(CTA) IRF
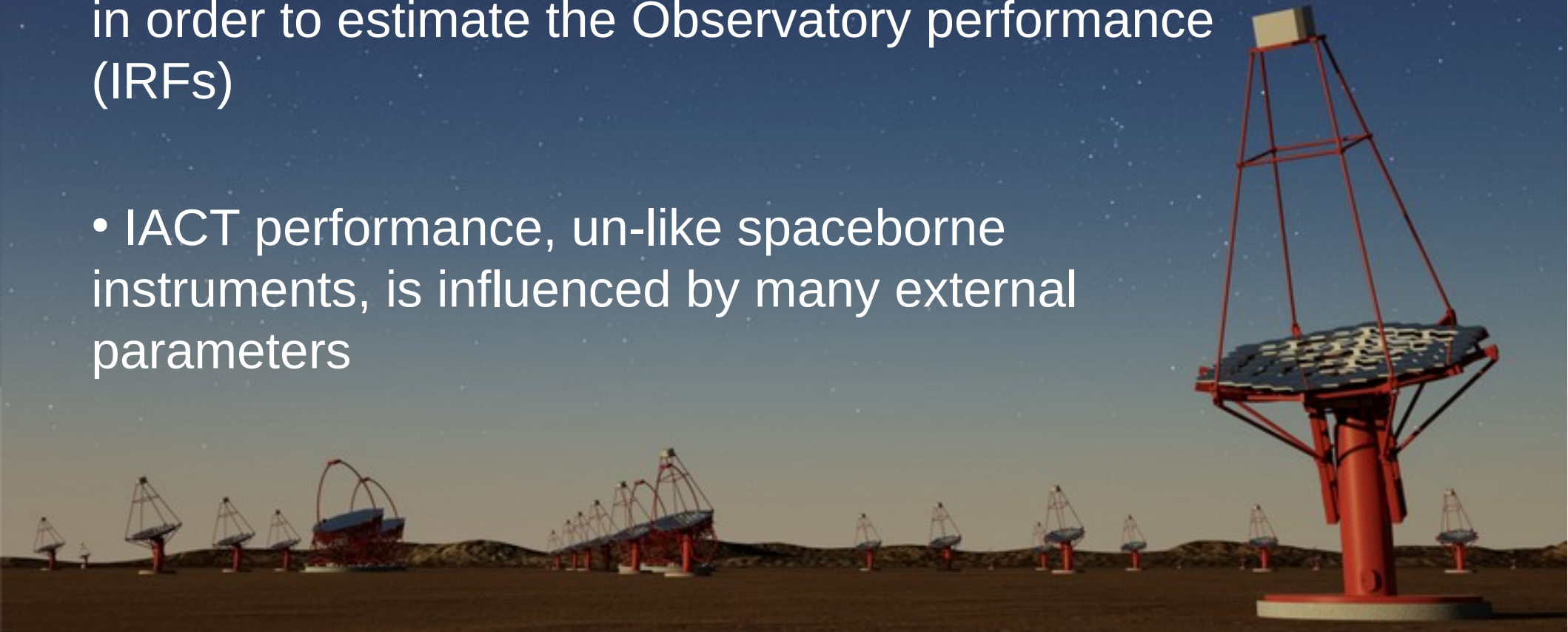# Data Format

T. Hassan, J. Rico, J. E. Ward

– IRF Basics

- The Instrument Response Function relates the array reconstructed quantities with the parameters of the source emitted photons

$$R_\gamma(\theta', \phi', E' | \theta, \phi, E) = A_\gamma(\theta, \phi, E) \times PSF(\theta', \phi' | \theta, \phi, E) \times D(E' | \theta, \phi, E)$$

- The IRF elements are:

  - Effective area
  - Energy dispersion
  - Direction dispersion (PSF)
  - Background "acceptance" as the BG rate

– IACT Analysis

- IACTs analysis rely heavily on MC simulations

- High level products require dedicated simulations in order to estimate the Observatory performance (IRFs)

- IACT performance, un-like spaceborne instruments, is influenced by many external parameters

