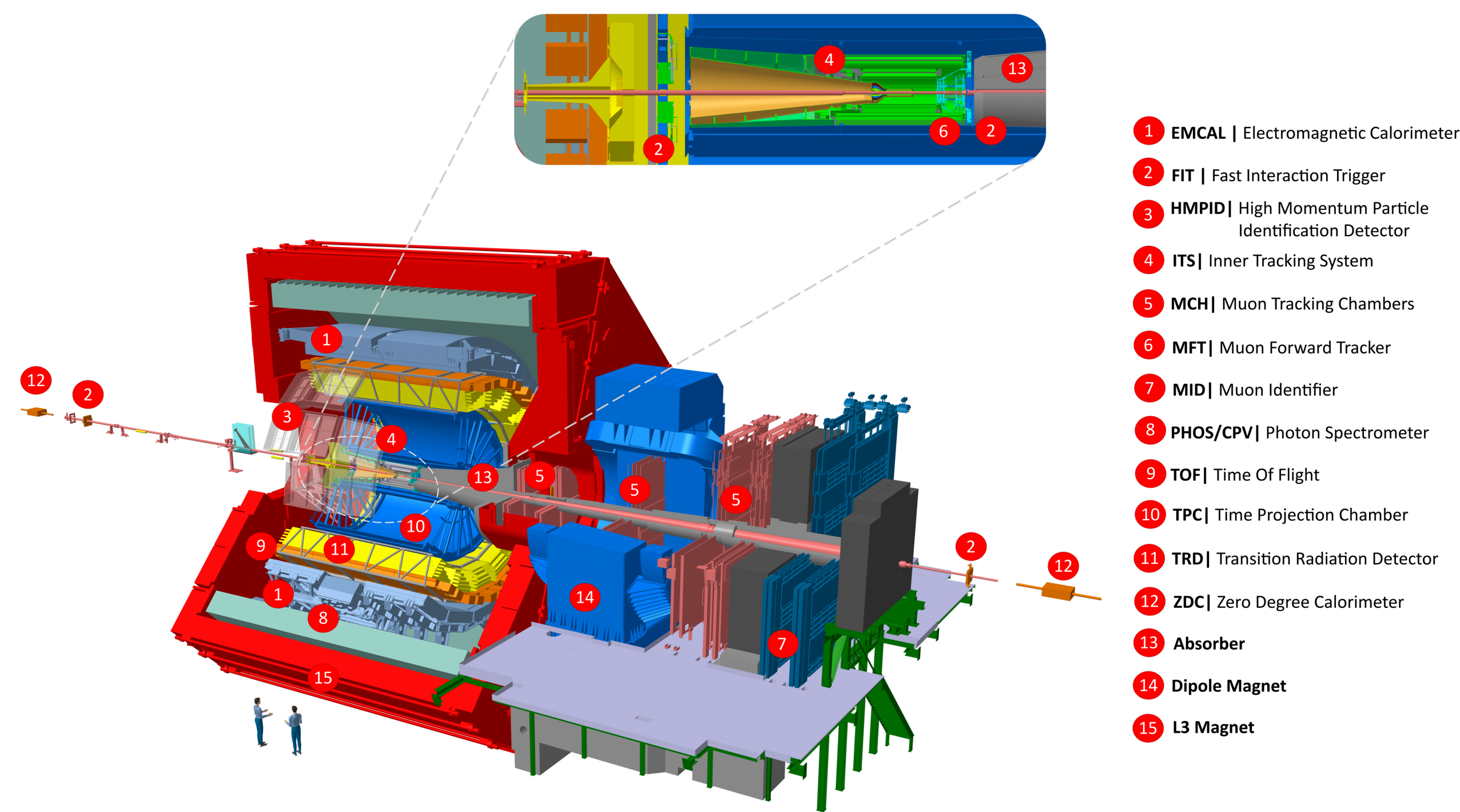# INTEGRATING IPBUS ALFRED INTO THE ALICE-FIT SETUP

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A LARGE ION COLLIDER EXPERIMENT (ALICE)

1. EMCAL | Electromagnetic Calorimeter
2. FIT | Fast Interaction Trigger
3. HMPID | High Momentum Particle Identification Detector
4. ITS | Inner Tracking System
5. MCH | Muon Tracking Chambers
6. MFT | Muon Forward Tracker
7. MID | Muon Identifier
8. PHOS/CPV | Photon Spectrometer
9. TOF | Time Of Flight
10. TPC | Time Projection Chamber
11. TRD | Transition Radiation Detector
12. ZDC | Zero Degree Calorimeter
13. Absorber
14. Dipole Magnet
15. L3 Magnet

ALICE – FAST INTERACTION TRIGGER (FIT)

