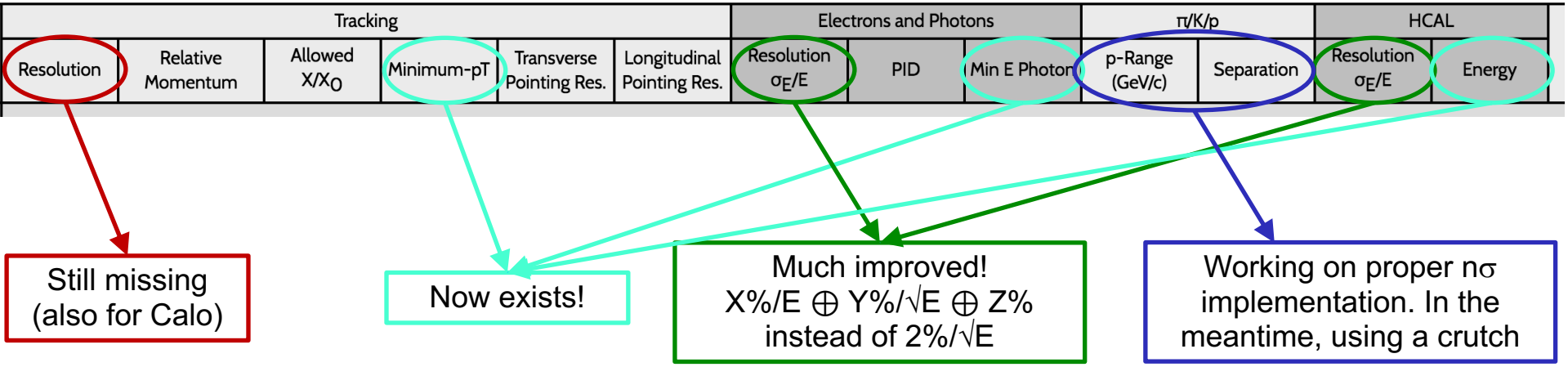
Detector Matrix Status

- Yellow Reports: Determine key measurements and how they drive **detector constraints**
- **Detector Matrix**: Big picture view, evolving in the process, with links to details
  - Original plan was a series of releases at https://physdiv.jlab.org/DetectorMatrix/ with a versioned history
  - So far, only v0.1 has been released by the DWG conveners – delicate balance between "needed" and "possible"
- Matrix v0.2 is being finalized – but likely won't be released before next YR meeting in mid November
- I received a **private** preview to have Fast Simulation ready ASAP after release

Improvements

- New details and better resolutions



- Note: Versioning seems to have fallen by the wayside for now. Online version is in a superposition of old and new…

Implementation Done

- Acceptance and resolution ex.

```
// 2%/E  + 12%/sqrtE + 2%
// A       B           C
Smear::Acceptance::Zone EmcalFwdZone(ThetaFromEta ( 3.5 ),ThetaFromEta ( 1 ),
                                     0., TMath::TwoPi(), // phi
                                     0.05, TMath::Infinity() ); // E
Smear::Device EmcalFwd(Smear::kE, "sqrt( pow ( 0.02,2 ) + pow( 0.12,2)*E + pow ( 0.02*E,2 ) )");
```

Note: These formulas can be much more complex functions of P, θ, φ, E, …

→ Will use those as we go from abstract to concrete concepts

- Perfect PID where 3σ is assumed. Crude but hopefully useful.

```
// p < 6 GeV, also in principle p> 100 MeV from tracker but that's not clarified yet
Smear::Acceptance::Zone PidBarrelZone(ThetaFromEta(1),ThetaFromEta(-1),
                                      0., TMath::TwoPi(), // phi
                                      0., TMath::Infinity(), // E
                                      0., 6 ); // p

Smear::PerfectID PidBarrel;
```

Next

Before release or shortly thereafter hope to include:

- **Far Forward detectors**. Exist and can be plugged in immediately if approved
- **Angular resolution**
  - Calo code exists, needs feedback and approval.
  - Tracking would be nice to have at least "1mrad or better"
- Better/more **realistic nσ PID**. On-going discussion with PID group. I have code but need their buy-in and contribution
- **DELPHES** implementation is being prepared. Hope to set a volunteer on cross-validation.

- Some more version control of the matrix…