

LIU CABLING & OPTICAL FIBRES STRATEGY

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ENGINEERING
DEPARTMENT

Summary



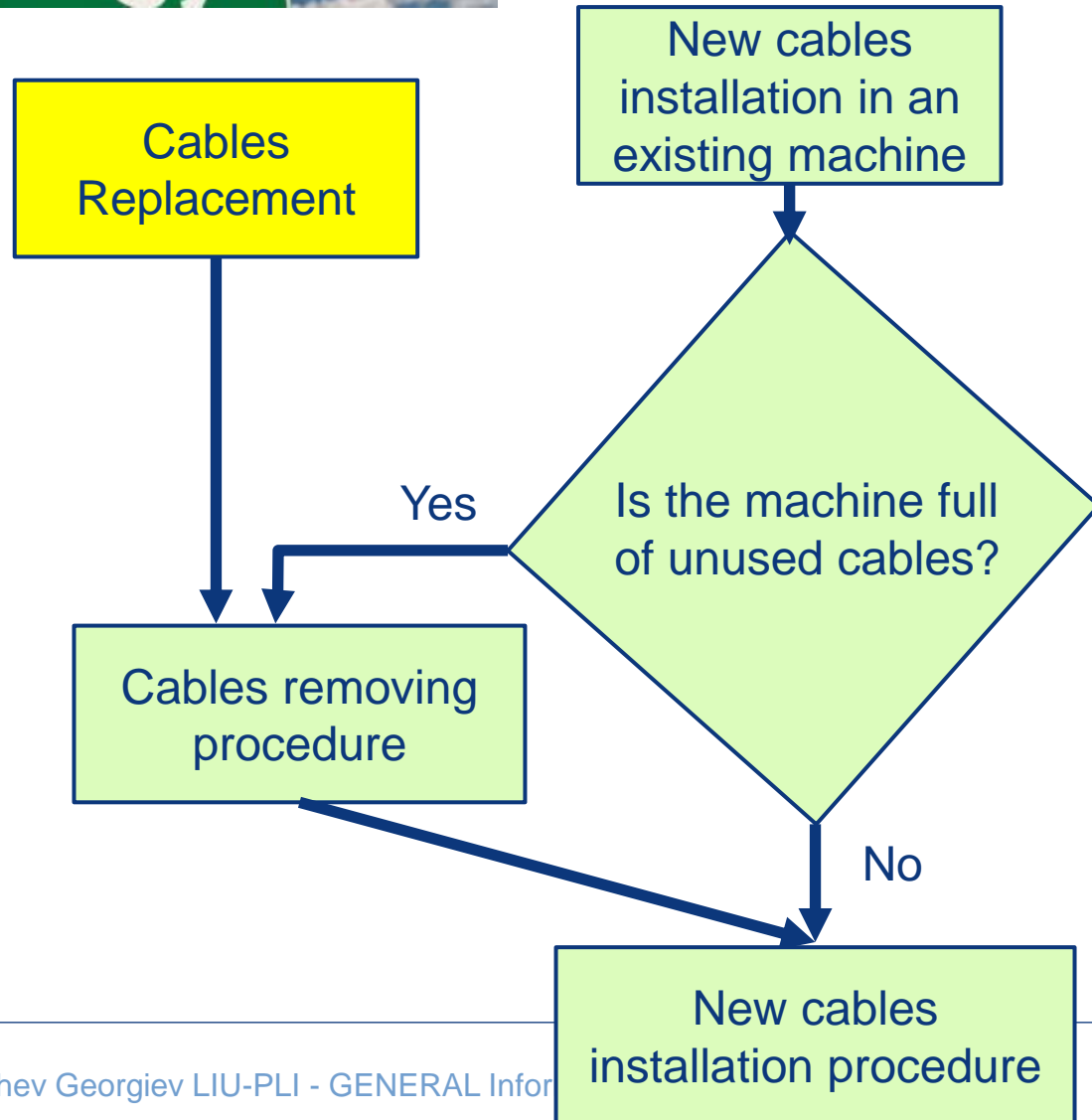
1. LIU cabling works

LIU SPS			LIU PS			LIU PSB			IONS		
MACHINE	Action	Cabling	MACHINE	Action	Cabling	MACHINE	Action	Cabling	MACHINE	Action	Cabling
SPS	Machine interlocks	XX	PS	Beam	X	PSB	Magnets	X	LINAC3	10 Hz	X
	800 MHz upgrade			Magnets	X		LL RF	X		LBS	X
	Improved vacuum sectorisation LSS1	X		Transverse damper	X		HL RF	X		LEBT	X
	Scraper improvement			Longitudinal damper	X		Power converters L4 injection	X	Oven Test stand		
	Beam Instrumentation	XXX		Radiation shielding			Power converters ring, extraction & TL	X	Source test stand	X	
	Transverse damper	X		Power converters	X		Beam instrumentation	X	LEIR	LEIR Dump	X
	Improved vacuum sectorisation arcs	XX		Beam dumps	X		Beam intercepting devices	X	PS	RF Gymnastics	
