ACTS Navigation Discussion

A. Salzburger (CERN)

Generation3 geometry & Navigation

‣ Many updates went into navigation

  – MultiIntersection for cylinder intersection disentangling

  – Layer-less navigation (first done in detray, then in Generation2)

  – Navigation delegates (introduced in Generation 2) to allow different navigation strategies for different volumes

‣ Move to Generation3 geometry gives unique opportunity
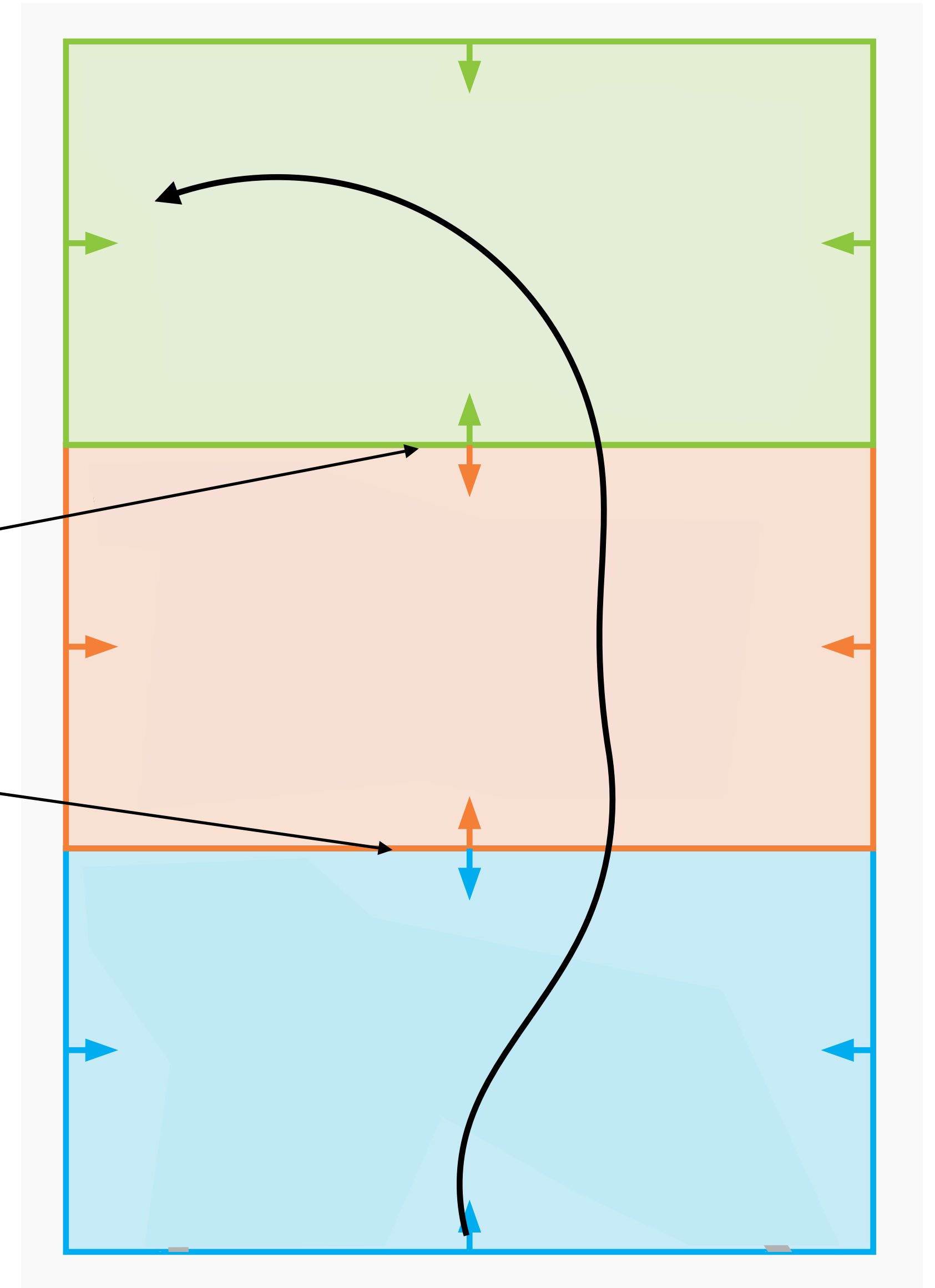
  – Bundle all of this coherently together

