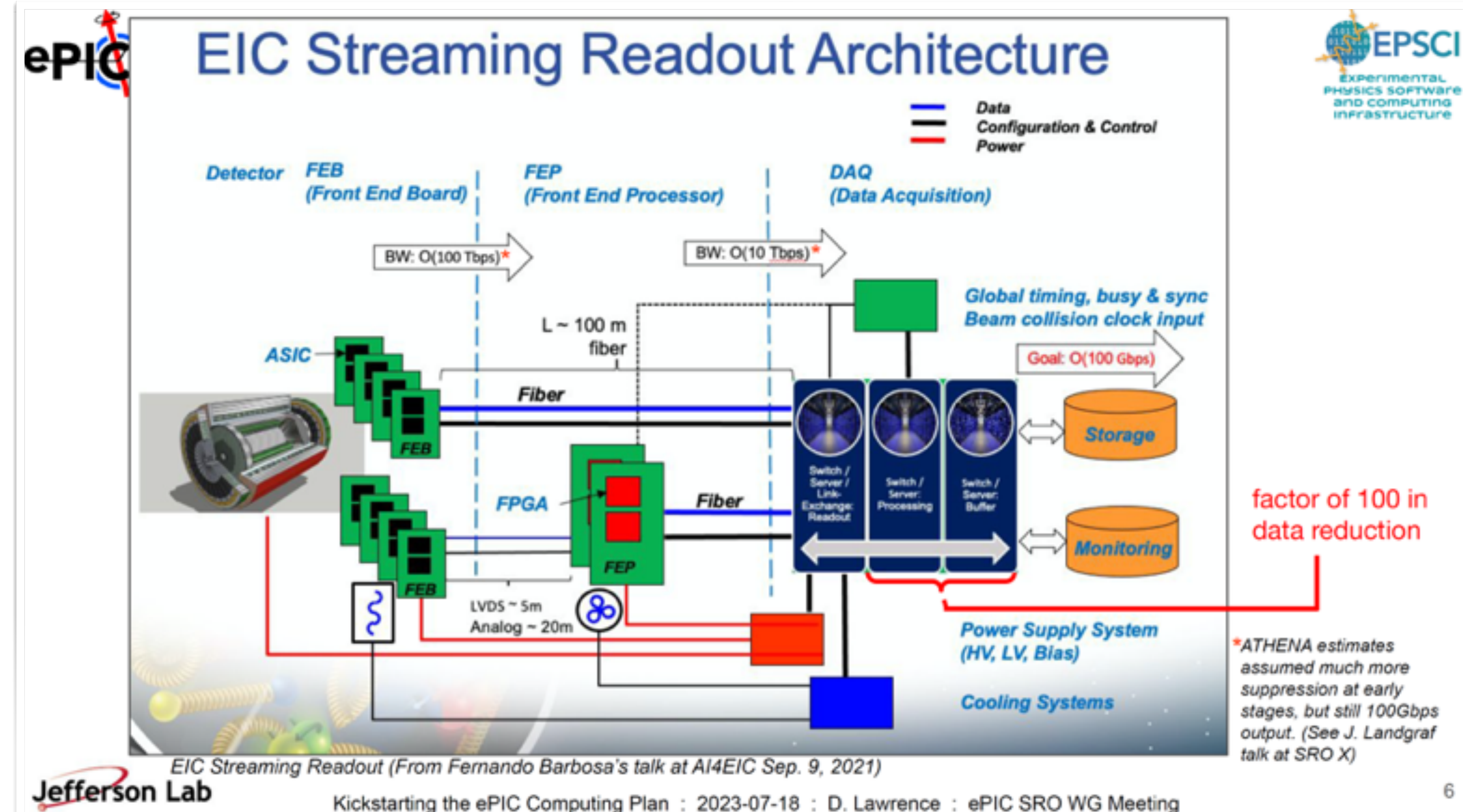## WG Recap

- WG activity started in July 2023, regular weekly meetings (Tue 9:00 AM) on Zoom
- So far:
  - Streaming RO computing model
  - ePIC Data Rates
  - Topics for discussion:
    - interface between DAQ and computing;
    - (autonomous) calibrations;
    - EIC butterfly computing model (Echelon 0-3)
    - (raw) data filtering and storage
    - Algorithmic workflow data analysis requirements
    - data format, data cooking, …
- Current activity:
  - Preparation of ePIC computing review (Oct 23)
  - Preparation of the paper *The ePIC Streaming Computing Model*

