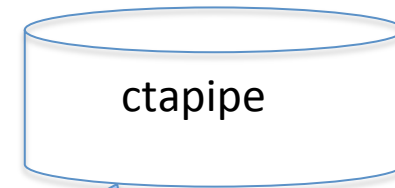
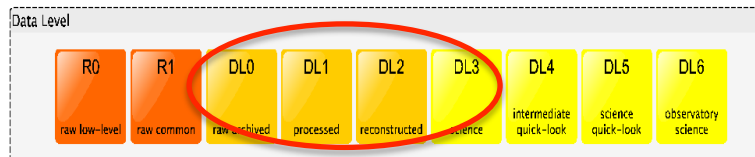




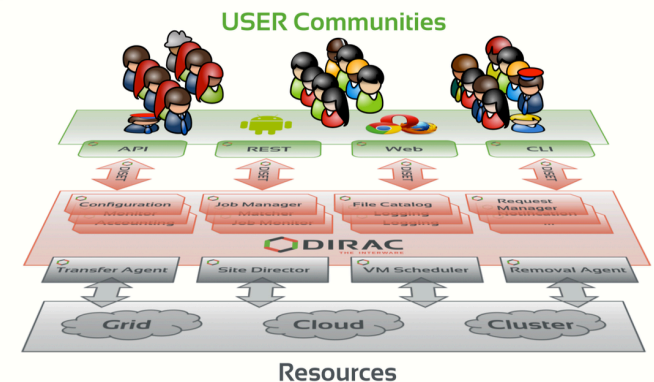
Provenance and CTADIRAC Context



- Instrument: CTA
- Objectives: **FAIR Data**
- Environment:
 - DL0-DL3 pipeline, which uses the tools of the ctape library (including the Provenance module which captures provenance information - K. Kosack, - CEA)



- CTADIRAC (Prototype based on DIRAC - L. Arrabito - LUPM) used for the management of distributed calculations on heterogeneous resources (grid, cloud, clusters)



- Project of this implementation: **Storage** of the provenance **inside** the use of CTADIRAC



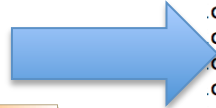
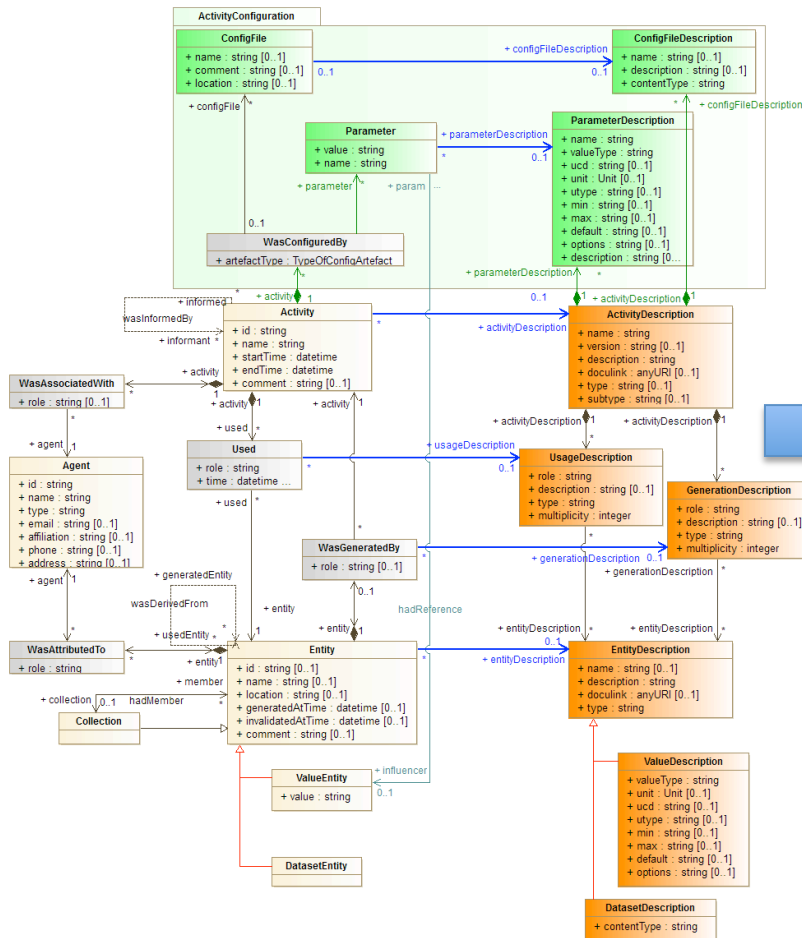
Provenance and CTADIRAC Technology used