	New TIDVG core			2 GeV injection	X		Linac4 injection	X	SPS	100 ns rise time kickers	X
	Other kicker impedance reduction			RF-HP	X		2 GeV extraction and transfer	X		Momentum slip Stacking	
	ZS improvements			RF-LL			Vacuum	X			
	200 MHz low level improvement	X	RF-LL		Electrical Systems		X				
	Extraction protection upgrade		Vacuum	X	Cooling and Ventilation		X				
	200 MHz power upgrade	X			Installation, Transport and Handling		X				
	SPS and T12/T18 protection devices	X			Civil Engineering						
	New wide band transverse damper	X			Civil Engineering related to Rack and Cable Installation		X				
	New external high energy beam dump	X			Interlock Systems		X				
	Replace power supply of MSE septa	X			Control		X				
aC coating of vacuum chambers											
Upgrade injection damper for ions											
100 ns rise time kickers for ions	XX										

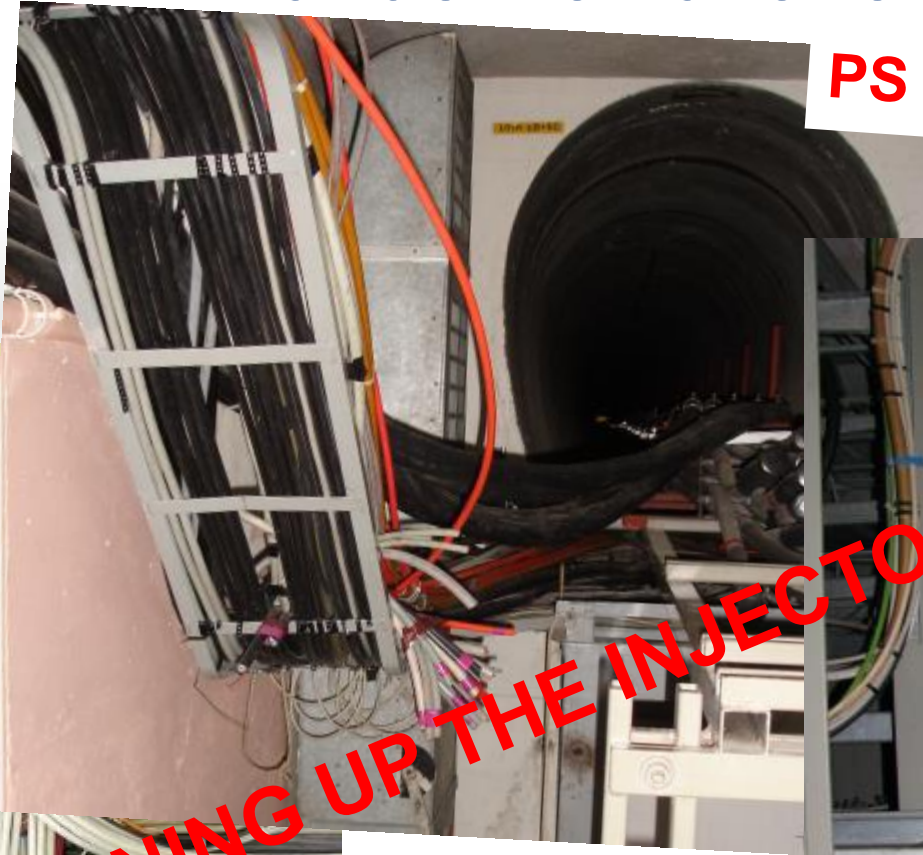
74% of LIU activities require cabling!!!

According to EDMS 1296785

2.



