

# sPHENIX Status and Needs

1<sup>st</sup> Beam in Feb 2023

1 year and 5 months



sPHENIX is becoming  
reality fast

Planned for September:  
Placing of the Babar magnet

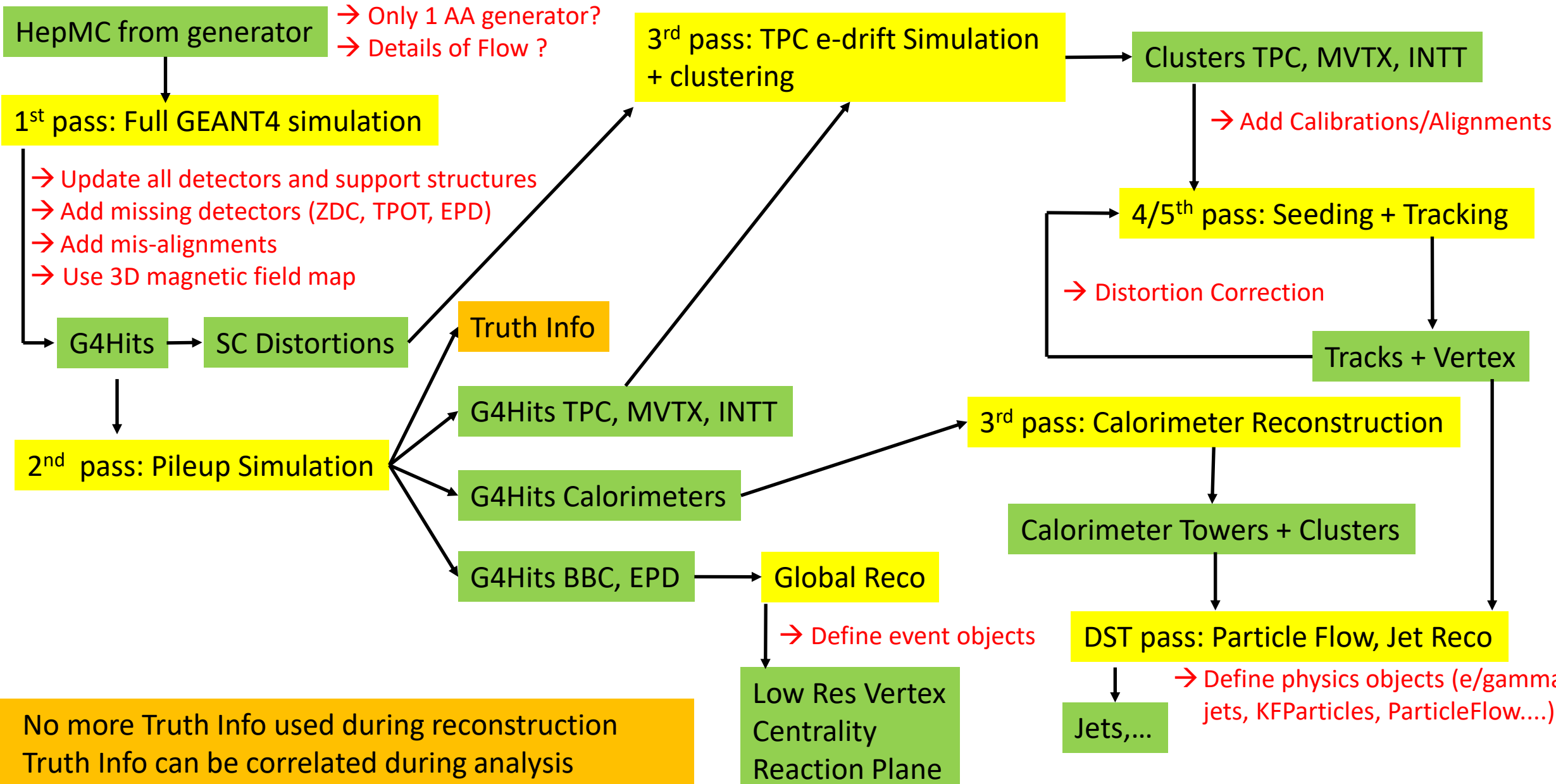


# How about Software?

- Tracking speed close to 5s/evt target
  - Just to mention it – we started with 10mins/evt
- Offline Event Builder is functional (more than proof of principle)
  - Just to mention it – reading multiple input files is standard operation for PHENIX analysis
- Fixed latency reconstruction: Calibrations have now moved to the center of our attention
- And something has to manage 200k running jobs
- Mock Data Challenge planned starting in December
  - 15k condor slots (~10% of planned resources)
  - Large sample of simulated data for physics analysis
  - Test the production mechanics + inform next purchase decisions (mainly disk/filesystems)



