

IQC status

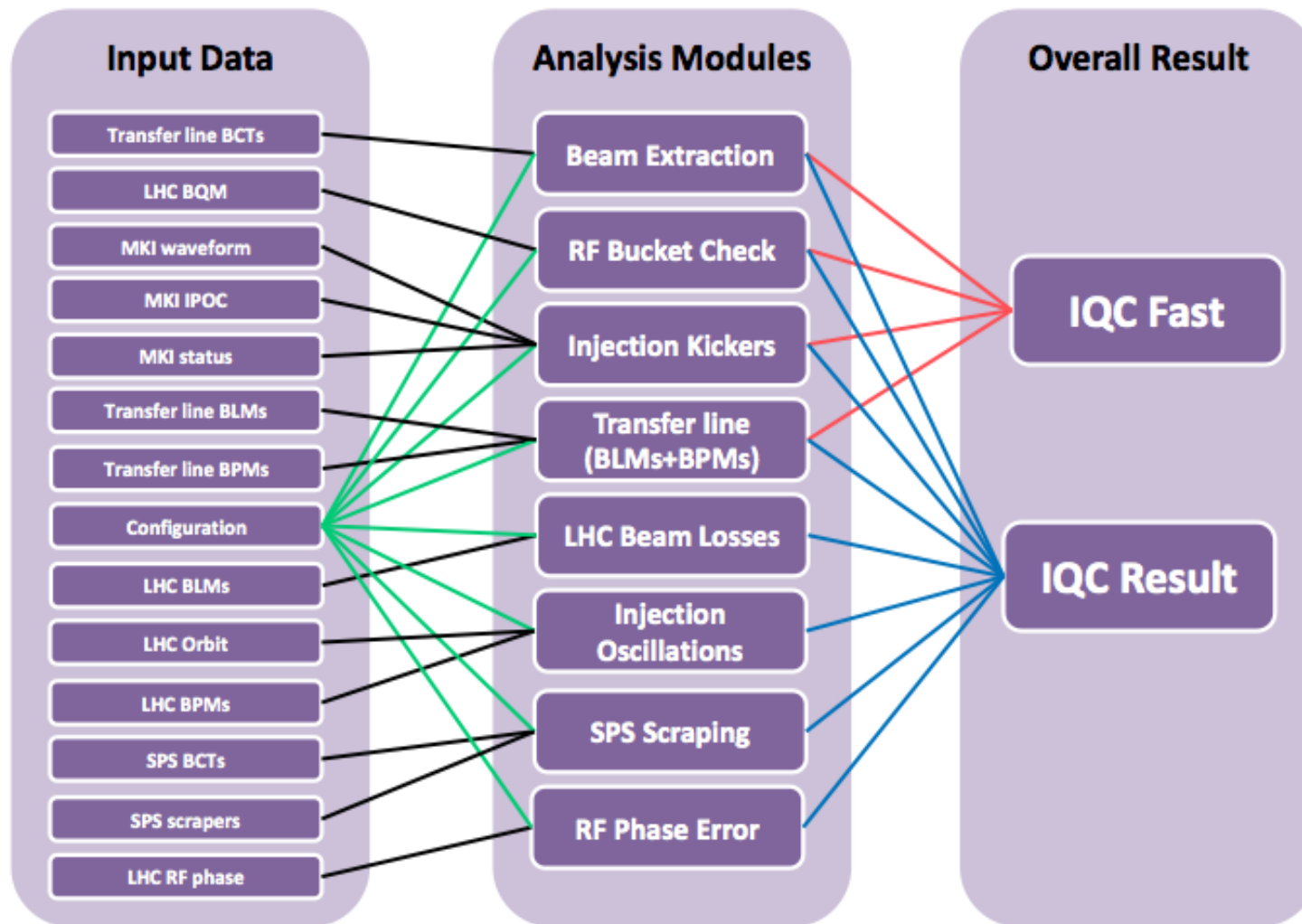
IQC Modules

- The IQC consists of 8 modules per beam

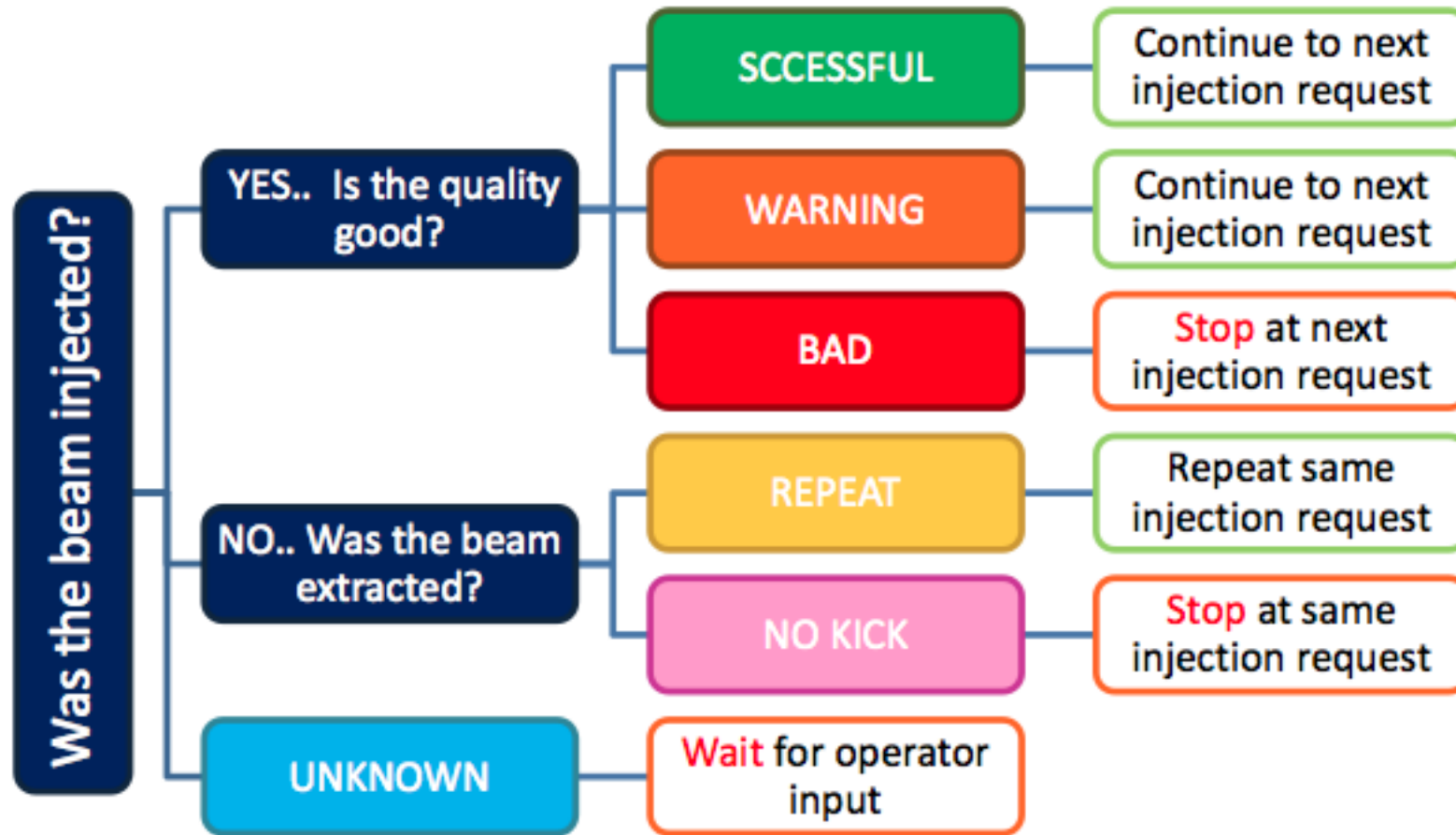


IQC Results

IQC Result after 13 s. IQC Fast after 2.5 s.



Results for Injection sequencer



Results “BAD”, “NO KICK” and “UNKOWN” interlock the next injection via the SIS. While the IQC is still analyzing it also interlocks.

Additional interlock for injection oscillation amplitude.