  –

Navigation: objectives (1)

‣ Guide from volume to volume

  - This has been done by the BoundarySurfaces (Generation1)

  - Concept kept as Portals in Generation2/3

Registering the volume(s)
on both sides of portals

`TrivialPortalLink`
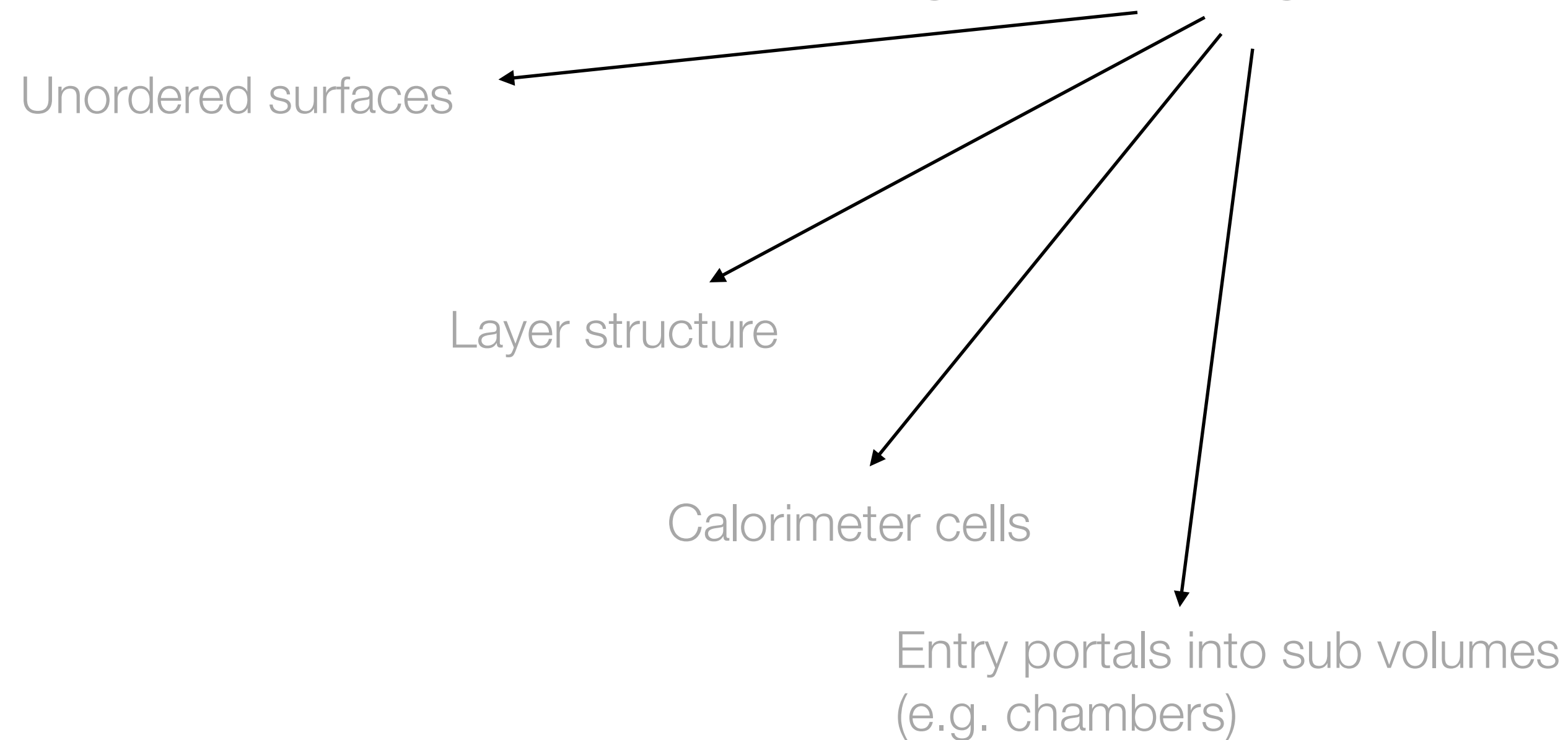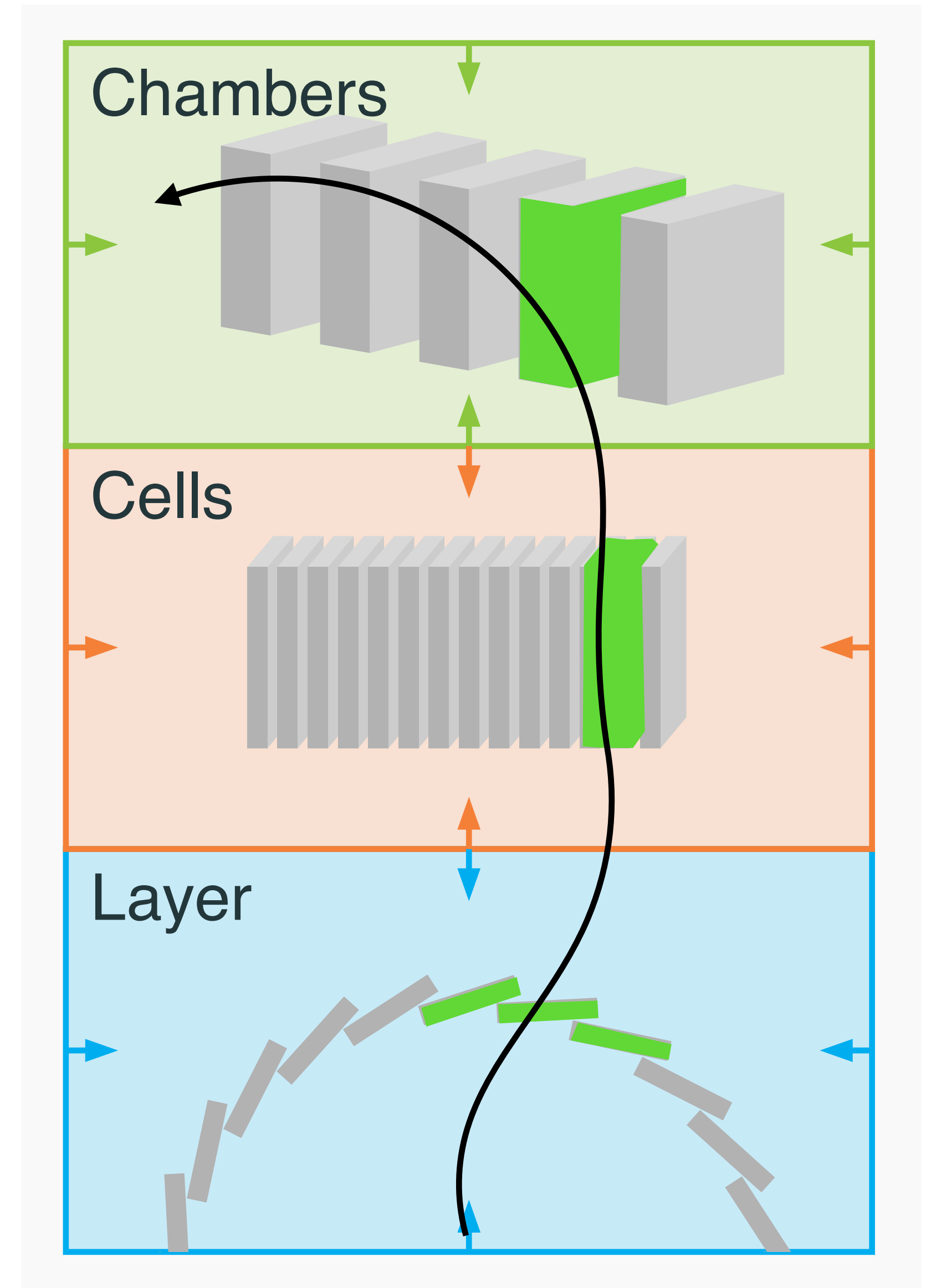`GridPortalLink`

