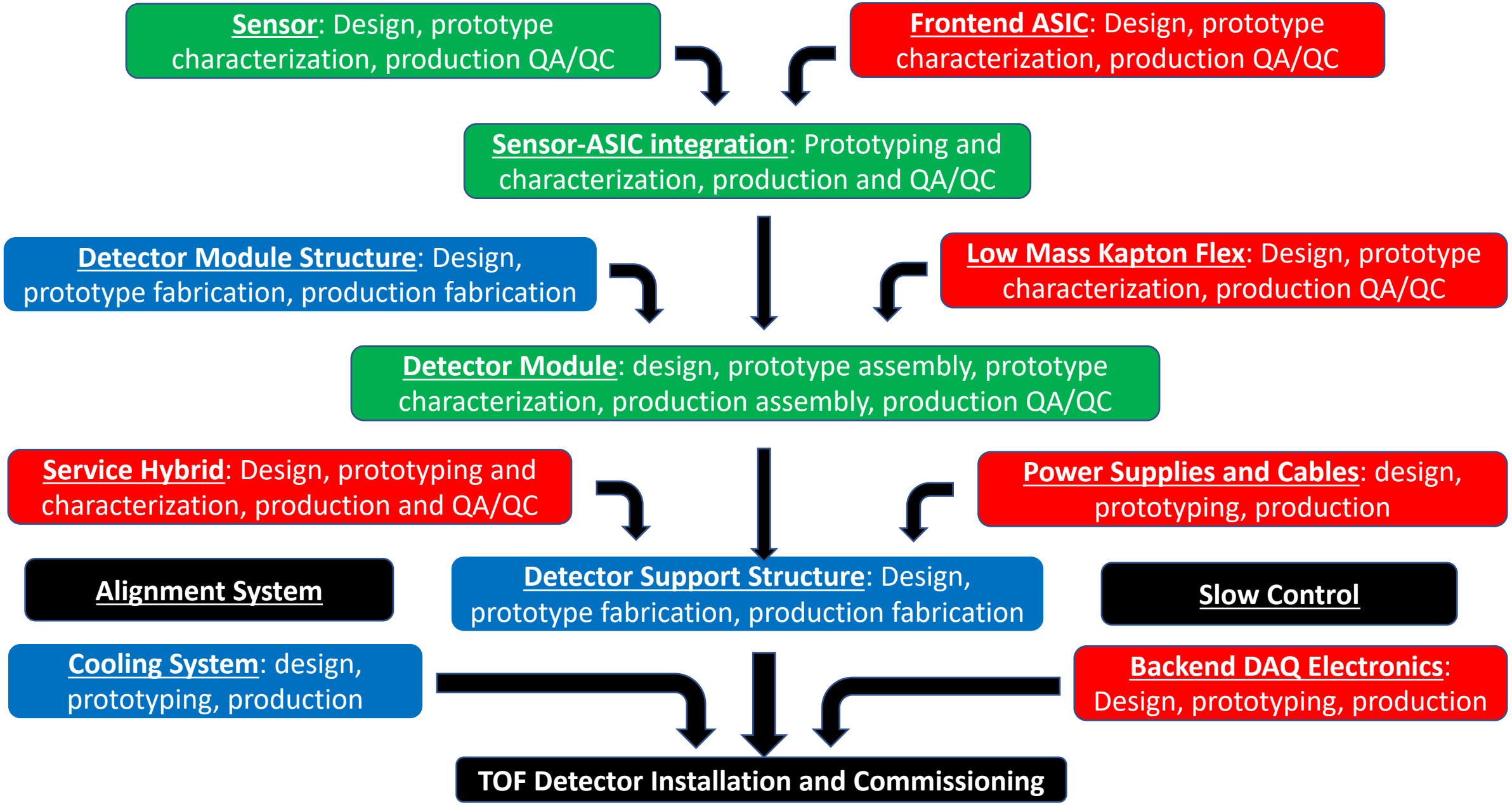
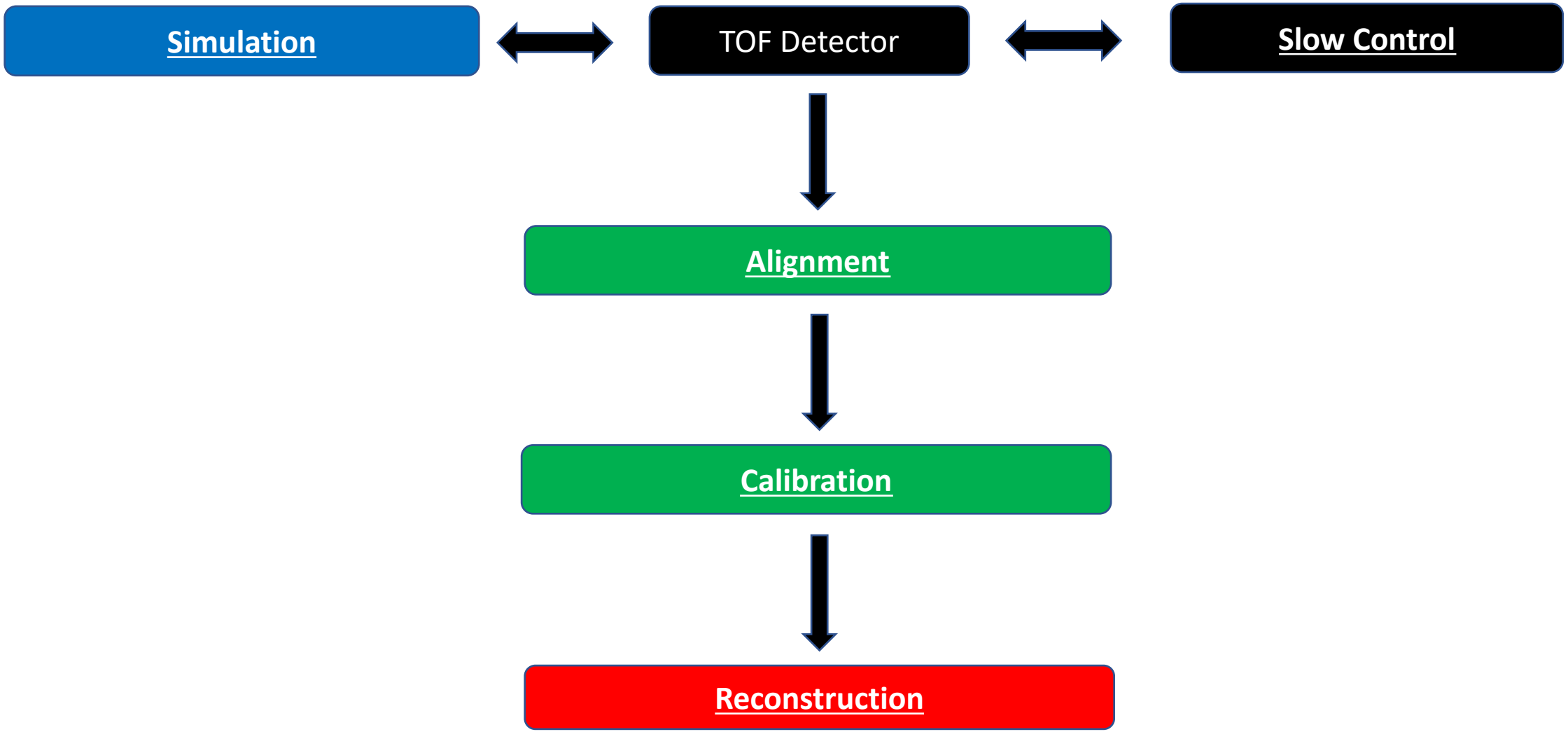
TOF Detector - Hardware