Delivered Functionality
- Fast min. bias collision trigger with latency < 425 ns;
- Time resolution: 5 ps in Pb-Pb and 18 ps in pp collisions;
- Particle Identification signal for TOF;
- Luminosity and background monitor;
- Centrality and multiplicity measurement;
- Event plane determination;
- Diffraction physics measurements;
- Veto trigger for UltraPeripheral Collision;
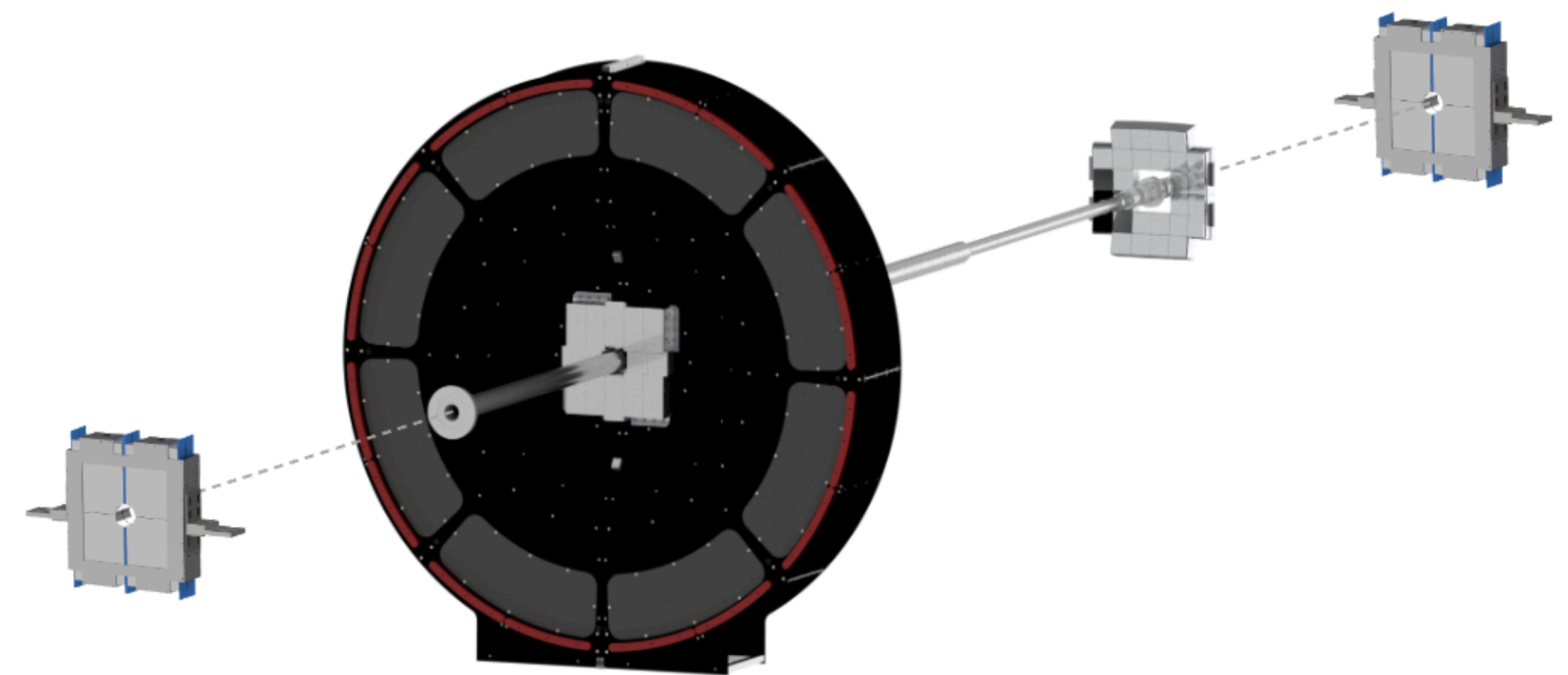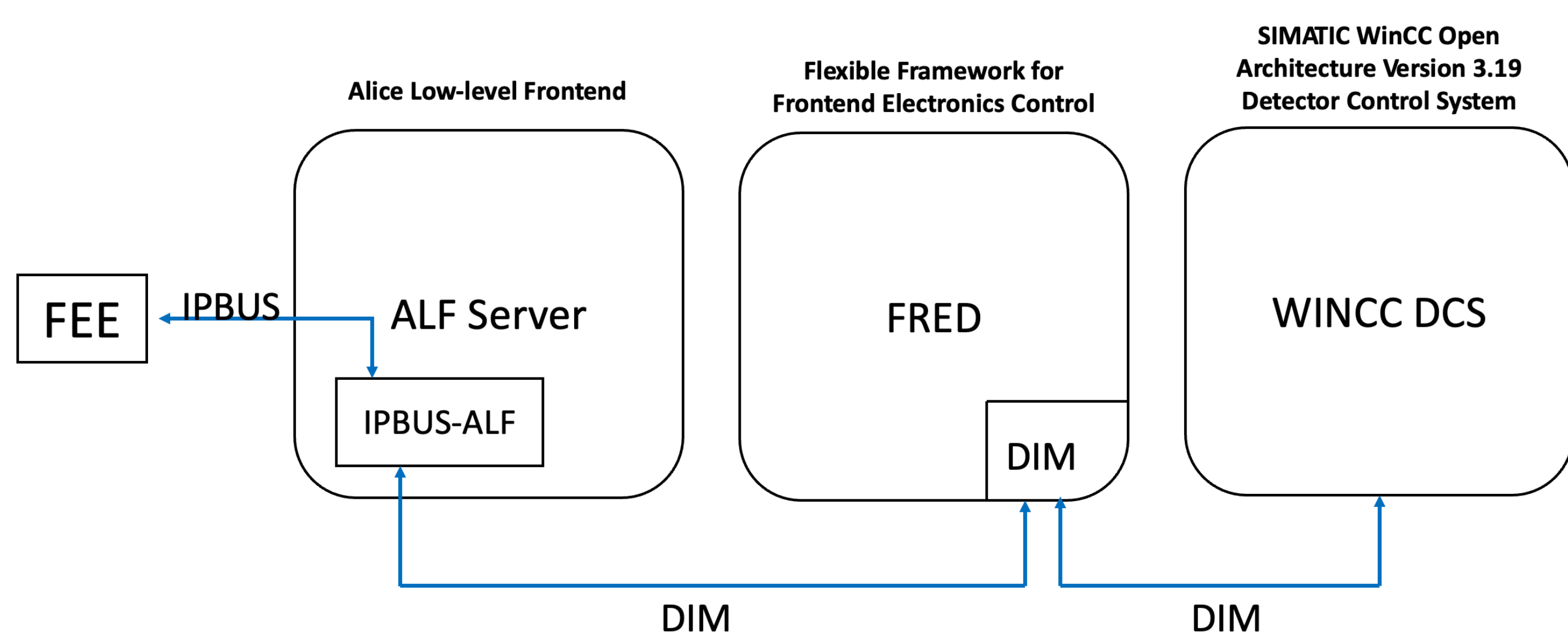