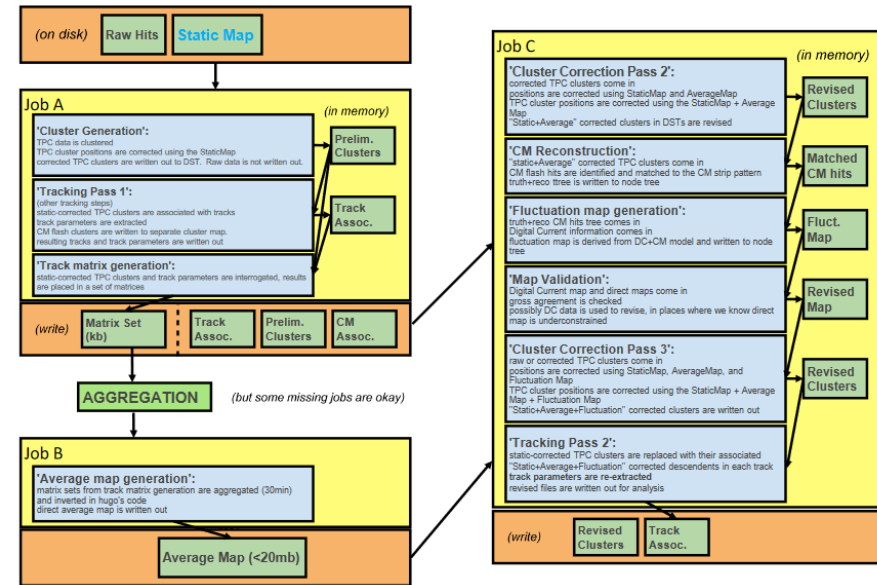
# MDC2: Flowchart



- No more Truth Info used during reconstruction
- Truth Info can be correlated during analysis

# Calibrations

- Two types of calibrations
  - Distortion corrections (timescale 10ms)
  - All others (timescale 5mins to years)
- 64 bit (BigInt) beam clock serves as Time stamp
  - event level granularity
  - Our events are time ordered – easy assignment of calibrations to raw data files (looking at first and last event)
  - Gaps in validity (beam off periods) but no overlapping validity ranges
- Distortion corrections
  - No plan to keep calibrations long term (huge data volume)
  - Output of Job A produces distortion calibration for Job C – easy 1:1 match (needs some initial accumulation but then is rolling average)
  - Reprocessing means redoing distortion corrections
  - No need for a conditions DB here – some naming convention will do (and filesystem which can handle this → MDC goal)

