sur l'entree de l'automate).		
) 🖉						Comme vous avez pu le constater, le Jlog a des problèmes de rapidité. Cela est en cours d'investigations.		
<b>.</b> ⊕	01-10-2008 15:40		None	LogBook	INFORMATION	Pour ce qui est des demandes qui m'ont été formulées : * Le formatage de la date et heure est maintenant au standard français. * L'ervoi de mails plus clairs est en cours		
						* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours		
try for	17:59 on 09/27 (PS-2008-55) <u>Au</u>	<u>dit Loq</u>				* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours		
try for	17:59 on 09/27 (PS-2008-55) <u>Au</u> ) ➡ Username goudar	<u>dit Loq</u> rd	Lc	og Time 27-09-200	8 17:59	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours		
try for	17:59 on 09/27 (PS-2008-55) <u>Aw</u> ) ➡ Username goudar Area Techni	<u>dit Loq</u> rd ical Galle	Lo	og Time 27-09-200	8 17:59	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours		
try for ) 🔊 C	17:59 on 09/27 (PS-2008-55) <u>Au</u> Username goudar Area Techni Equipment FUG Po	<u>dit Loq</u> rd ical Galle ower Su	ery La	9g Time 27-09-200	8 17:59	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours		
try for ) Ø €	17:59 on 09/27 (PS-2008-55) <u>Au</u> Username goudar Area Techni Equipment FUG Po Mode MDT	<u>dit Loq</u> rd ical Galle ower Su	ery pply M	ng Time 27-09-200	8 17:59 e de la carte peak	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours detector No2 sur fug 17b.		
itry for ) Ø €	17:59 on 09/27 (PS-2008-55) Au Username goudar Area Techni Equipment FUG Po Mode MDT Event ALARM	<u>dit Loq</u> rd ical Galle ower Su	ery pply M	ng Time 27-09-200 lessage mise en plac	8 17:59 e de la carte peak	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours detector No2 sur fug 17b.		
try for ) ♪ €	17:59 on 09/27 (PS-2008-55) Au Username goudar Area Techni Equipment FUG Po Mode MDT Event ALARM Email To psq@e	dit Log rd ical Galle ower Su synf.fr	ery pply M	ng Time 27-09-200 lessage mise en plac	8 17:59 e de la carte peak	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours detector No2 sur fug 17b.		
itry for	17:59 on 09/27 (PS-2008-55) Au Username goudar Area Techni Equipment FUG Po Mode MDT Event ALARM Email To psg@e	dit Log rd ical Galle ower Sup srf.fr	ary pply M	ng Time 27–09–200 Iessage mise en plac	8 17:59 æ de la carte peak	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours detector No2 sur fug 17b.		
try for	17:59 on 09/27 (PS-2008-55) Au Username goudar Area Techni Equipment FUG Po Mode MDT Event ALARM Email To psg@e	dit Loa rd ical Galle ower Su osrf.fr MDT	pply M Technical Gallery	ng Tirme 27-09-200 lessage mise en plac FUG Power Supply	8 17:59 e de la carte peak INFORMATION	* Le formatage de la date et heure est maintenant au standard français. * L'envoi de mails plus clairs est en cours detector No2 sur fug 17b. Rétour dans l'armoire de la carte Peak Detector No2 qui était sur la Fug18B. La carte No1 est sur Fug10B car depuis quelques semaines, il y a des alarmes sur H6/C18.		
	17:59 on 09/27 (PS-2008-55) Aur Username goudar Area Techni Equipment FUG Po Mode MDT Event ALARM Email To psg@e 23-09-2008 10:33	dit Log rd ical Galle ower Sup issrf.fr MDT none	pply Technical Gallery	pg Time 27-09-200 lessage mise en plac FUG Power Supply ESRF Steerers	8 17:59 e de la carte peak INFORMATION REPARATION	<ul> <li>* Le formatage de la date et heure est maintenant au standard français.</li> <li>* L'envoi de mails plus clairs est en cours</li> <li>detector No2 sur fug 17b.</li> <li>Retour dans l'armoire de la carte Peak Detector No2 qui était sur la Fug18B. La carte No1 est sur Fug10B carte Pepuis quelques semaines, il y a des alarmes sur H6/C18.</li> <li>Réparation des tous les canaux de commande et les modules de Puissance des ESRF Steerers. Ils sont tous rangés dans l'armoire pour les ESRF- STEERERS en SRDC.</li> <li>Il reste 3 canaux de commande et moduleles de Puissance modifié pour faire des asservissemnet e AC.</li> </ul>		

