

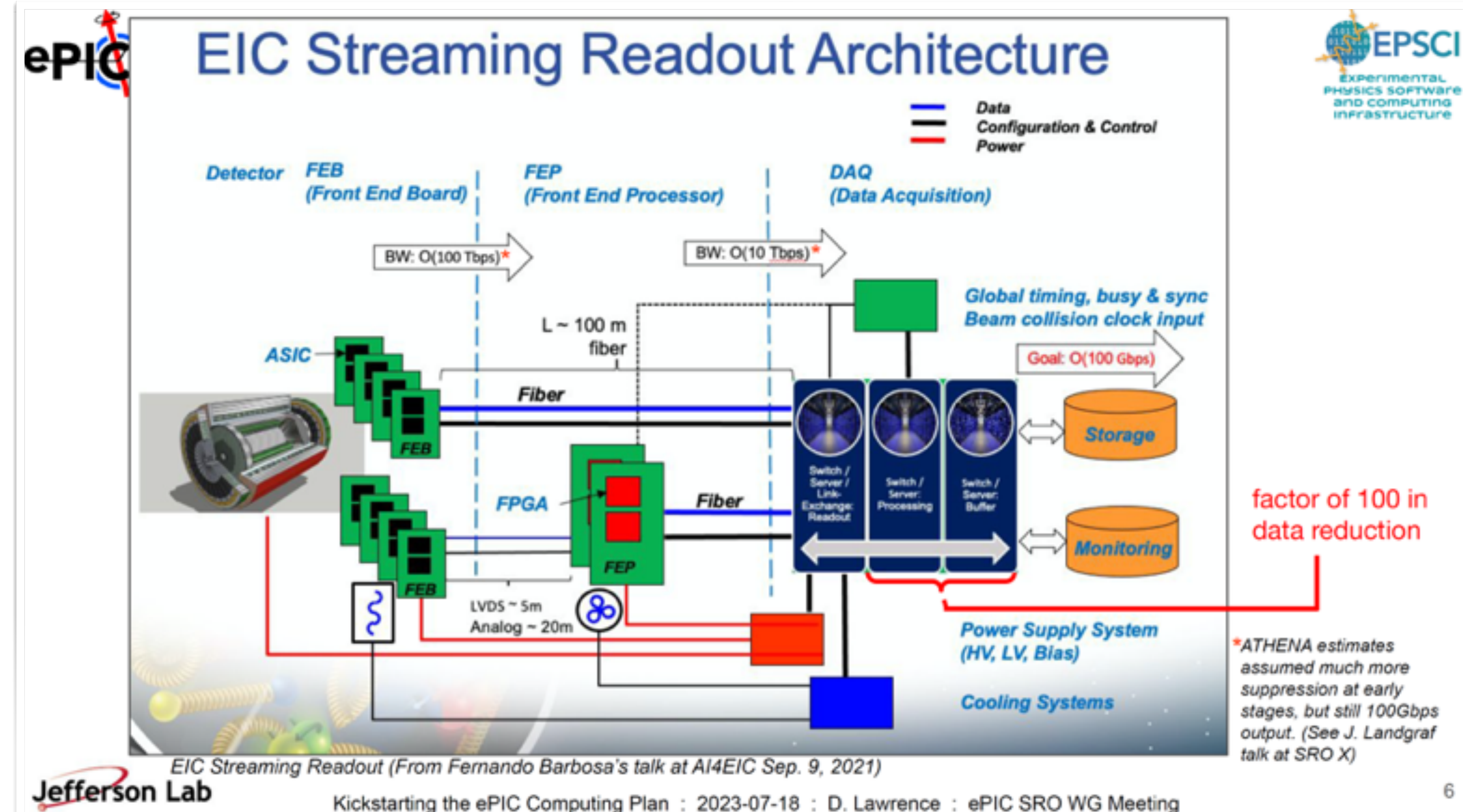
WG Recap

- 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*

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### Streaming RO for ePICS



- 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



# ePIC Streaming Computing Model Working Group

## Meeting - October 3, 2023

M.Battaglieri (INFN), M.Diefenthaler (JLab),  
J.Huang (BNL), J.Landgraf (BNL), T.Wenaus (BNL)