Streaming RO for ePICS

EIC Streaming Readout (From Fernando Barbosa's talk at AI4EIC Sep. 9, 2021)

Kickstarting the ePIC Computing Plan : 2023-07-18 : D. Lawrence : ePIC SRO WG Meeting

- Full consensus for SRO within the EIC community (Yellow Paper, DAQ models for ECCE, ATHENA, …)
- Rates at ePICS are not comparable to LHC HI-LUMI but the advantages of SRO remain:
  - several different channels to trigger on
  - Holy Graal: manage (storage) an unbiased (untriggered) data set for further analysis
 - on/off-line event selection with full detector information

Streaming RO for ePICS

By Jeff Landgraf, presented on Aug 22 WG meeting [link], Updated Sept 19

Summary of Channel Counts

Detector Group	Channels					RDO	Fiber	DAM	Data Volume (RDO) (Gb/s)	Data Volume (To Tape) (Gb/s)
	MAPS	AC-LGAD	SiPM/PMT	MPGD	HRPPD					
Tracking (MAPS)	36B					400	800	17	26	26
Tracking (MPGD)				202k		118	236	5	1	1
Calorimeters	500M		104k			451	1132	19	502	28
Far Forward	300M	2.6M	170k			178	492	8	15	8
Far Backward	82M		2k			50	100	4	150	1
PID (TOF)		7.8M				500	1500	17	31	1
PID Cherenkov			320k		140k	1283	2566	30	1275	32
TOTAL	36.9B	10.4M	596k	202k	140k	2980	6826	100	2,000	96

Summary of Data Flow

100% Occupancy	27.5-1760 Pb/sec

Aggregate	2.0 Tb/sec
Noise	1.6 Tb /sec
Signal from Physics + Background	400 Gb / sec

Aggregate	2.0 Tb/sec
Per RDO (Avg)	.7 Gb/sec

Aggregate	96 Gb/sec
Collision Signal	38 Gb/sec
Synchrotron Rad	.01 Gb/sec
Electron Beam	22Gb/sec
Hadron Beam	4 Gb/sec
Noise	32 Gb/sec

- Established a strong link with DAQ WG
- Define an envelope for the system (<200Gb/s)
- First estimate of ePICS data rate/volume
- Will be updated based on new information
- Useful to provide feedback to sub-systems groups to reduce the data stream to an acceptable level
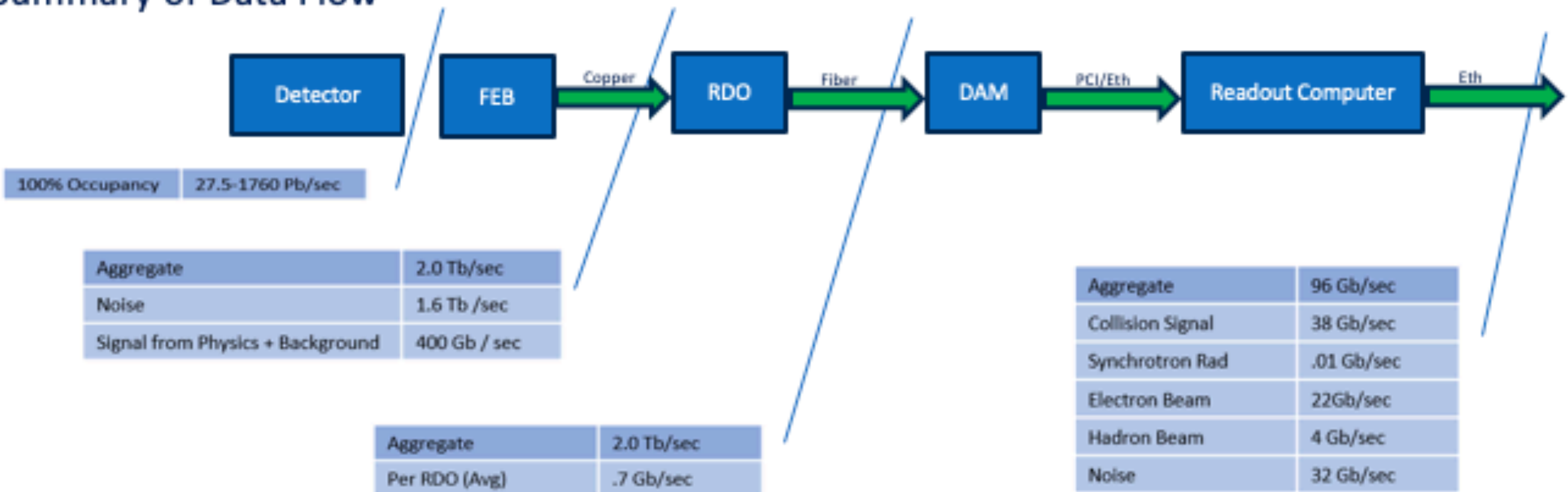
Streaming RO for ePICS