What do we have to do first?



PS

PSB

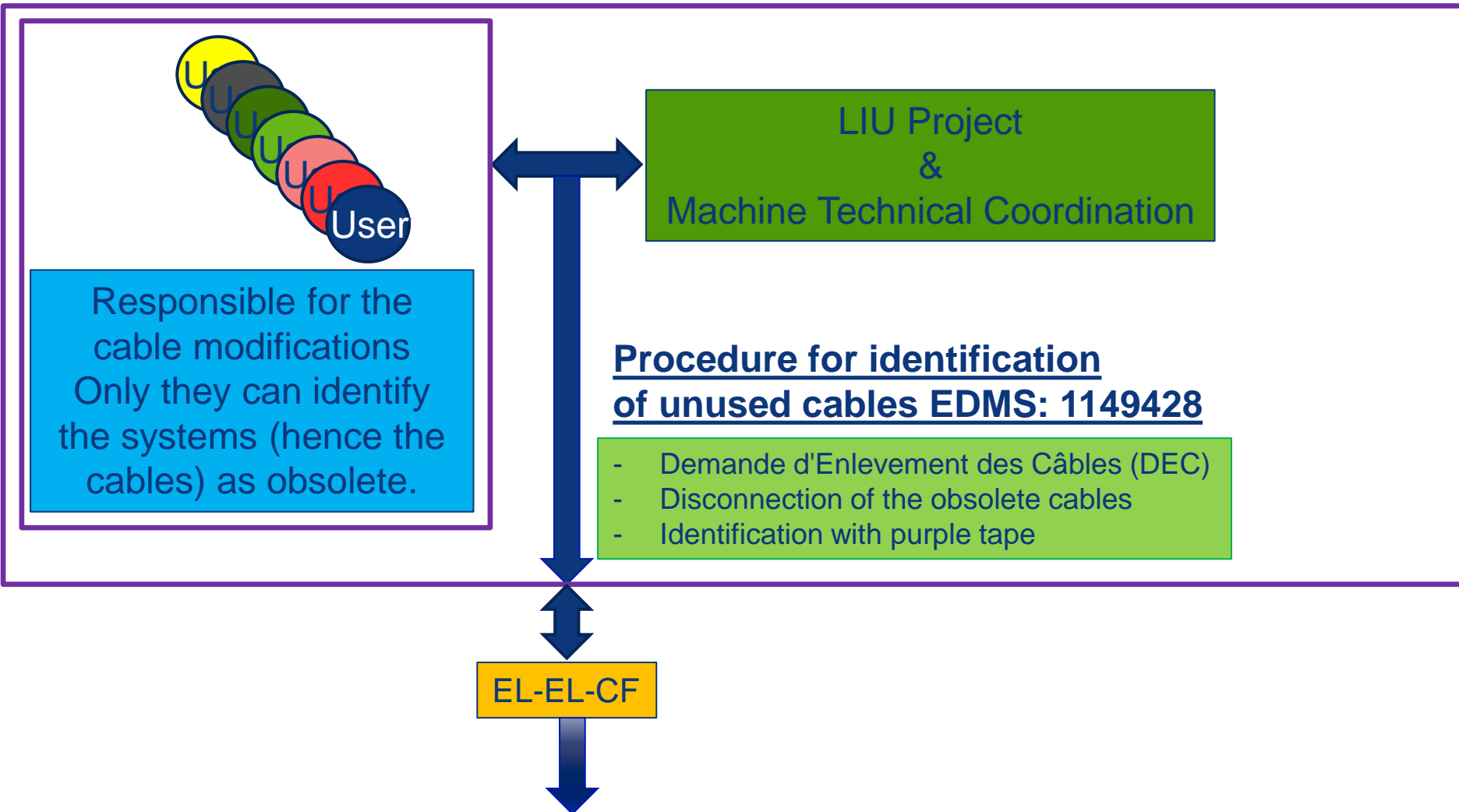


SPS

CLEANING UP THE INJECTORS!

How to proceed with de-cabling?

Different contributors



What is important for de-cabling?

Hierarchical levels of the elements in order of importance

- Identify obsolete systems/sub-systems + associated cables
- Identify obsolete racks + associated cables
- Identify obsolete equipment and chassis + associated cables
- Identify obsolete isolated disconnected cables

Optimization of existing systems

- There are a lot of huge systems which can potentially be simplified
- With the installation of a few new cables, tens or hundreds old ones could be removed

Example BE-CO: the installation of 25 new cables in PSB will enable the removal of 327 old cables!!!