Generation3

Navigation: objectives (2)

‣ When inside a volume

- Provide **candidate surfaces**

  - Generation 1: Layer, Detached volume

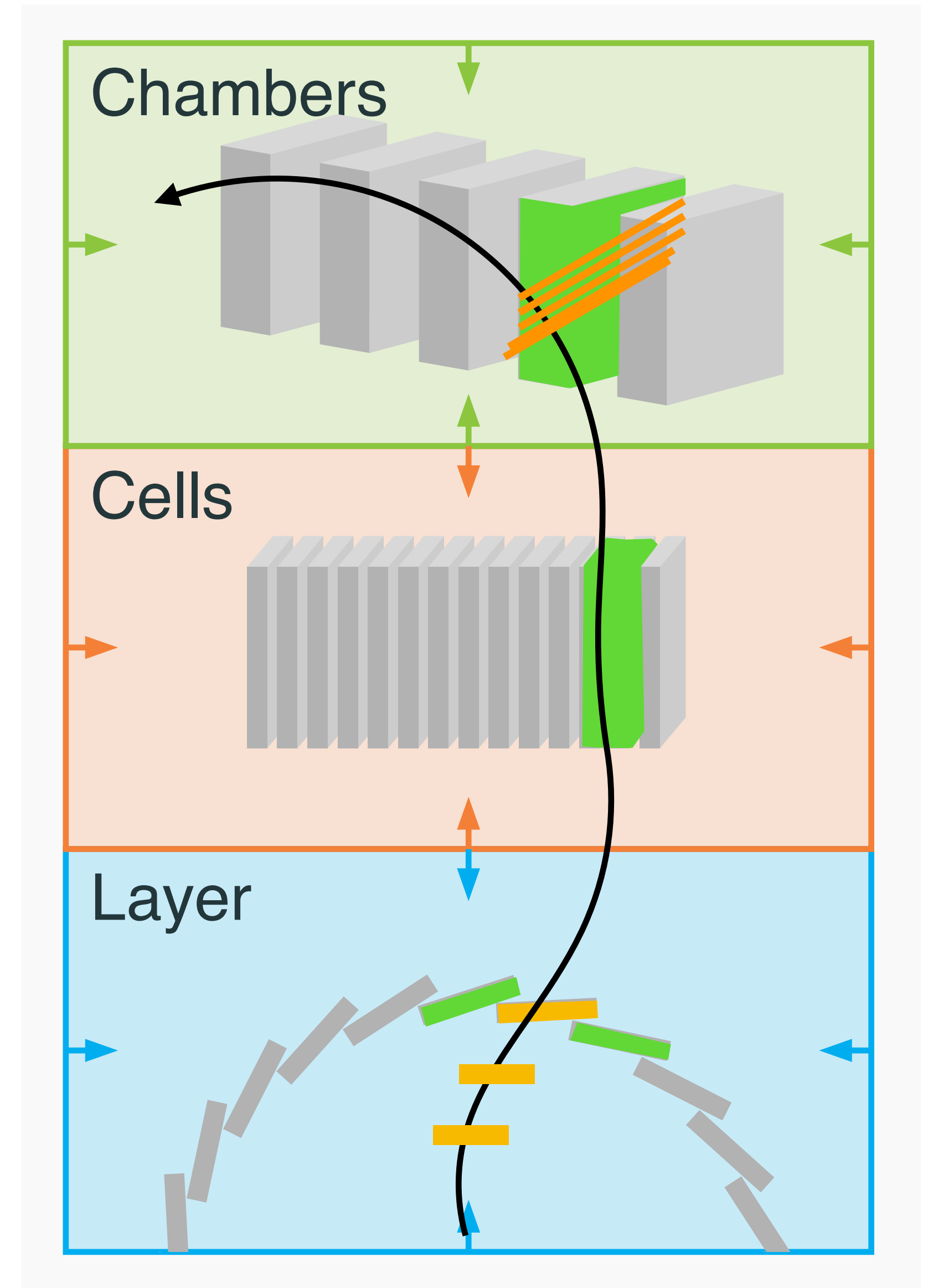 - Generation 2/3 : Navigation delegates

Unordered surfaces

Layer structure

Calorimeter cells

Entry portals into sub volumes
(e.g. chambers)

- Provide **volume based material**
  (surface based material is handled via candidates)

Chambers

Cells

Layer

Navigation: special casing

- In KalmanFilter

  - **Measurement surfaces need to be approached**

    - In pure refit mode this is/was done with the DirectNavigator

- A **destination surface** also needs some special handling

Navigation: discussion proposal

Navigator

Navigation stream (geometry)

Static stream (user filled)

External surfaces (e.g. Kalman Filter)
Destination surface

Navigation delegates
Fill into the geometry stream

Chambers

Cells

Layer