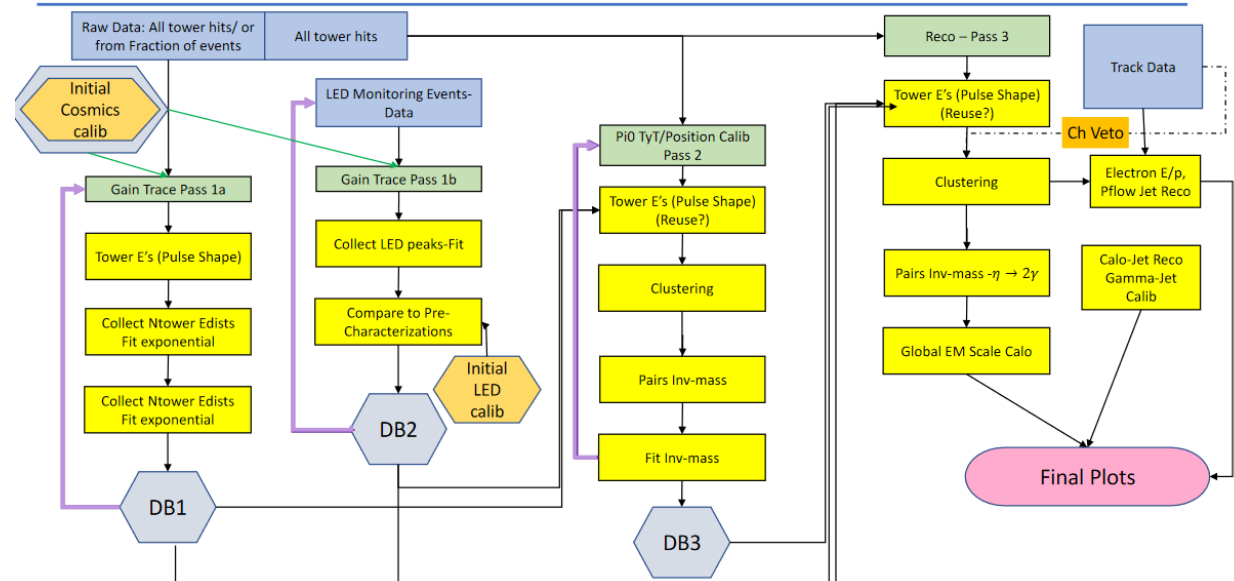


**Static Map:** Space charge independent distortions (e.g. magnetic field), created from Laser flashes without beam

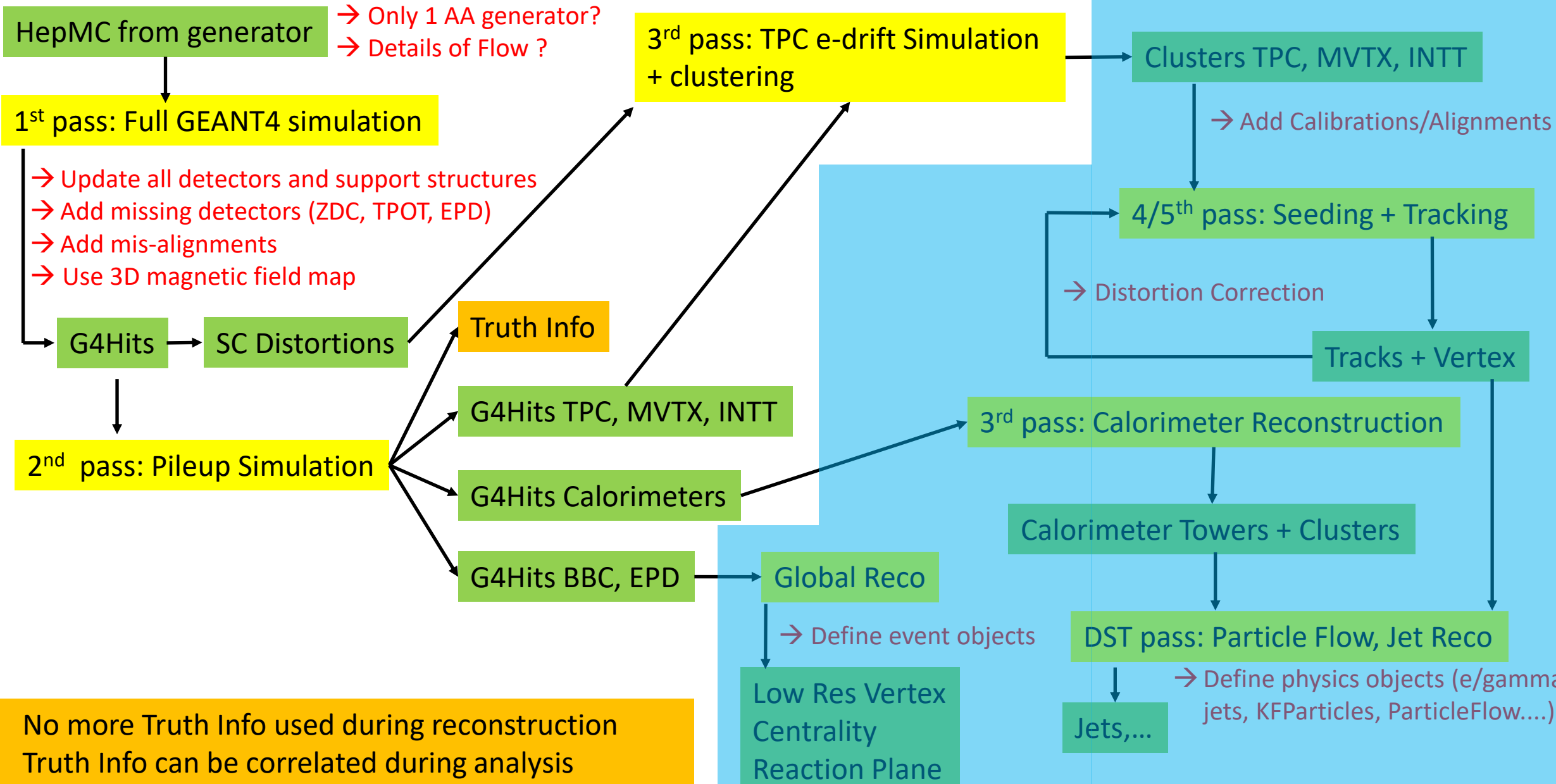
**CM:** Central Membrane, all strips illuminated by Laser, fired by interaction trigger

