

High level control requirements for Linac4 commissioning

preface

Specialists vs users : FESA-level responsibilities within individual WPs/groups (RF, BI etc), as distinguished from operational/analysis control room applications (OP/CO crew)

Stand-alone vs integrated : applications needed for commissioning-only purposes can be stand-alone solutions (or as first instance in limited number of cases). Operational use applications should be compatible with and integrated in present CO architectures → InCA? (for generic applications and interface to specific ones)

Priorities: time (more than relevance) weighted

Standard software

what	priority	resources	when	who
E-logbook	1	Extension of existing software (elogbook, LASER, PVSS etc)	09/2011	done
Logger/archive				
Alarms				LASER
Interlocks				B Puccio
Watchdog				LASER
Vacuum				PVSS
Radiation monitoring				RAMSES

Beam instrumentation

System	What	Priority	Resources	Stand-alone?	When	Who
Wire scanners	Interlocks, movement, acquisition, display, simple sigma fit	1	Upgrade ISOLDE	no	09/2011	Arkady(FESA), Ernesto+JLSA (OP)
Emittance meter application	Slit/SEM grid movement, acquisition, emittance reconstruction	1	LabView	Yes	ASAP	A. Rijllart, E. Zorin
Bunch shape monitor (Feshenko)	Interlocks, movement, acquisition, display	1	LabView provided, to be integrated/maintained	Yes, until final installation	09/2011	U Raich + russian team
Halo monitor		1	Existing, need resp. for maintenance	Yes	09/2011	K Hanke, M Hori
BCTs	Acquisition, OP display	1		No	09/2011	M Ludwig, JLSA
BLMs	Acquisition, display, loss histogram	2		No	end 2013	E B Holzer

Beam instrumentation (2)

System	What	Priority	Resources	Stand-alone?	When	Who
BPMs	Trajectory, fixed display, TOF	1		No	09/2011	M Ludwig, JLSA
TOF application	Energy from phase measurement, at FESA level?	1		No	09/2011	M Ludwig JLSA
Spectrometer	Input from Bfield, magnet cycling, quadrupoles, slit position; acquisition, display, sigma fit	1		Yes	09/2011	J F Comblin, JLSA
3 screens emittance	Acquisition, emittance reconstruction	2	Adapt Verena's application for transfer lines?	No	01/2013	J F Comblin, JLSA
LBE-LBS	TBD	2	Upgrade existing	no	03/2014	tbd

Equipment control

System	What	Priority	Stand-alone?	When	Who
Source	Source application	2	no	mid/2012	TBD
Chopper	sequence control, synchro, LLRF	1	no	09/2011 and 2013	P Baudrenghien
RF	LLRF, synchro, timings, cavities settings and acquisition	1	no	09/2011 and 2013	J Marques, PB, L Arnaudon
PSB injection application	Intensity vs chopper settings , long painting	2	no	Start 2014	tbd
Foil / injection monitoring	Injection Working set: injection efficiency, BLM synoptic, BTV/foil camera, H0/H- dump current monitor, ctrl/status foil exchanger	2	No	Start 2014	tbd
Beam dumps	Monitoring/ alarms	3	no	2013	tbd

General purpose

System	What	Priority	Resources	Stand-alone?	When	Who
OASIS	Triggered waveform display	1	Extension of existing	No	09/2011	I Kozsar
EqpViewer	RF signals, BCTs	1		No	09/2011	JLSA
Orbit viewer	Display orbit, compare to model predictions, difference bw original and new acquisitions	1		No	09/2011	JLSA
2D scan application	Correlate any 2 signals (quad scans included)	1		No	09/2011	JLSA

Interfaces ++/RTUs

What	Priority	Resources	When	Who
“Fingerprint”: take snapshot of machine state, show deviation from reference and save in PATH/TRACE input file format	1		09/2011	JLSA
Orbit correction : acquire BPMs readings, use steering algorithm to find corrector strenghts to reduce beam offsets- YASP?	3		2014	YASP team
Automated phase/amplitude longitudinal scans for setting RF points (calculating output phase and energy)	3		End 2012	JLSA
Online model application for transverse matching: acquire beam sizes at WS and compare to model predictions. Use iterative optimisation algorithm to solve for input Twiss parameters (input from live machine data and online model tracking- TRACE3D?)	3		2013	?
High level applications to control chopper sequences, synchronisation timings in PPM mode according to super-cycle specifications	3		2014	?