

INTT Data Handling

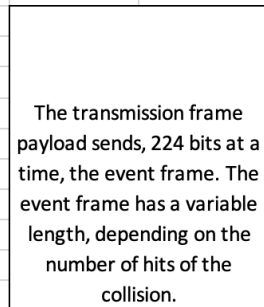
RIKEN/RBRC

Itaru Nakagawa

INTT-RCDAQ Packet Format As of 2023/5/11

As of 2023/5/11

Felix Specification=256 bits/packet

[illegible]

Transmission Frame Payload - Event Frame				
SOF	GTM BCO			Hits
24 bits	40 bits			(N*32) bits
CADEAD	UUUUUUUUUUU			?

$$N < 6$$

General		Felix Full	Amplitude	Full ROC	Full FPHX	FPHX BCO	ADC	Chip ID	Channel ID
		1 bit	6 bits	1 bit	1 bit	7 bits	3 bits	6 bits	7 bits

Each packets carry only upto 5 hits or so. Each packets are stamped by GTM-BCO

INTT

The transmission frame payload sends, 224 bits at a time, the event frame. The event frame has a variable length, depending on the number of hits of the collision

Event counter is to be implemented to INTT

[illegible]

Transmission Frame Payload - Event Frame				
SOF	GTM BCO			Hits
24 bits	40 bits			(N*32) bits
CADEAD	UUUUUUUUUUU			?

General	Felix Full	Amplitude	Full ROC	Full FPHX	FPHX BCO	ADC	Chip ID	Channel ID
	1 bit	6 bits	1 bit	1 bit	7 bits	3 bits	6 bits	7 bits

15	E	0	X	W	Y	Z	R6	R6	Channel ID	R6	Z	R6		R6	S	1	
14	E	1	X	W	Y	Z	R5	R5		R5	Z	R5		R5	S	1	
13	E	0	X	W	Y	Z	R4	R4		R4	Z	R4		R4	S	1	
12	E	1	X	W	Y	Z	R3	R3		R3	Z	R3		R3	S	1	
11	E	0	X	W	Y	0	R2	R2		R2	0	R2		R2	S	1	
10	E	1	X	W	Y	0	R1	R1		R1	0	R1		R1	S	1	
9	E	0	X	W	Y	0	R0	R0	R0	0	R0		R0	S	1		
8	E	1	X	W	Y	0	C5	C5	Chip ID	C5	0	C5		C5	S	1	
7	E	0	X	W	Y	0	C4	C4		C4	0	C4		C4	S	1	
6	E	1	X	W	Y	0	C3	C3		C3	0	C3		C3	S	1	
5	E	0	X	W	Y	0	C2	C2		C2	0	C2		C2	S	1	
4	E	1	X	W	Y	0	C1	C1		C1	0	C1		C1	S	1	
3	E	0	X	W	Y	0	C0	C0	C0	0	C0		C0	S	1		
2	E	1	X	W	Y	0	A2	A2	ADC	A2	0	A2		A2	S	1	
1	E	0	X	W	Y	0	A1	A1		A1	0	A1		A1	S	1	
0	E	1	X	W	Y	0	A0	A0		A0	0	A0		A0	S	0	
bit	Event	Flag	Word	Det. ID	Mod Add	BCO	FEM_ID	DATA_0	DATA_1	...	DATA_m	FEM_ID	DATA_0	...	DATA_m	CRS	EOP

