ACTS meeting

2019-5-6

ACTS Status : current version 0.09.00

- ACTS-model
  - Exited model : some models are updated
    - Geometry
    - Event Data Model
    - Material
    - SpacePoint
    - Seeding
    - Fitting
    - Vertex Fitting / finding
  - Missing part
    - Track finding
    - Alignment & Calibration

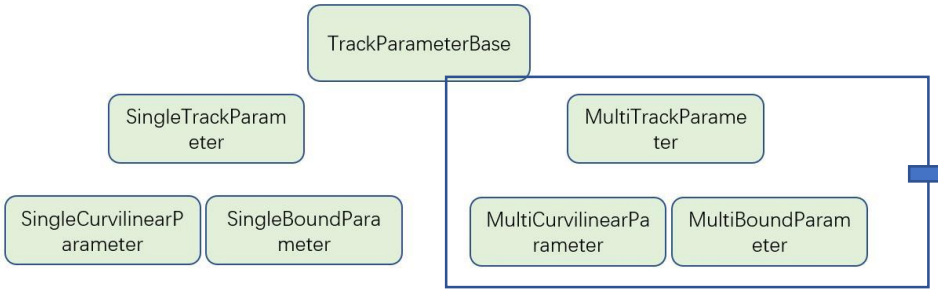
Material mapping

- The material mapping is updated with the new Propagator
  - The material mapping model was too old before
  - With the new propagator update -> the material mapping failed,

    we were failed to use in CEPC material mapping
  - The new material mapping model is just finished, being on test stage and will be released at this week at 0.09.02

Event Data Model (TrackPar&Measurement Model)

- TrackParameter/Measurement/TrackState
- Track Parameter Model



For Gaussian Sum Filter : in merge request

- Measurement Model
  - Non-fixed dimension
  - A bound surface
  - A link to pack the measurement

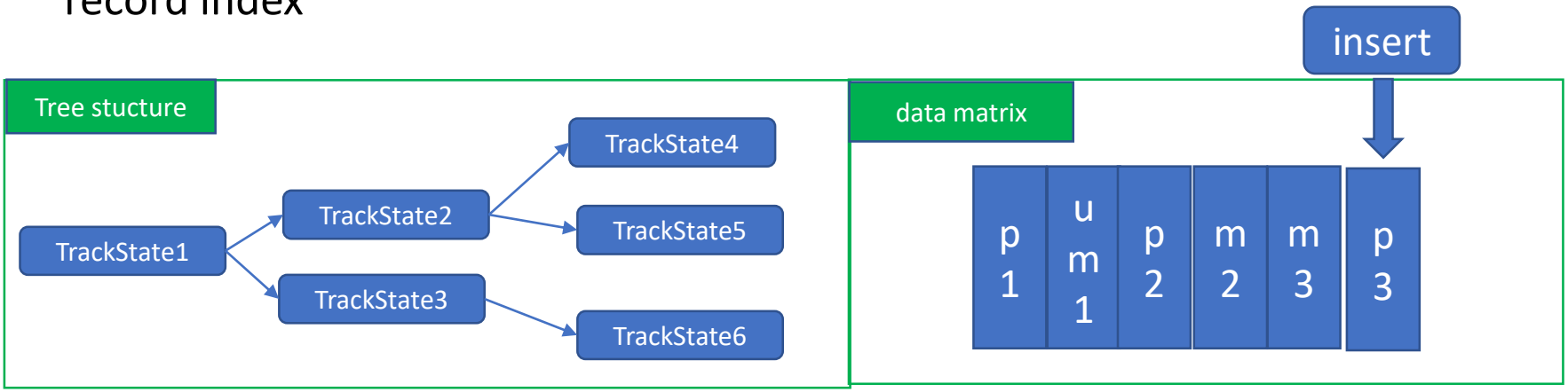
```
ParSet_t m_oParameters;  ///< measured parameter set
std::shared_ptr<const Surface>
    m_pSurface;  ///< surface at which the measurement took place

source_link_t m_sourceLink;  ///< link to the source for this measurement
```

Event Data Model : TrackState improvement (almost finished)

- Current : A list of TrackState , which contains
  - <optional> predited
  - <optional> filtererd
  - ….
  - <optional> uncalibrated mearsurement
  - <optional> calibrated mearsurement