– IACT performance
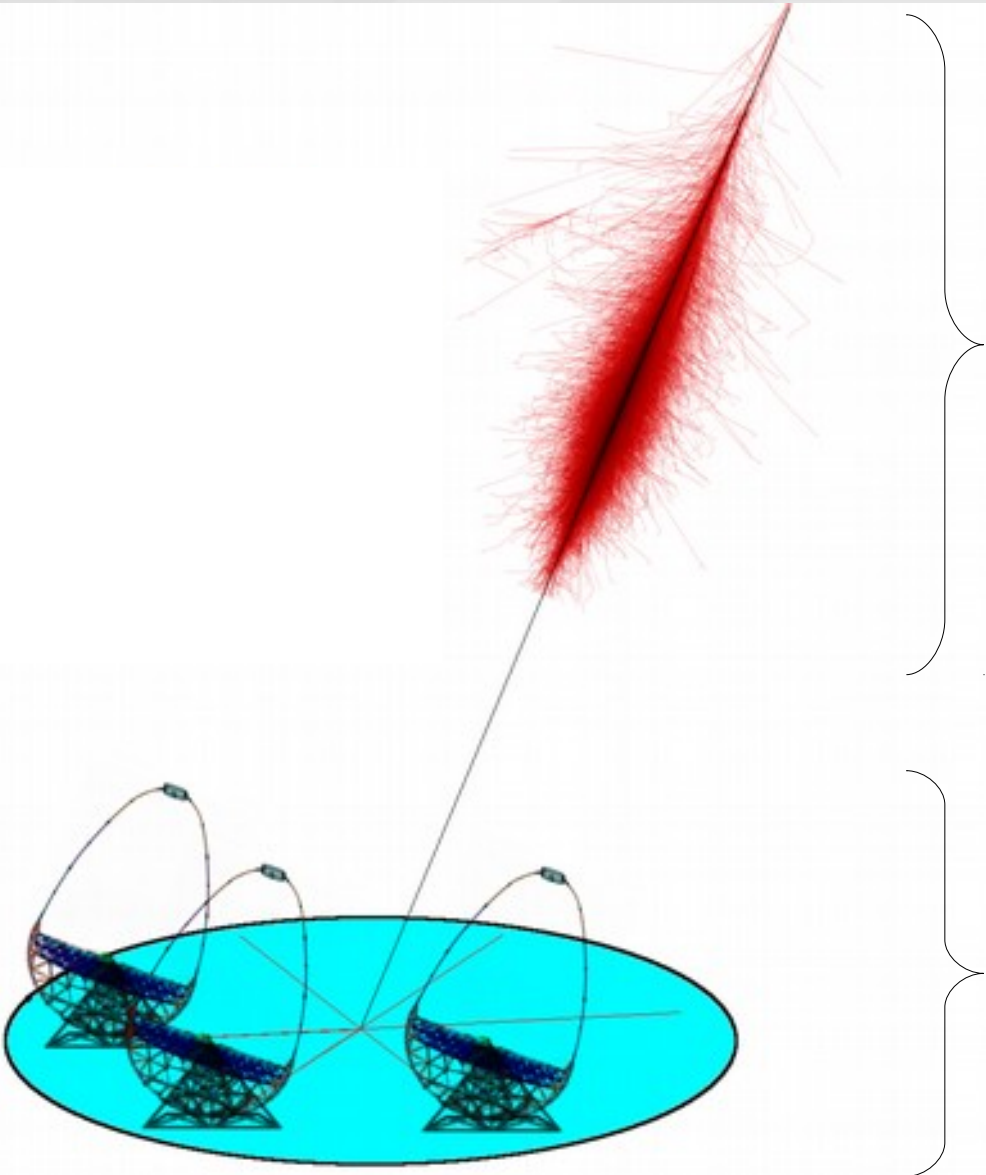
Transmitance

Molecular Profile

Weather

NSB

Hardware Status

Obs. Mode

Array ...

– Proposed IRF data format

- We developed an IRF data format flexible enough to comply with these dependencies (3.2 deliverable?)