**Average Map:** space charge distortions averaged over 30 min aka “distortion correction”

## NEW: EMCal Calibrations (details)



# MDC2: Flowchart

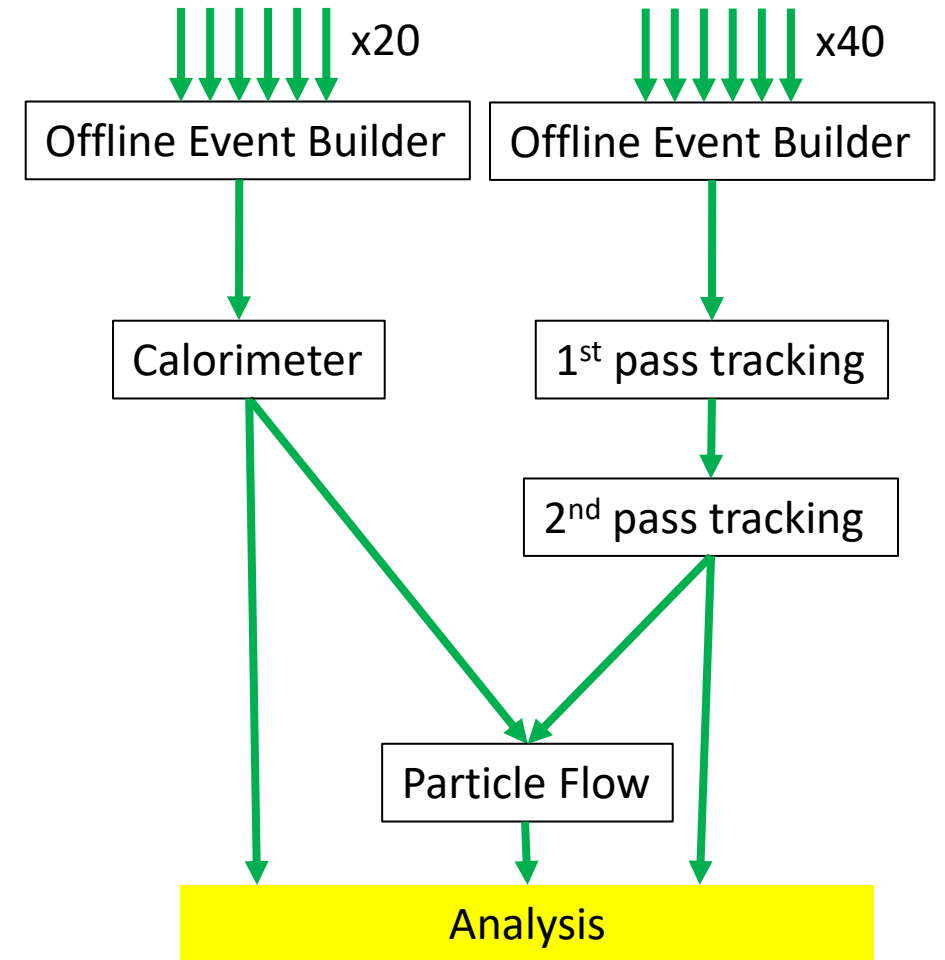


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# Production Workflow

0. Event building + Calibrations (partly run in sPHENIX counting house)
1. Event building (20/40 input streams, 1 output streams [each])
  - Tracking Detectors
  - Calorimeters
2. Calorimeter
3. 1<sup>st</sup> pass tracking
4. 2<sup>nd</sup> pass tracking (time lag between 1<sup>st</sup> and 2<sup>nd</sup> pass)
5. Particle Flow (combines tracks & calorimeter data)
6. Simulations on the Grid



**We have one shot at this – data from 2023 (AuAu) needs to be processed and analyzed to prepare for 2024 (pp,pAu), data from 2024 needs to be processed and analyzed for 2025 run plan (do we have enough high-quality pp reference data?).**

**3 years of running – no re-do's**