

# ESCAPE

European Science Cluster of Astronomy &  
Particle physics ESFRI research Infrastructures

## The HCG-16 study

IAA-CSIC

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- Partner: **IAA-CSIC**



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**CSIC**

- Science case: *Evolution of compact groups from intermediate to final stages; A case study of the HI content of HCG 16 ([DOI](#))*
- Heads up: The speaker is a sysadmin helping out astronomers to write a reproducible workflow.
- Previously presented in a [WP3 FG1 \(video\)](#)
  - Thanks to WP3 for their valuable feedback!



- **Software:** pipeline to reproduce the HCG-16 study
- **Purpose:** enable end-to-end reproducibility, from initial data to plots in the paper. We open up the whole workflow so researchers should be able to:
  - Understand what was done to the data
  - Verify the analysis
  - Reuse data and code
- **Use case:** From a researcher's point of view, "can I use the ESCAPE ecosystem to share my analysis with a colleague or a referee?"
- **Code:** <https://github.com/AMIGA-IAA/hcg-16>





- Workflow:
  - Download and install runtime dependencies
    - Runtime dependencies are provided in a [conda environment](#)
  - Download source code for the analysis and input data.
    - Code from [GitHub](#)
    - Data from [EUDAT's B2SHARE service](#)
  - Run the pipeline
    1. Flagging and calibration with CASA ([docker container](#))
    2. Imaging with CASA ([docker container](#))
    3. Masking with SoFiA ([docker container](#))
    4. Plotting with Jupyter Notebooks ([conda environment](#))



# System Requirements

- Operating System, compilation environment
  - In theory you just need a bash shell on a Linux OS
  - Everything else installs automatically with conda
  - It has been tested on Ubuntu 18.04/20.04 + CentOS 7/8
  - Also on SKAO's JupyterHub instance:  
<https://srcdev.skatelescope.org/escape>
    - Thanks to ESAP! <https://sdc-dev.astron.nl/esap-gui/interactive>
- Hardware requirements
  - Minimum of 20GB disk space on the working directory
  - Recommended minimum of 2 CPU cores, 2GB RAM
- Containerisation and portability requirements
  - None thanks to “udocker”

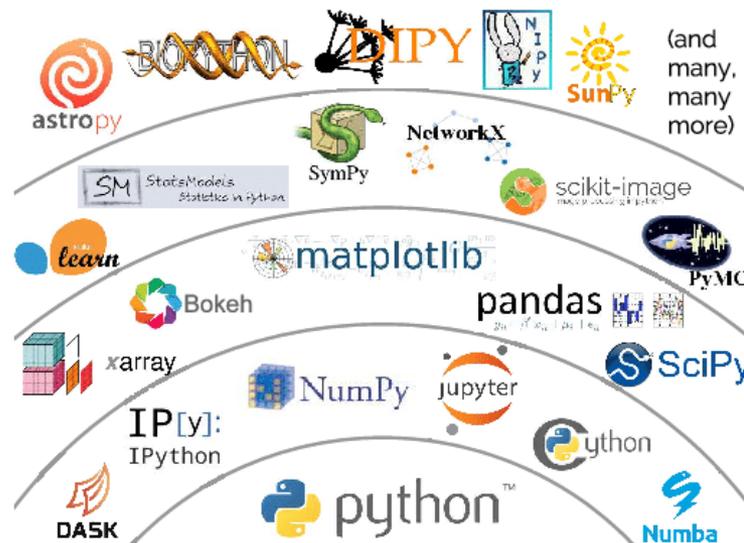


# Integration in the ESCAPE ecosystem

- From the ESCAPE point of view:
  - Replace existing services with ESCAPE's equivalent
    - Analysis platform: MyBinder → ESCAPE ESAP
      - Achieved with SKAO's JupyterHub!
      - Caveat: ESCAPE IAM login is a pre-requisite
    - Code repository: GitHub + DockerHub → ESCAPE OSSR
    - Data repository: EUDAT → ESCAPE DIOS
      - Actually, data was re-hosted in EUDAT since the VLA archive only allows manual interaction (via a web form)



- This work would have not been possible without:



(and many, many more)