- It extends FITS standard to allow:

  - Any IRF parameterization

  - Any axis binning (e. g. irregular or overlapping bins)

  - Any number of dimensions

- We will also be involved in the analysis pipeline and IRF database
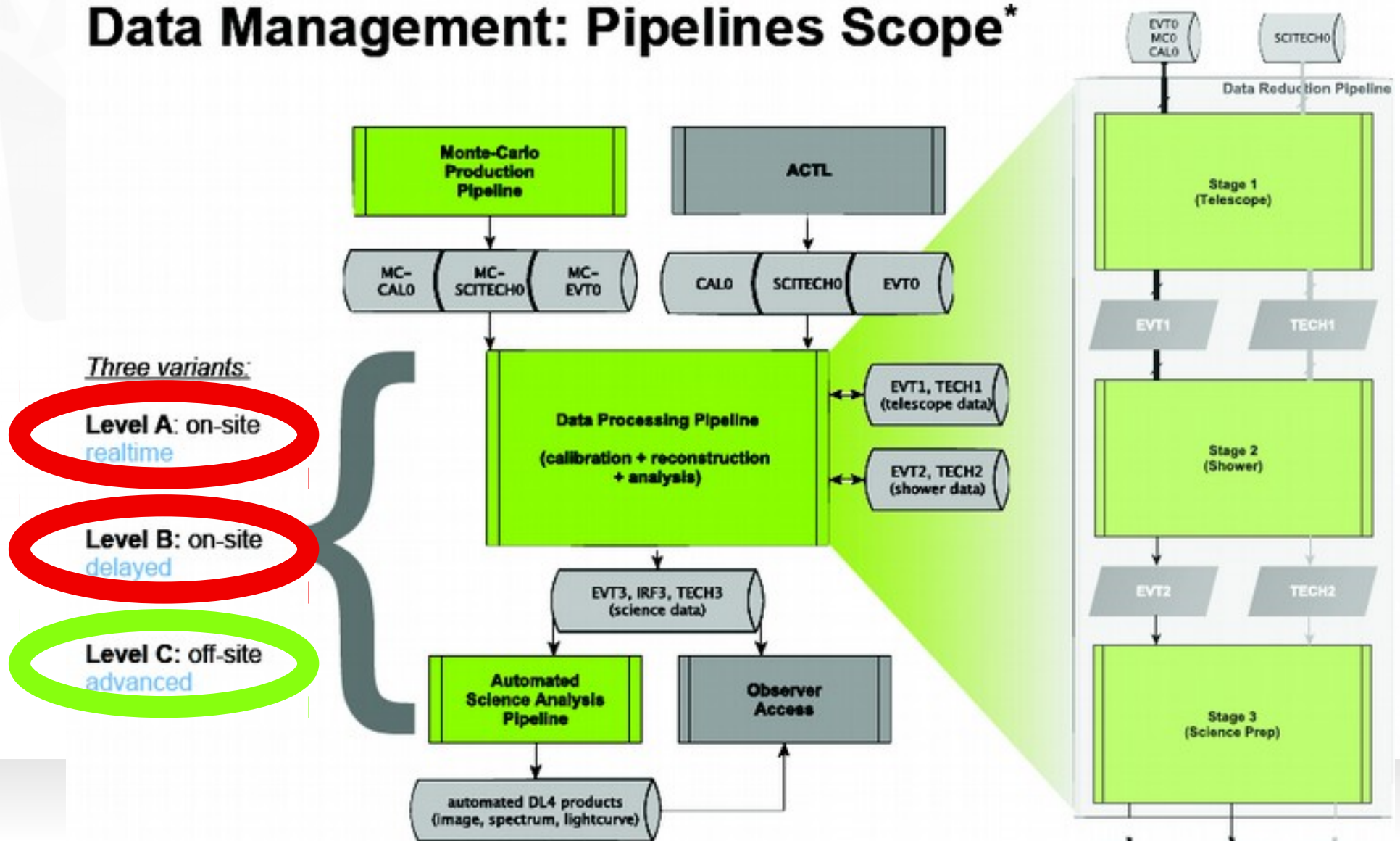
– Proposed IRF data format

Thank you!

Proposed IRF3 format - Archive

- IRF elements need to be archived

Proposed IRF3 format - Archive