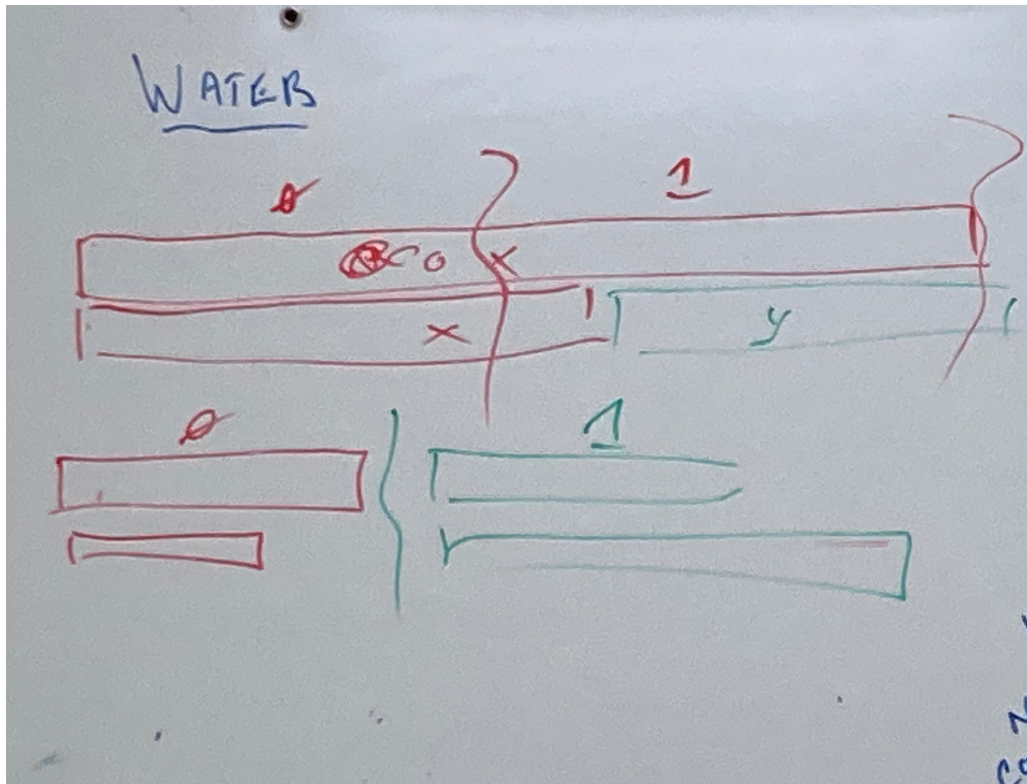
Header

Data section

Trailer

FVTX

DAQ Commissioning Strategy

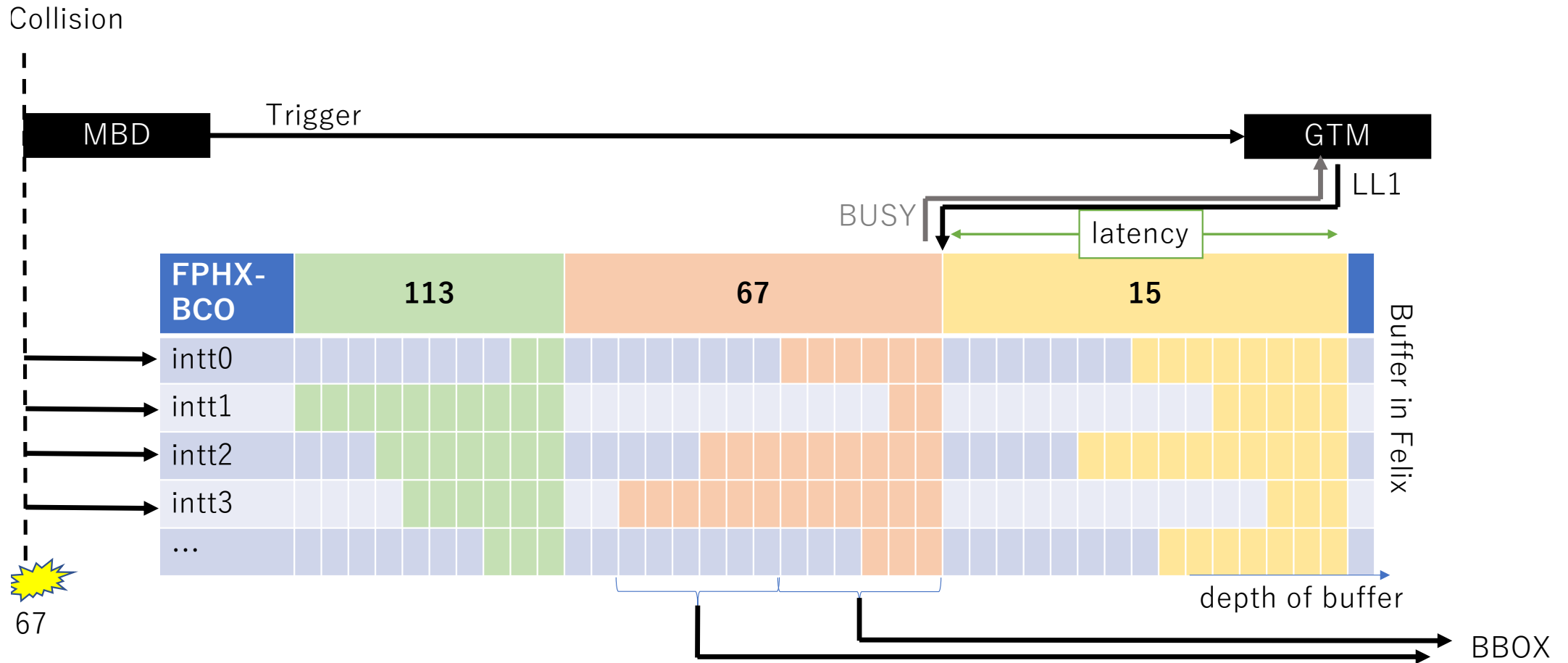


Consensus made in DAC group meeting May 5

- We will start commissioning with low rate enough not to mix hits from different collision into the same packet.
- This way, the event number has one-by-one correlation with the BCO counter.