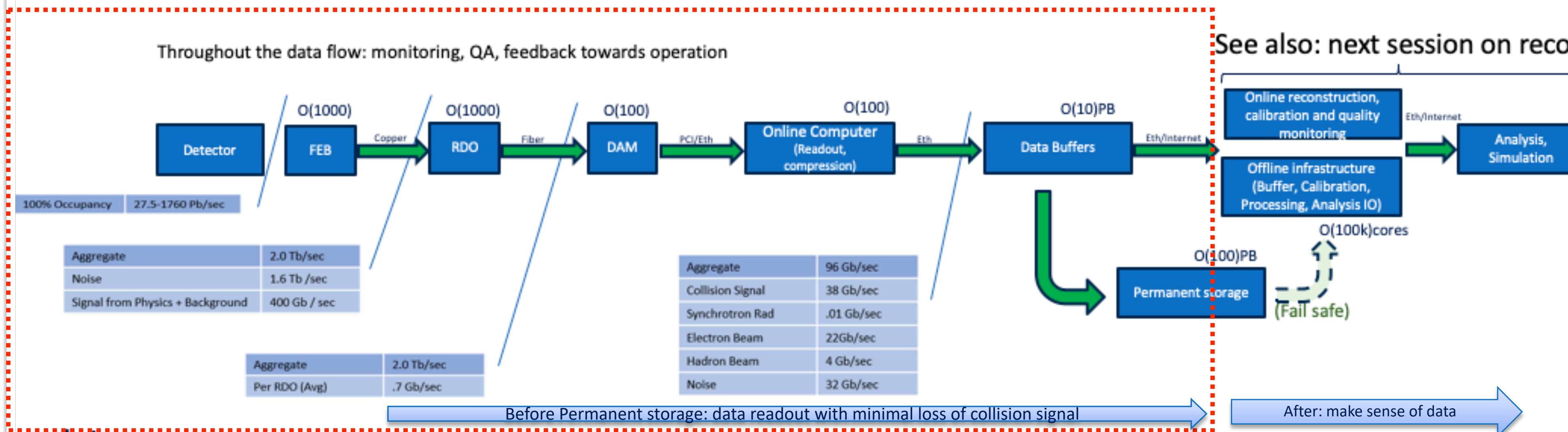ePIC Software & Computing Meeting

20–22 Sep 2023
UIC Student Center East Tower
US/Central timezone

Presented by Jin at UIC Meeting on Sept 21 2023

ePIC streaming computing: follow the data & zoom out

Within the control room (paid by the project)
- Each stage in data flow will require IO specs and time latency (CPU, GPU, FPGA)
- definition of different interfaces
- boundaries of the 'control room'

Outside the control room (driven by the collaboration)
- Networking?
- CPU/GPU farm?
- Local/remote resources?
- on/off-line analysis?

Oct 19-20 Computing review charge:
- Long-term plan for ePIC software and computing
- Integration of international partners in the project
- Integration into HEP/NP community development
- Resources
- ePIC SRO integration into computing model

Today's discussion about the how use cases map to multiple-echelon levels computing model

ePIC Streaming Computing Model WG Meeting

📅 Tuesday 3 Oct 2023, 09:00 → 10:30 US/Eastern

👤 Jeff Landgraf (Brookhaven National Laboratory) , Jin Huang (Brookhaven National Lab) , Marco Battaglieri (Jefferson Lab)

Description   We will use Zoom for the remote meeting:
- https://jlab-org.zoomgov.com/j/1614875218?pwd=RFRPcGlNM3BaS0pQaDhxS3JURkdJZz09
- Meeting ID: 1614875218
- Password: 925723

| 09:00 → 09:15 | Status of Discussion on Computing Model | |
| 09:00 | Status Report | 15m |

09:15 → 10:00	Use Case to Echelon Mapping	
09:15	Use Case to Echelon Mapping	15m
	Speaker: Dr Markus Diefenthaler (Jefferson Lab)	
09:30	Discussion	30m