- Python
- ctapipe library
- DIRAC (Client/Server architecture)
- PostgreSQL database
- SQLAlchemy module



Provenance and CTADIRAC Results



vtest=> \d

List of relations		Type	Owner
ia	Name		
.c	activities	table	ctaprov
.c	activityDescriptions	table	ctaprov
.c	agents	table	ctaprov
.c	configFileDescriptions	table	ctaprov
.c	configFileDescriptions_id_seq	sequence	ctaprov
.c	configFiles	table	ctaprov
.c	datasetDescriptions	table	ctaprov
.c	datasetEntities	table	ctaprov
.c	entities	table	ctaprov
.c	entities_id_seq	sequence	ctaprov
.c	entityDescriptions	table	ctaprov
.c	generationDescriptions	table	ctaprov
.c	parameterDescriptions	table	ctaprov
.c	parameterDescriptions_id_seq	sequence	ctaprov
.c	parameters	table	ctaprov
.c	usageDescriptions	table	ctaprov
.c	used	table	ctaprov
.c	used_id_seq	sequence	ctaprov
.c	valueDescriptions	table	ctaprov
.c	valueEntities	table	ctaprov
.c	wasAssociatedWith	table	ctaprov
.c	wasAssociatedWith_id_seq	sequence	ctaprov
.c	wasAttributedTo	table	ctaprov
.c	wasAttributedTo_id_seq	sequence	ctaprov
.c	wasConfiguredBy	table	ctaprov
.c	wasConfiguredBy_id_seq	sequence	ctaprov
.c	wasDerivedFrom	table	ctaprov
.c	wasDerivedFrom_wasDerivedFrom_Id_seq	sequence	ctaprov
.c	wasGeneratedBy	table	ctaprov
.c	wasGeneratedBy_id_seq	sequence	ctaprov
.c	wasInformedBy	table	ctaprov
.c	wasInformedBy_wasInformedBy_Id_seq	sequence	ctaprov

ws)



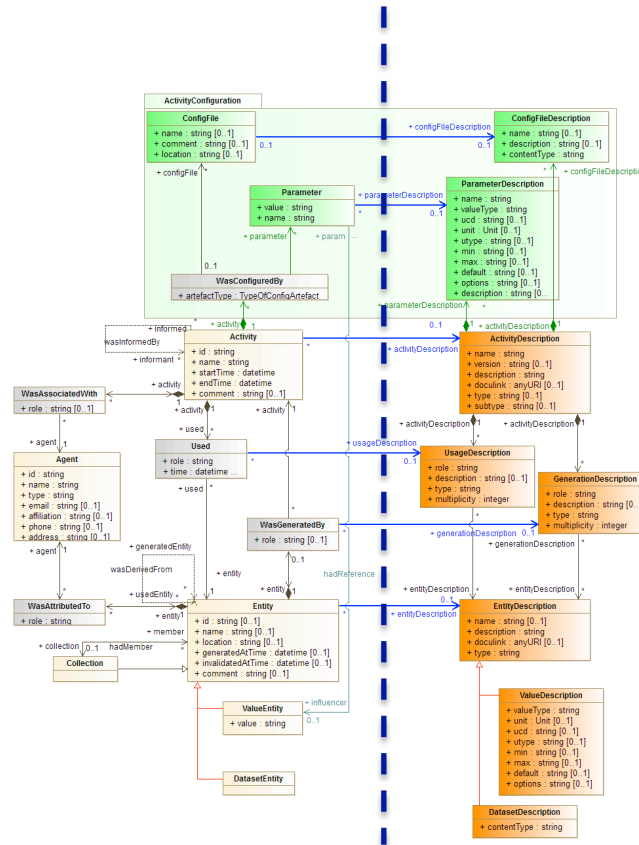
Provenance and CTADIRAC Results



The Provenance Data model contains different parts:



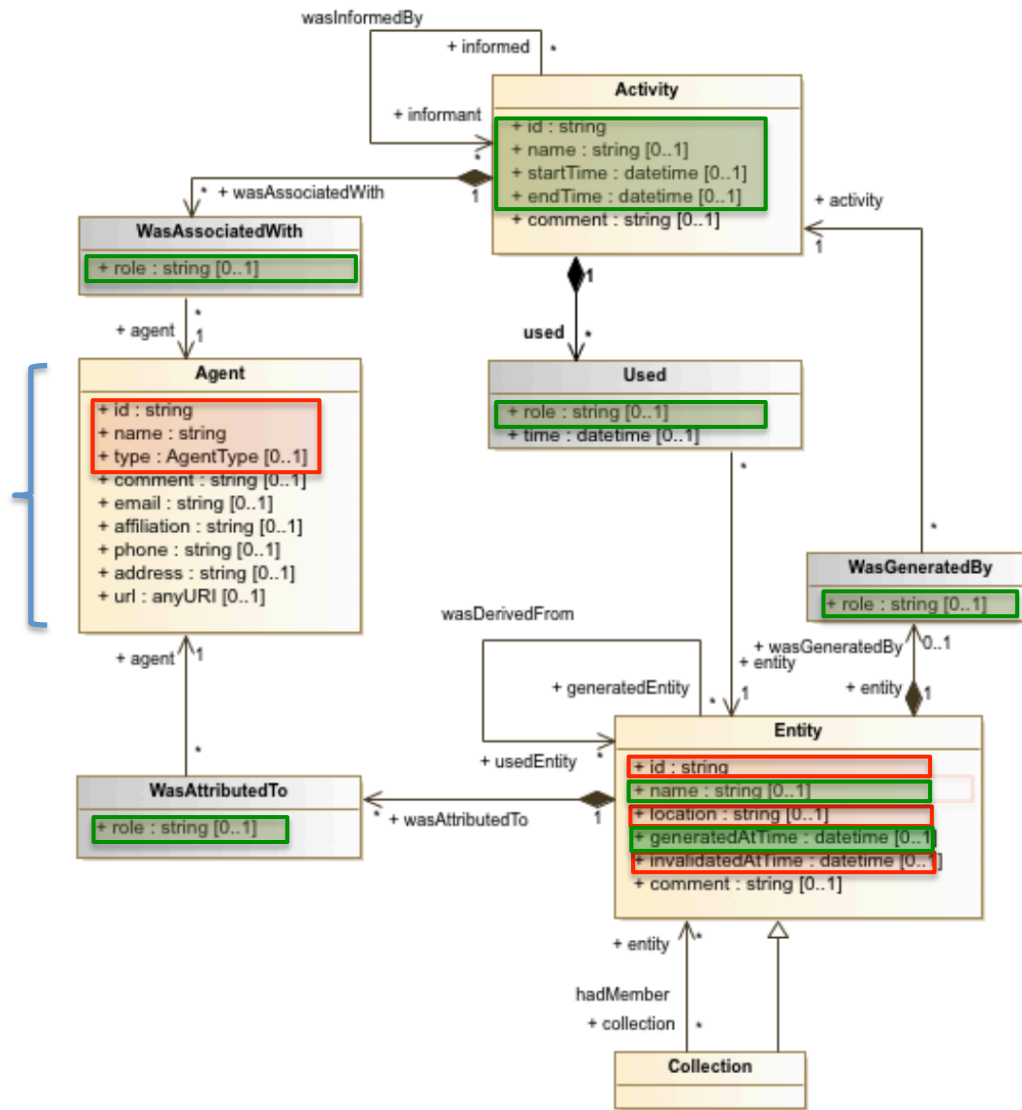
Information relative to each job



Descriptions relative to each type of job



Provenance and CTADIRAC Results



Only one agent defined: CTAO

CTADIRAC
ctapipe