- The event counter should be implemented to Felix and the event-ID should be injected to every packets.
- This way, the consistency in both BCO counts and event-ID are double checked at the event building stage to insure the healthiness of the event.

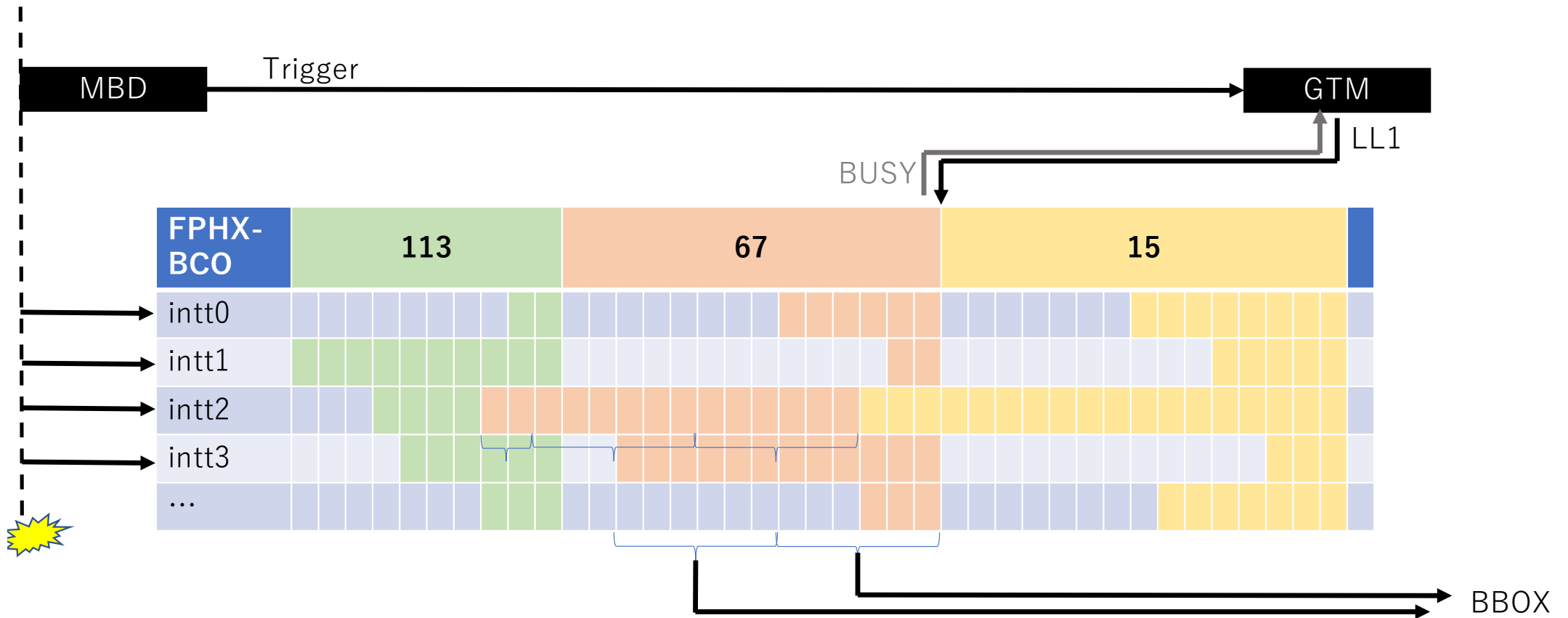
“The event” doesn’t make much of sense for MVTX/TPC.