Cables Replacement

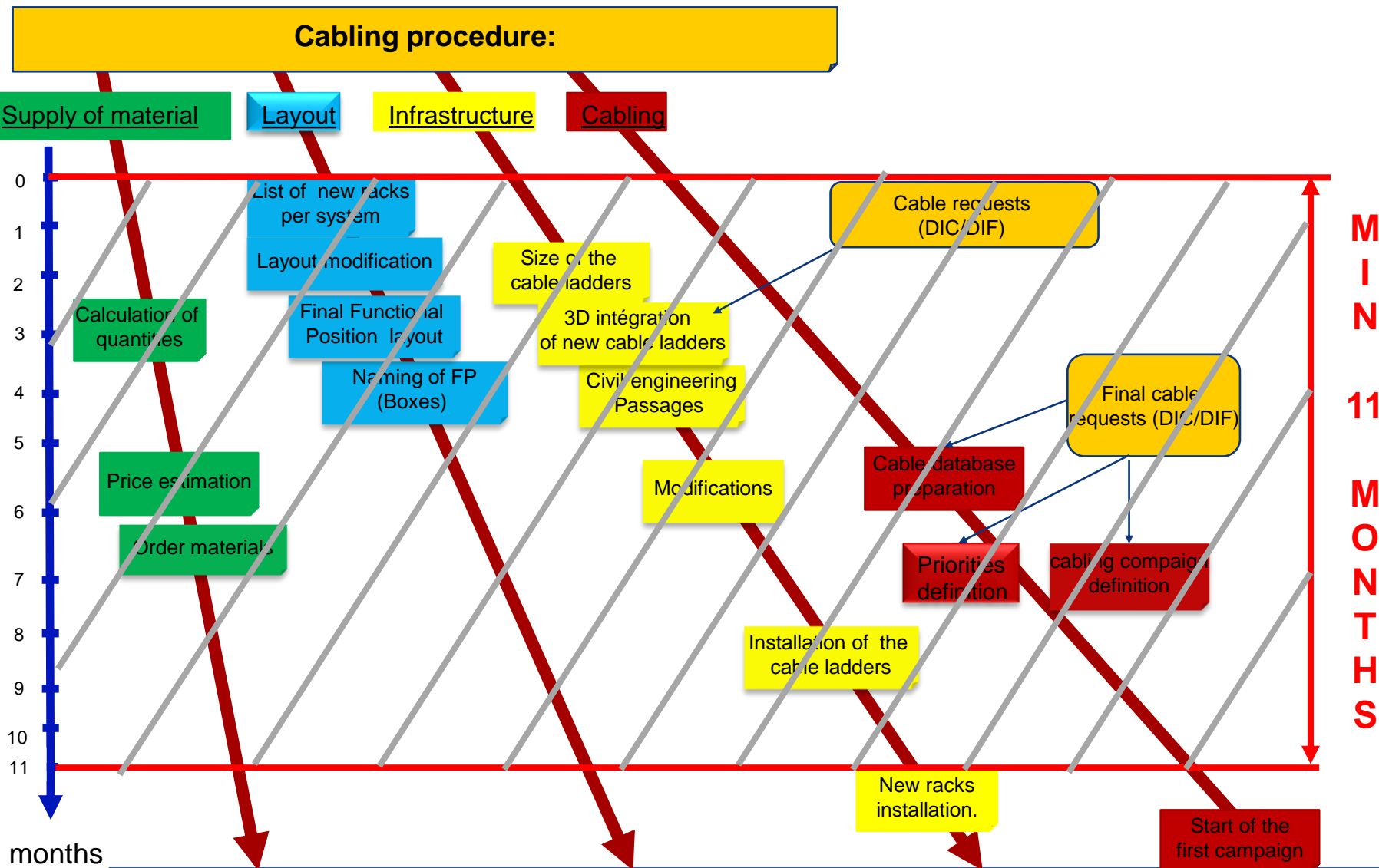
For systems requiring existing cables to be removed and new ones to be installed

- Send “Demande d'Enlevement des Câbles (DEC)” with possible execution date
- Send “Demande d'Installation de Câbles (DIC)”

Demande d'Enlevement des Câbles (DEC) have to be submitted to EN/EL/CF at least 12 months before works start!