quite a lot allocated space, duplicated objs

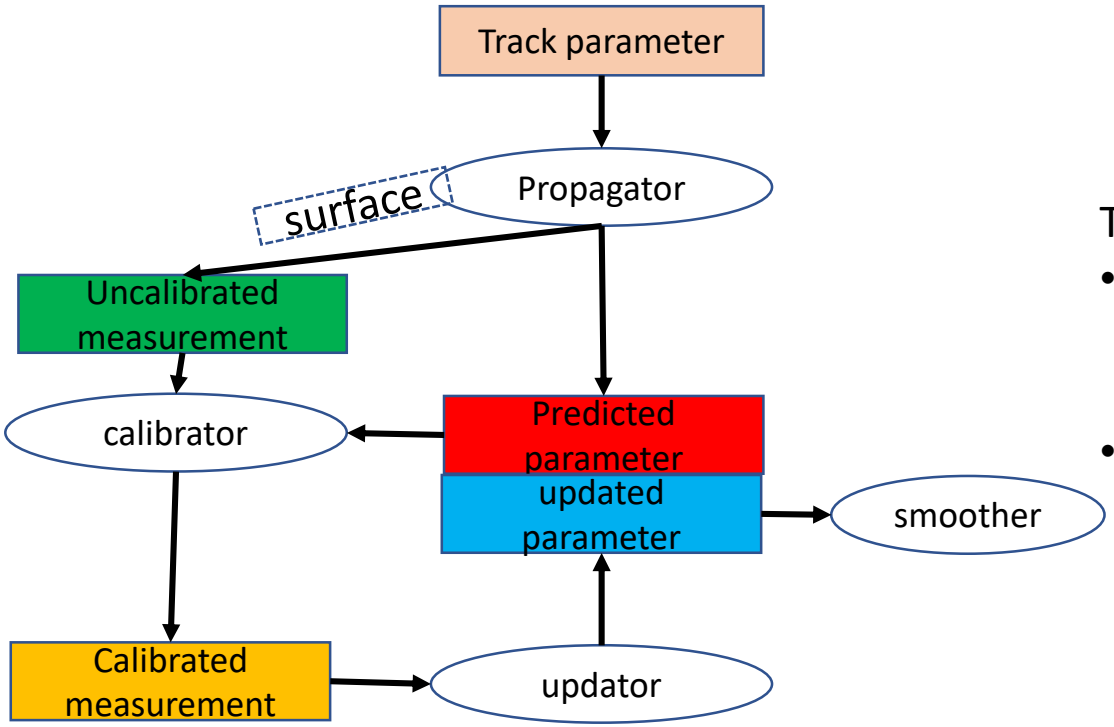
- Modified : a Matrix to store all the obj as a column, store get it from the record index



Get obj for example : MultiTrackState. getTrackProxy(i).predicted

Kalman Fitter

- The Kalman Fitter model was in the acts-core
  - Use Propagator as the prediction
  - Filter/Smoother



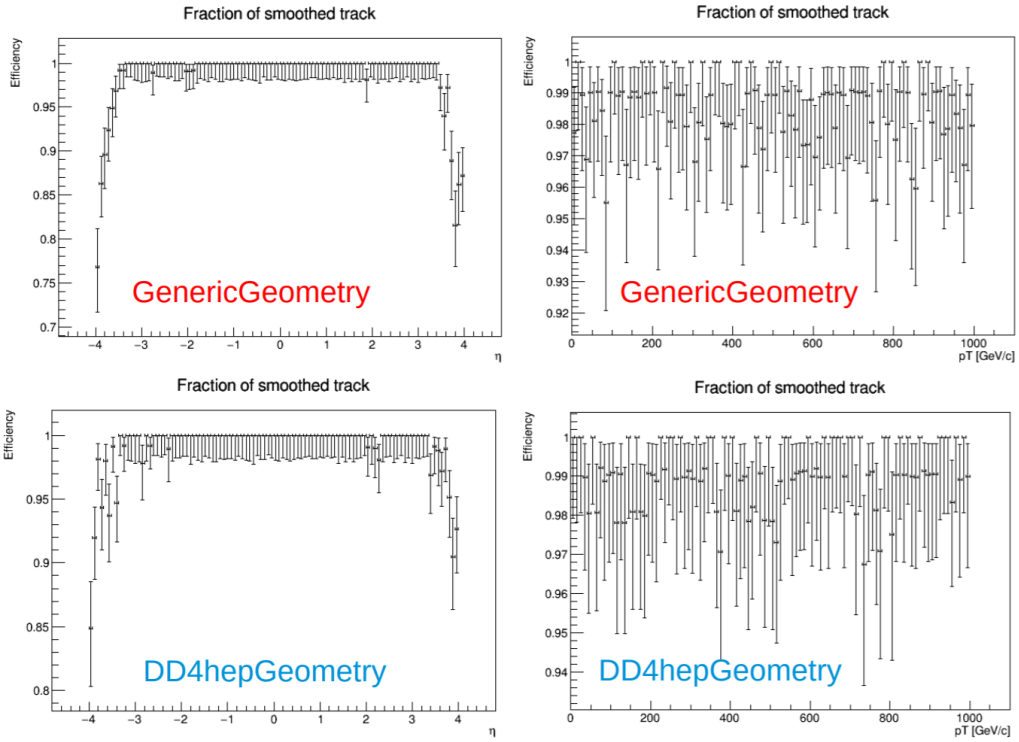
To be improved:

- There is something to be discussed in when applying a smoother
- Make measurement surface play more important role in Fitter

