IRT 2.1 data model
part #1

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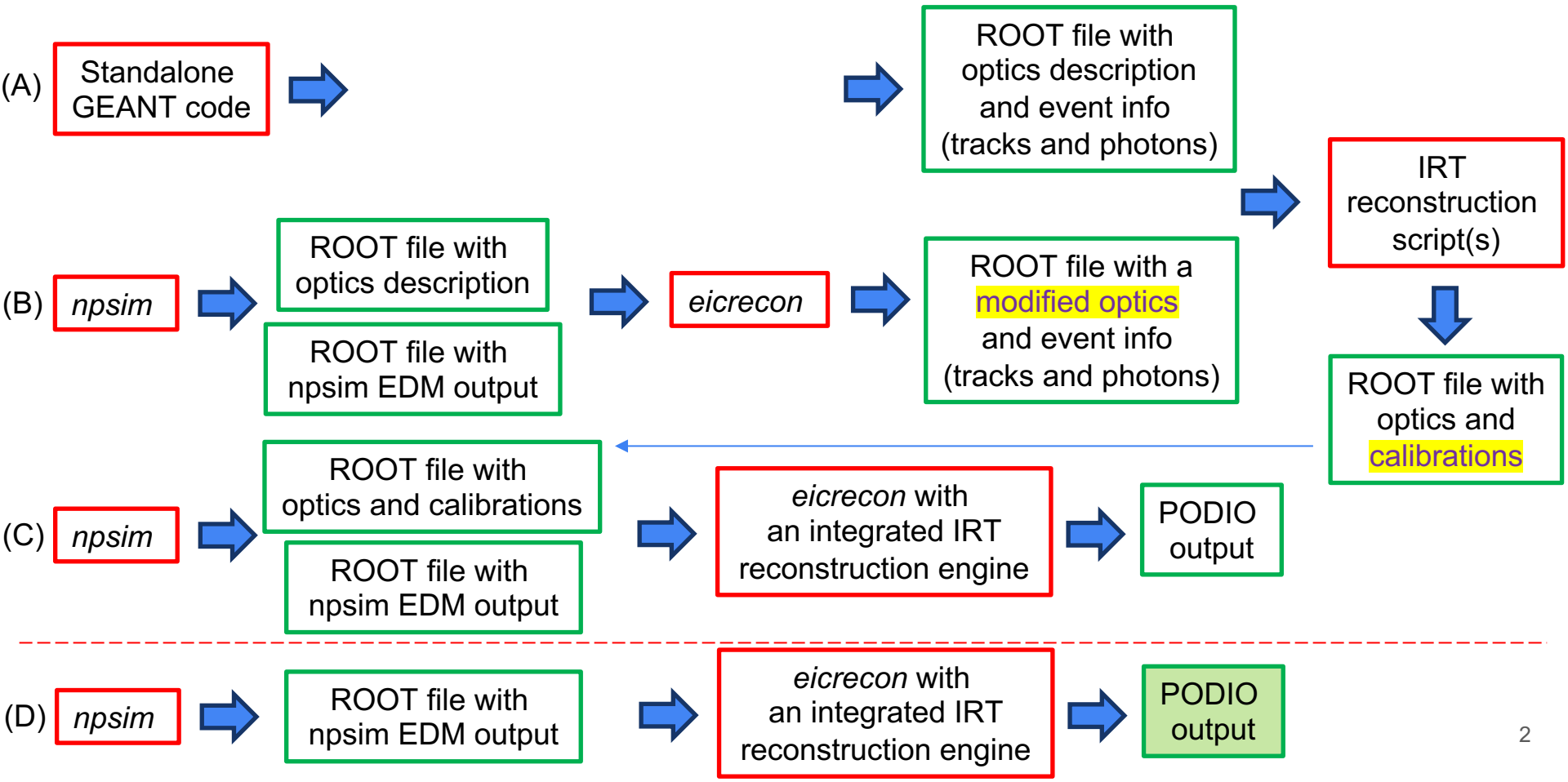
IRT-2.0(1) EICrecon interface evolution



IrtInterface data processing sequence

- Get Cherenkov photon hit collection and track-related collections
- Convert them to an internal event structure described in the IRT library
  - Does not depend on PODIO
  - Is detector-specific (separate entries for pfRICH and dRICH)
  - A reminder: IRT-2.* is an *event-level* algorithm
- The IRT reconstruction engine then works the same way in EICrecon and any standalone GEANT / IRT implementation
- It appends the internal event structure with PID-related output information
- Part #1 described here is a first portion of a 1:1 copy of this internal event structure to PODIO output
  - Needed also for systematic studies, calibrations, etc

Proposed data tables

PR

```
edm4eic::IrtRadiatorInfo:
  Description: "IRT 2.1 output (radiator level)"
  Author: "A. Kiselev"
  Members:
    - uint16_t          npe              // Detected photoelectron count
    - uint16_t          nhits            // Hit count associated with this radiator by IRT engine
    - float             angle            // Reconstructed Cherenkov angle

edm4eic::IrtParticle:
  Description: "IRT 2.1 output (track level)"
  Author: "A. Kiselev"
  Members:
    - int32_t           PDG              // Reconstructed most probable PDG code
    - uint16_t          npe              // Detected photoelectron count
    - uint16_t          nhits            // Hit count associated with this particle by IRT engine
  OneToOneRelations:
    - edm4eic::ReconstructedParticle        chargedParticle    // reconstructed charged particle
  OneToManyRelations:
    - edm4eic::IrtRadiatorInfo              radiators          // radiator-related information

edm4eic::IrtEvent:
  Description: "IRT 2.1 output (event level for a particular detector)"
  Author: "A. Kiselev"
  OneToManyRelations:
    - edm4eic::IrtParticle                  irtParticles       // charged particles with associated Cherenkov PID info
```