What to do next?

NEW CABLES INSTALLATION!



3. Price optimization

Price optimization

EN/EL new installation contract includes important discounts for large-work quantities.



To use this advantage we need users and coordination contribution:

- enable the organisation of large de-cabling/cabling campaigns

ALL REQUESTS TO BE SENT AT LEAST
12 MONTHS BEFORE WORKS START!

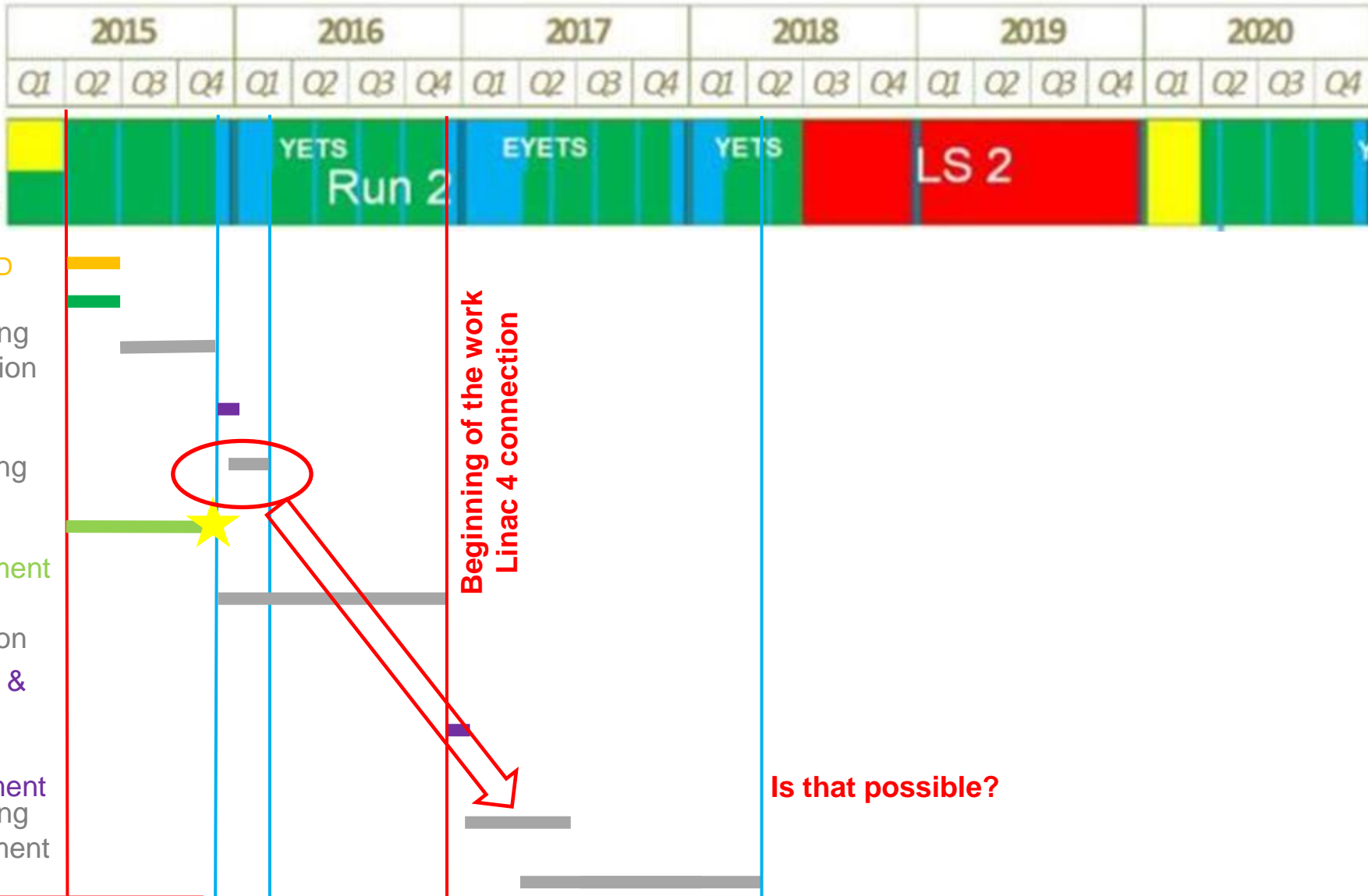
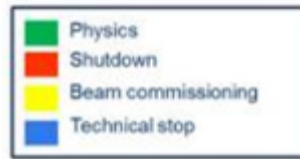
4.