TOF Detector - Software



On-going/Planned Work

[1] https://wiki.bnl.gov/EPIC/index.php?title=TOFPID
[2] https://www.overleaf.com/read/vftxyvjtjrvp
[3] https://wiki.bnl.gov/conferences/index.php/ProjectRandDFY23

Simulation [1]

- DD4HEP geometry, digitization, reconstruction (**ORNL, UIC, Hiroshima, BNL, OSU**)
  - Timing resolution requirement
  - Spatial resolution requirement
  - Material budget requirement

Project Engineering and Design (PED) [2]

- Mechanical engineering (**NCKU/Purdue, ORNL**)
  - Mechanical support and services
  - Cooling system
- Electric engineering (**BNL within DAQ WG**)
  - Precision clock distribution (<5 ps)
  - Timing chips and streaming readout
  - Readout board

eRD112 [3]

- Sensor (**BNL-IO, UCSC, UIC/Fermilab, LANL, ORNL, Rice**)
  - BNL-IO, HPK and FBK productions
  - Lab/beam test, irradiation
- Sensor-ASIC integration (**UIC**)
- Module mechanical structure (**NCKU/Purdue**)
  - Low-density composite structure

eRD109 [3]

- Frontend ASIC:
  - EICROC (**IJCLab/OMEGA, BNL**)
  - FCFD (**Fermilab**)
  - Fast/HPSoC/ASROC (**UCSC**)
- Frontend electronics
  - Low-mass flexible Kapton PCB (**ORNL**)
  - Barrel TOF service hybrid (**ORNL**)
  - Endcap TOF service hybrid (**Rice**)