Trigger Data Acquisition (ideal case)



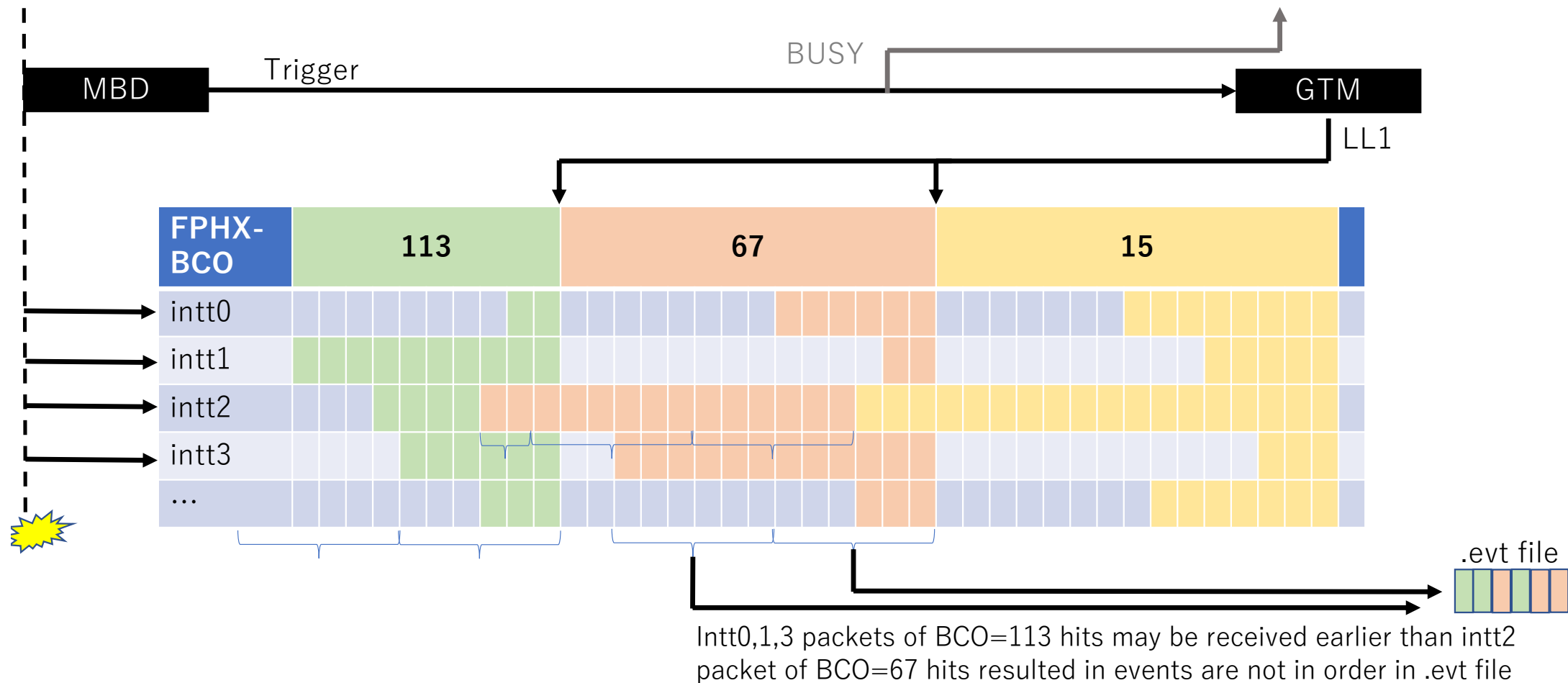
Trigger Data Acquisition (Phase-I)

Collision



Trigger Data Acquisition (Phase-II)