LIU de-cabling/ cabling roadmap



PS-Booster

Under the hypothesis of PSB-Linac4 connection end of 2016



Today we are here



**THE PROPOSED PLANNING IS BASED ON
HYPOTHESIS AND UNKNOWN QUANTITIES!**

**➤ FOR MORE PRECISE PLANNING
WE NEED THIS INFORMATION TO
BE MORE ACCURATE!**



BACKUP SLIDES



EN-EL-CF documents

Procedure for identification of unused cables on the CERN site - EDMS: 1149428

DEC – Demande d’Enlevement de Câbles - EDMS: 1314019

DIR - Demande d'Installation de Racks - EDMS: 1398443

DIC - Demande d'Installation de Câbles - EDMS: 1210369

DIF - Demande d’Installation Fibre Optique - EDMS: 1153880

DFP - Demande de Fourniture de Patchcords - EDMS: 1300564

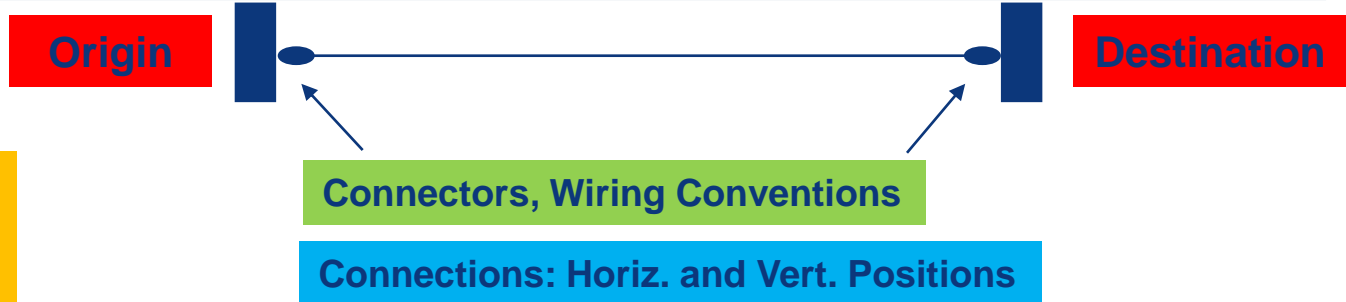
How to fill in a cables request (DIC)? - EDMS: 1301560

Demande d'Installation de Câbles (DIC) - EDMS: 1210369

DIC				DEMANDE D'INSTALLATION DE CABLES				DATE D'EMISSION :	VERSION	Réservé ST-EL
DEMANDEUR :		DESCRIPTION :		FIN TRAVAUX DEMANDE :		RECU LE :				
TEL :		DIVISION :		CODE BUDGETAIRE :		No. DT :				
BEEP :		GROUPE :		NOM SIGNATURE AUTORISE :		AFFAIRE :				
								ACTIVITE :		
								OSE :		

Comments: Examples: Max cable lengths, Sensible câbles to EMC, etc...

Technical part



No. Cable (par EN-EL)	No	5	4	20	6	12	12	3	4	7	7	6	12	12	3	4	7	7	LON- GUEUR
		CABLE	SEAU	FONCTION DU CABLE	OUVRAG	Position Fonction.	ELEMENT	POSH	CONNECT	CONVN	OUVRAG	Position Fonction.	ELEMENT	POSH	CONNECT	CONVN			
1																			
2																			

Cable code: See standard cable lists
Cable function: free 45 character max.