FIT DETECTOR CONTROL SYSTEM (DCS)
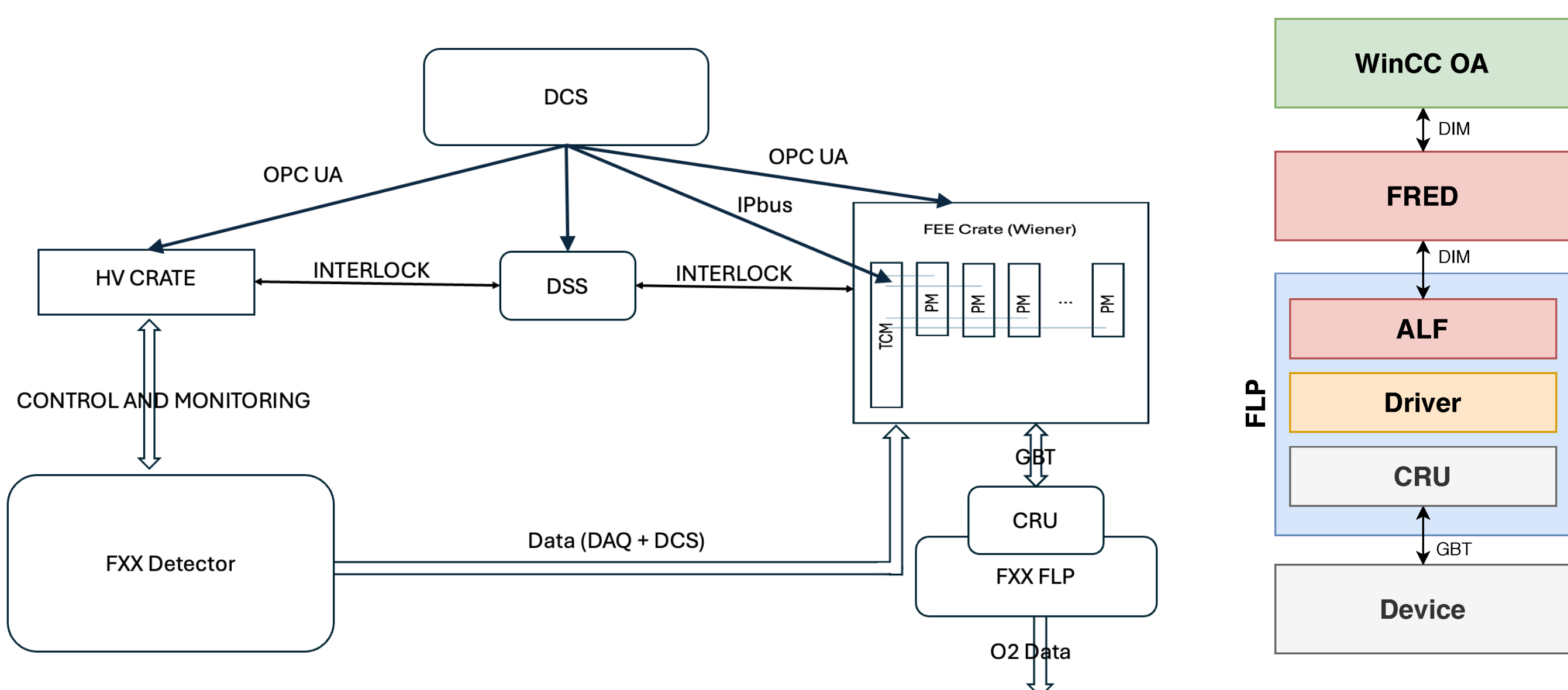
ACTUAL AND FINAL DCS IMPLEMENTATION
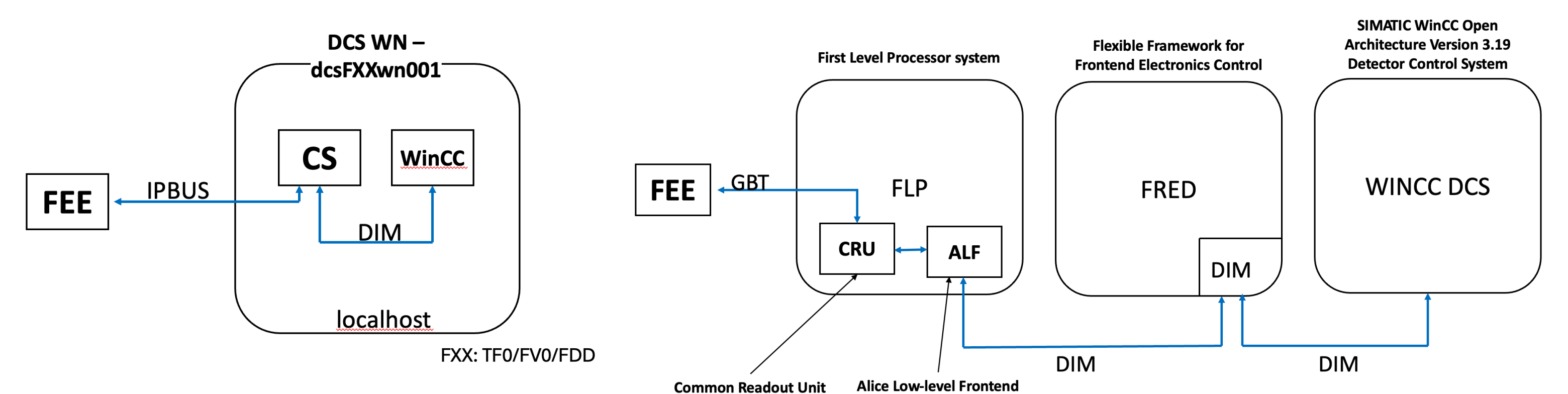
ACTUAL IMPLEMENTATION   **FINAL IMPLEMENTATION (LHC RUN4)**

IPBUS INTEGRATION IN ALFRED (LHC RUN3)

CONCLUSION AND FURTHER WORKS

- A COMMUNICATION ARCHITECTURE FOR THE DETECTOR CONTROL SYSTEM TAILORED FOR THE FAST INTERACTION TRIGGER WAS PROPOSED.
- THE IPBUS PROTOCOL WAS EXPLORED FOR COMMUNICATION WITH THE FRONT-END ELECTRONICS (FEE), APPLICABLE TO VARIOUS DETECTORS.
- THE ARCHITECTURE INTEGRATES DISTINCT COMPONENTS: WINCC OA, FRED, ALF, DIM, AND IPBUS.
- FUTURE WORK WILL FOCUS ON REPLACING THE IPBUS-ALF STRUCTURE WITH A SYSTEM THAT TRANSLATES THE SWT PROTOCOL INTO IPBUS.
- THE FINAL GOAL IS TO DEVELOP A PLUG-AND-PLAY SYSTEM FOR SEAMLESS COMMUNICATION WITH THE CONTROL READOUT UNIT AND TESTING ARCHITECTURE BANDWIDTH.