Ele	ectronic Logbooks at ESRF	European Synchrotron Radiation f
• An 'even-	easier' interface for designers and administ	rators !
		the stand of the standard st
• And a pos	ssibility to clone logbooks which are very i	dentical or similar (ex: it
takes a few	<i>i</i> minutes to configure a logbook for a beam	line which is very similar
to another	one !)	
Home	Log Off Accelerator Development Directorate Experiment Miscellaneous QuickLogs	Server Admin Technical Services
Power S	Supply Operation Procedures MODs Diagnostics Injection Linac Radio Frequency	Vacuum Docs
	Designing <u>Power Supply</u> Logbook (using table PSLogbook)	
Save Logbook	General         Fields         Simple Layout         Expanded Layout         Options	Option Styling
Conditional Styling		
Field		
Fields affected by the s	Area Event Mode Username Attachement Follow up Reference ID Combo-Chromatic Selection Palette	
Tields affected by the s	Email To Log Time Event Time #FCFCFC NO COLOR CLOSE	
Option		
	Style 🕗	
	Bold no v Italic no v Align I	a particular
-		-
<b>0</b> -1'	Background Color: Font Cc	
Option		
-		110000

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## Sub-Logs are possible

000									
	Dept	Monomer	Roun	d Name	South East Round Copy	Status	Expired	Due Date	2008-08-27 22:3
Descri	ption	Covers the	area south of the t	tanks up	to the storage Dam				
Comm	ent /				5	Sublogs as	sociated with	the main I	og
Super Com	visor ment								
dd log entry Au	udit Lo	a for Deleted	Rows			+			
Actions	Tas	k Date	Task Order		Instruction	Tag Nar	ne Task Value	c	omment
0/0	200	3-08-27 1 19		Meas	ure the value	T101	345	No problems (	today
0/8	200	8-08-27 09	2	Choos	se an option	5102	ок		
0/2	200	8-08-27	3	Selec	t one	3343	Bad	Switch is hot	we need to get

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### • 'Human readable' IDs can be created automatically at every log



→In another logbook (ex: control room logbook) where this ID is mentionned in a Weblink, clicking on it will open this log of the 'Power Supply logbook'.

Very useful to link a failure with a procedure written elsewhere for example.

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• The calendar widget avoids all problems of date / time format when recording or filtering !



ESRE



• j5 (as j4) can be connected to any common database (<u>MySQL</u>, Access, PostReg, Oracle, etc )

• And last but not least, the interface to the TANGO control system to catch:





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But this is the subject of the next talk to be given by David Moore !

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## 6. CONCLUSION

• Four years later, after having chosen to buy a commercial product from a small reactive company, we are fully satisfied with our choice.

• All specifications have been met (and even many more !)

- The price for ALL personalized developments +
  - PERMANENT site licence ( + an indefinite number of Users)

is ~ equivalent to the price of one engineer/year !...i.e., much cheaper than an in-house development !

- reactive company means :
  - Solutions provided in a few hours (or days if programme development is necessary)
  - Platinium support (24/24 365/365) to help Users

• They can connect to your system and do the job themselves if you do not feel competent to implement something.



## 7. Acknowledgements

## St James Software for their excellent and rapid response to our requirements

- Nick Hurley
- David Fraser
- David Moore
- Don Glass

### • ESRF:

- Olivier Goudard for his dedicated involvement over the last 4 years
- Jean-Michel Chaize (head of computing software) for his great help and support
- Gilles Chazot, operator, presently involved in designing beamline logbooks