Collision



John Haggerty's Plan

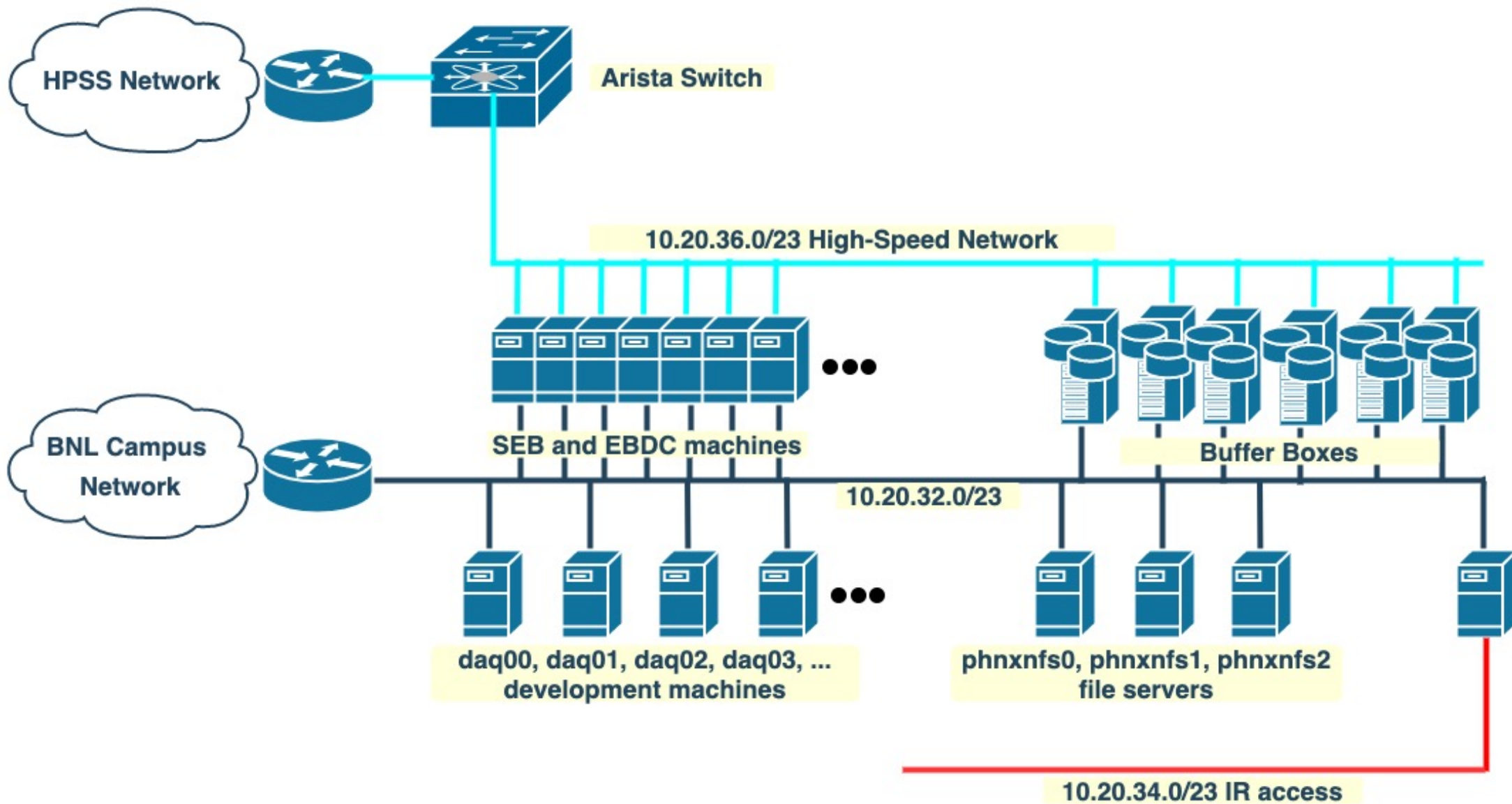
- Is it the plan to adjust the data sending timing within Felix side not to mix-up the order of hits from different BCO?
 - No. This is risky way of handing data because there is no way to recover the data if we lose hits by complicated handling of data within Felix. We rather sort hits in decorder side.
- Are there such a sorting routine exists in the decorder?
 - No. To be developed once we confirm the phase-I is working.

Data BackUp

500GB /home/inttdev/data are now backed up in sdcc

```
[itaru@rcas2062 ~]$ ls /sphenix/lustre01/sphnxpro/commissioning/INTT/from_INTTDAQ/
```

[illegible]



```
itaru — itaru@rcas2067:~ — ssh - ssh OPC0 — 91x23
phnxrc@opc0:~$ ssh intt0
Linux intt0 5.10.106 #2 SMP Wed Apr 20 15:04:28 EDT 2022 x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Thu May 11 12:22:47 2023 from 10.20.32.16
phnxrc@intt0:~$ df
Filesystem                1K-blocks      Used    Available Use% Mounted on
udev                      57516784         0    57516784   0% /dev
tmpfs                     13192132     10168    13181964   1% /run
/dev/nvme0n1p1            28704764   18065384     9158216  67% /
tmpfs                     65960652         0    65960652   0% /dev/shm
tmpfs                      5120         0         5120   0% /run/lock
tmpfs                     65960652         0    65960652   0% /sys/fs/cgroup
/dev/nvme0n1p6            822647328     70156    780719432   1% /scratch
phnxnfs2:/home            5653313536   1137837056   4515476480  21% /home
10.20.36.39@tcp:/bbox    6507717817840 4151236385136 2028346060744 68% /bbox
tmpfs                     13192128         0     13192128   0% /run/user/101390
phnxrc@intt0:~$
```

Backup Slides

Backup Data

- `bbox% rsync -a inttdev@10.20.36.110:INTT/data/
/sdcc/ sphnxpro/commissioning/INTT/from_INTTDAQ`