### Streaming RO for ePICS

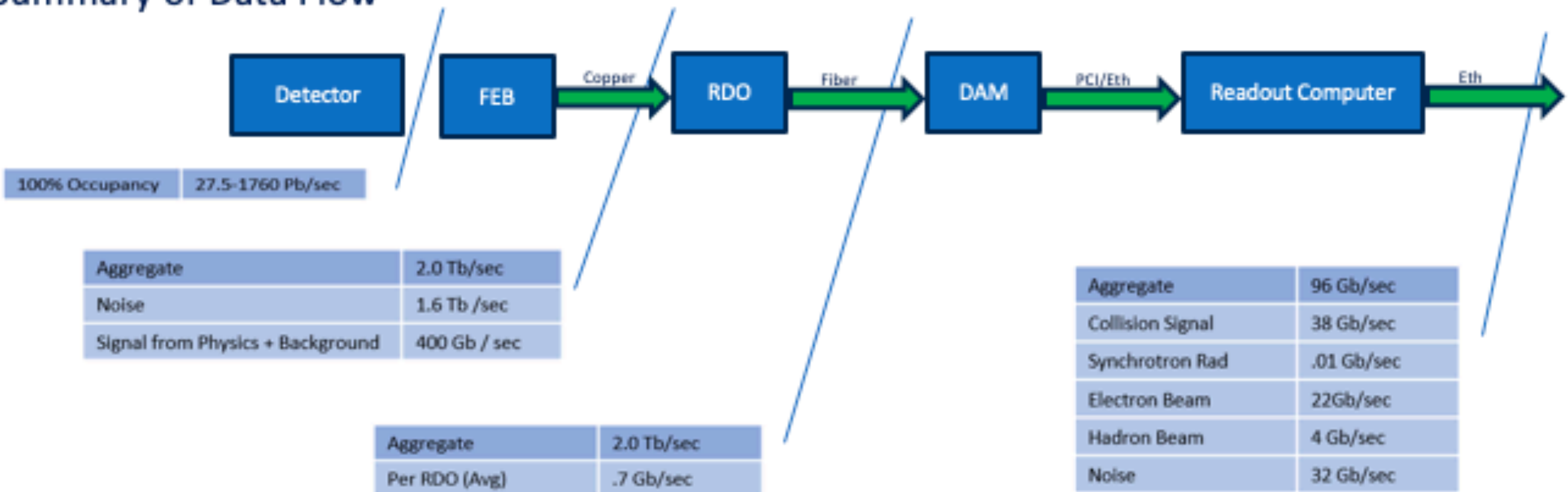
By Jeff Landgraf, presented on Aug 22 WG meeting [\[link\]](#), Updated Sept 19

#### 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

- 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

#### Summary of Data Flow



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### Streaming RO for ePICS

ePIC Software & Computing Meeting

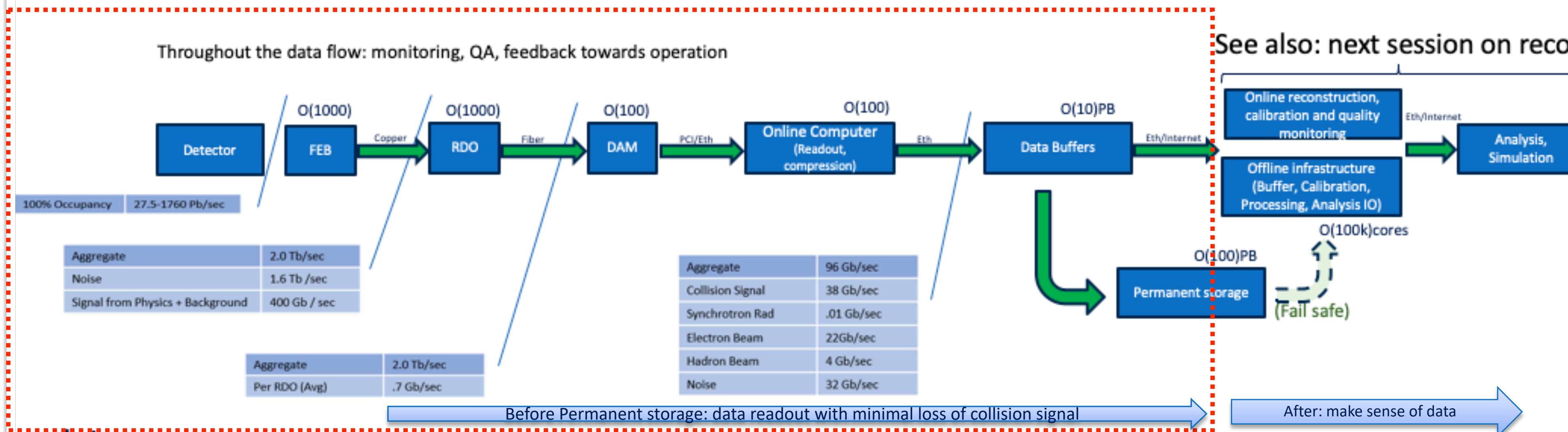
20-22 Sep 2023  
UIC Student Center East Tower  
US/Central timezone

Presented by Jin at UIC Meeting on Sept 21 2023

## ePIC streaming computing: follow the data & zoom out

Throughout the data flow: monitoring, QA, feedback towards operation

See also: next session on reco.



Latency :

0ns O(100)ns O(1)us O(10)us O(1)min O(1)min-O(1) day O(1)day-O(1)week

Possible facilities:

On detector On detector/rack DAQ room Host labs/Echelon 1 facility Remote resources

Reference: • ePIC DAQ wiki: <https://wiki.bnl.gov/EPIC/index.php?title=DAQ>  
• ECCE computing plan, [Nucl.Instrum.Meth.A 1047 \(2023\) 167859](#)

Jin, also for Marco, Markus, Jeff, Torre

ePIC Software & Computing Meeting at UIC

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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?





# ePIC Streaming Computing Model Working Group

## Meeting - October 3, 2023

M.Battaglieri (INFN), M.Diefenthaler (JLab),  
J.Huang (BNL), J.Landgraf (BNL), T.Wenaus (BNL)

- 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

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ePIC Streaming Readout Computing Model WG

M.Battaglieri - INFN