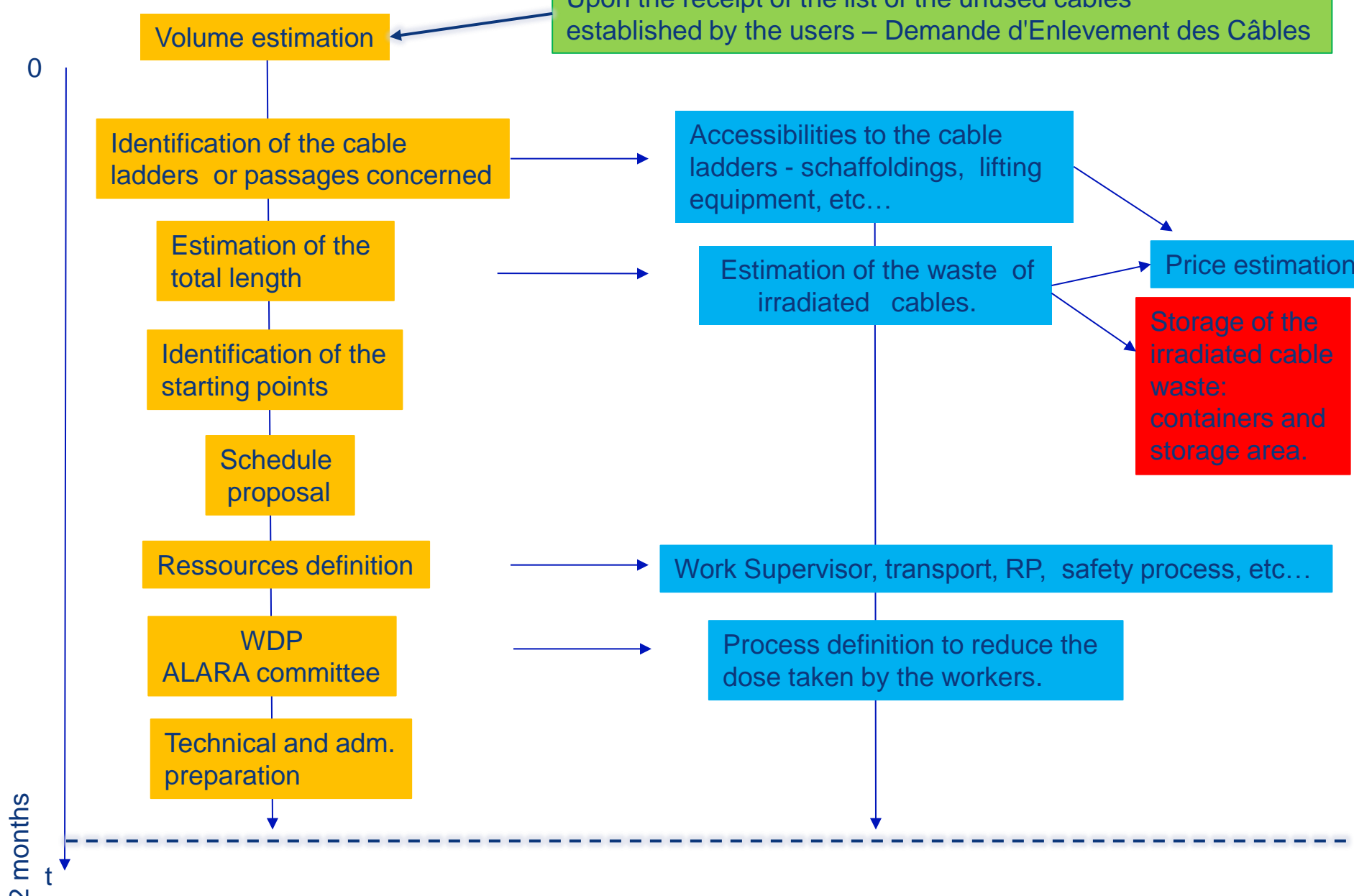
Connector code: See standard connector lists
Wiring conventions: See lists.

Building: Civil Engineering code.
Functional Position: Rack, cabinets, machine equipment
Element: Frames, boxes , etc...

Position inside the rack, extra length to let in the machine area, etc..

Câble number, network code, length: Defined by EN-EL

Cables removing procedure EN/EL



Upon the receipt of the list of the unused cables established by the users – Demande d'Enlevement des Câbles

Volume estimation

Identification of the cable ladders or passages concerned

Estimation of the total length

Identification of the starting points

Schedule proposal

Ressources definition

WDP ALARA committee

Technical and adm. preparation

Accessibilities to the cable ladders - schaffoldings, lifting equipment, etc...

Estimation of the waste of irradiated cables.

Work Supervisor, transport, RP, safety process, etc...

Process definition to reduce the dose taken by the workers.

Price estimation

Storage of the irradiated cable waste: containers and storage area.

12 months
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