Kalman Fitter Test

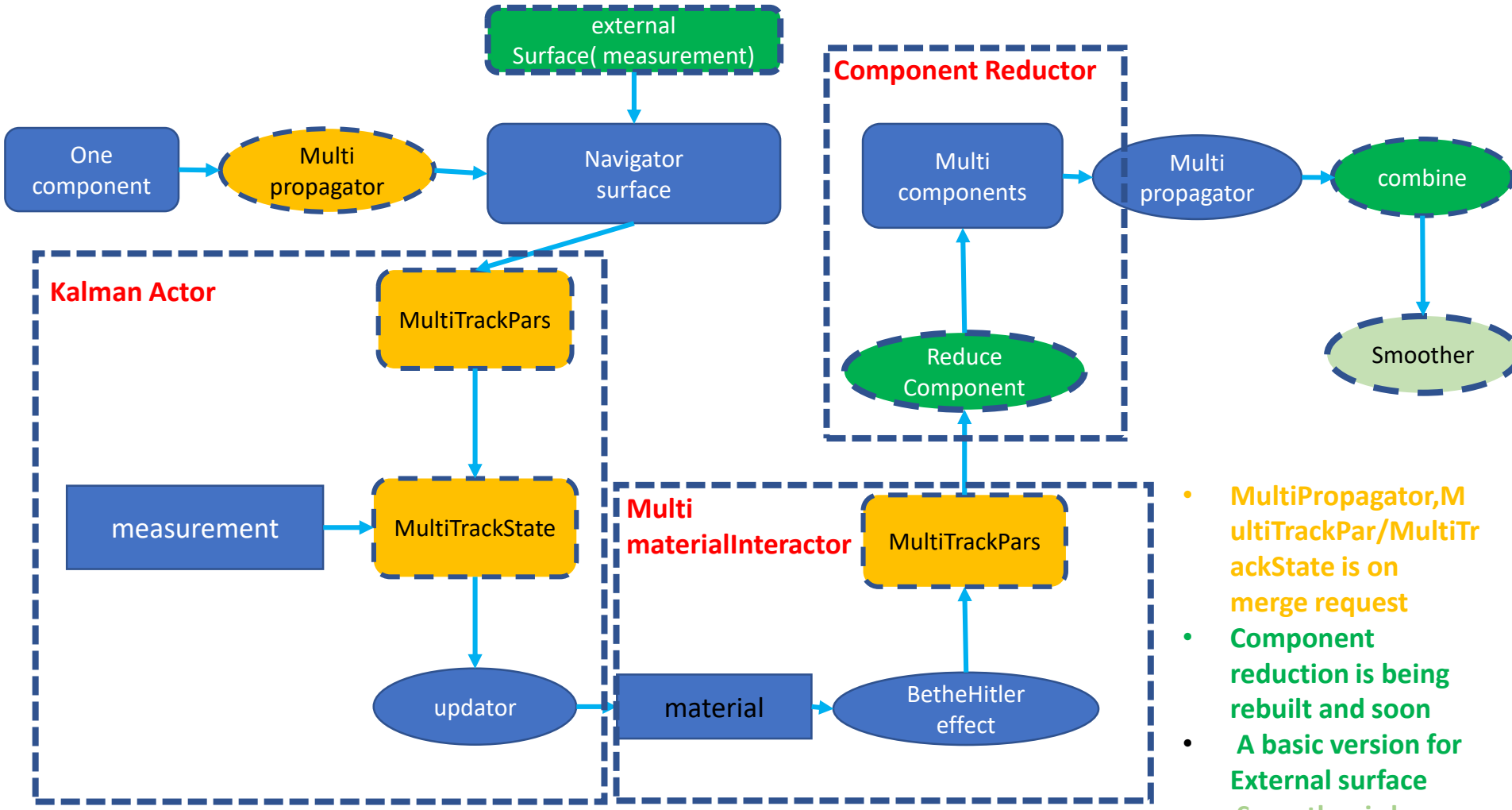
- A version for Kalman test is built in acts-framework
- The preliminary result of Kalman efficiency

Smooth trigger: reach EndOfWorld



The sim hit is from the fatras now

Gaussian Sum Filter



- MultiPropagator,MultiTrackPar/MultiTrackState is on merge request
- Component reduction is being rebuilt and soon
- A basic version for External surface
- Smoother is lose part

ActionList<KalmanActor, MultiMaterialInteractor, ComponentReductor>

- New basic models in the recent releases
  - A general Seed Finder
  - Vertex fitter : Billoir fitting method
- Still miss the model
  - Track finding
  - Calibration & Alignment

ACTS CEPC

- ✓CEPC Geometry
- ✓Run Fatras
- Test the new material mapping method
- Run the Kalman Fitter Test

Conclusion

- Some improvements and bug fixed in the acts-core
- The models grow more complete but still misses some
- For CEPC, we can try material mapping and Kalman test next step