Communication with Injection Sequencer

INJECTION SEQUENCER v0.4.5

RBA: lhcop

Injection schemes

Filter: 1374

GRP: ALL

50ns_1374_1368_0_1262_144bpi12
 50ns_1374_1368_0_1262_144bpi12
 50ns_1374b_1278_36_1218_144bpi
 50ns_1374b_1296_36_1200_144bpi
 Pilot_1374

Scheme active when loaded
 Allows online buck modif
 Display circ bu conf
 Clear active scheme
 SPSusr chk Freq linked
 Disable inj trims

Refresh list

check reservation
 Take the reservation

owo-ccc-d4lc.cern.ch

Request LHC mastership
 Remove LHC mastership

LHC_mastership

13:38:23 : IQC_RESULT BEAM1 >>> INJECTION OK
 Beam injected! BQMs: Injected 72 bunches(726 bunches circulating).

13:37:46 : IQC_RESULT BEAM2 >>> INJECTION OK
 Beam injected! BQMs: Injected 144 bunches(654 bunches circulating).

13:38:51 : INJECTION RING 1 : waiting for the CBCM response

50ns_1374b_1278_36_1218_144bpi12inj

LOAD OVER INJECTION PILOT R1 : 5711 PILOT R2 : 5711

INJECTION RING1							INJECTION RING2						
RFBucket	NbrEnch...	EnchSpac(ns)	PS btchs	EnchInt[E9]	level		RFBucket	NbrEnch...	EnchSpac(ns)	PS btchs	EnchInt[E9]	level	
1	8	50	1	100	INTR		121	8	50	1	100	INTR	
581	144	50	4	100	NOM		581	144	50	4	100	NOM	
4041	144	50	4	100	NOM		4041	144	50	4	100	NOM	
7661	72	50	2	100	NOM		7661	72	50	2	100	NOM	
9521	144	50	4	100	NOM		9521	144	50	4	100	NOM	
12981	144	50	4	100	NOM		12981	144	50	4	100	NOM	
16601	72	50	2	100	NOM		16571	36	50	1	100	NOM	
18461	144	50	4	100	NOM		18341	144	50	4	100	NOM	
21921	144	50	4	100	NOM		21921	144	50	4	100	NOM	
25421	72	50	2	100	NOM		25421	72	50	2	100	NOM	
27281	144	50	4	100	NOM		27281	144	50	4	100	NOM	
30741	144	50	4	100	NOM		30741	144	50	4	100	NOM	

INJ 8 - name : B1_50ns250Gp48atches36Bu_bu18461 - particle : 0

INJ 7 - name : B2_50ns18atch36Bu_bu16571 - particle : 0

WAITING_CBCM_RESPONSE

RESET Start Step STOP

Enable inj cleaning

DB/BQM check

Clear bch conf set Bu int

MD OPTIONS

WAITING_FAST_IQC_ANALYSIS

RESET Start Step STOP

Enable inj cleaning

DB/BQM check

Clear bch conf set Bu int

MD OPTIONS

UNLATCH B1 LATCH STATUS B1

UNLATCH B2 LATCH STATUS B2

Module Details

Module	Description	Thresholds	Thresholds updated	Masked
TL BCT	Checks whether beam extracted	No	-	No
Injection kicker	Checks length, rise time, abort gap,...of MKI kick	Yes	No (made large for commissioning)	No
BLMs	Compares beam loss to quality thresholds. Intensity scaled	Yes	Yes (20 % of dump threshold for 288 bunches)	No
RF bucket	Compares injected bunch pattern with requested	No	-	No
Inj. Osc.	Checks bunch-by-bunch oscillation amplitude	Yes	Yes	No
TL	Trajectory byb, BLMs	Yes	No	Yes
RF phase	Injection phase error	Yes	Yes	No
Scraping	Scraped intensity, scraper position	No	-	No

All thresholds are in LSA and managed by MCS

Status

- ❑ The IQC is operational.
- ❑ But some of the inputs still need commissioning:
 - Or re-commissioning after software changes
 - Do not get the injected bunch pattern yet from BQM
- ❑ Thresholds will have to be updated as soon as we have the reference trajectory in the line
- ❑ New modules are being prepared to survey the extraction losses
- ❑ Injection oscillation interlock on SIS not tested yet
- ❑ Issue with SIS IQC interlock – experts checking