

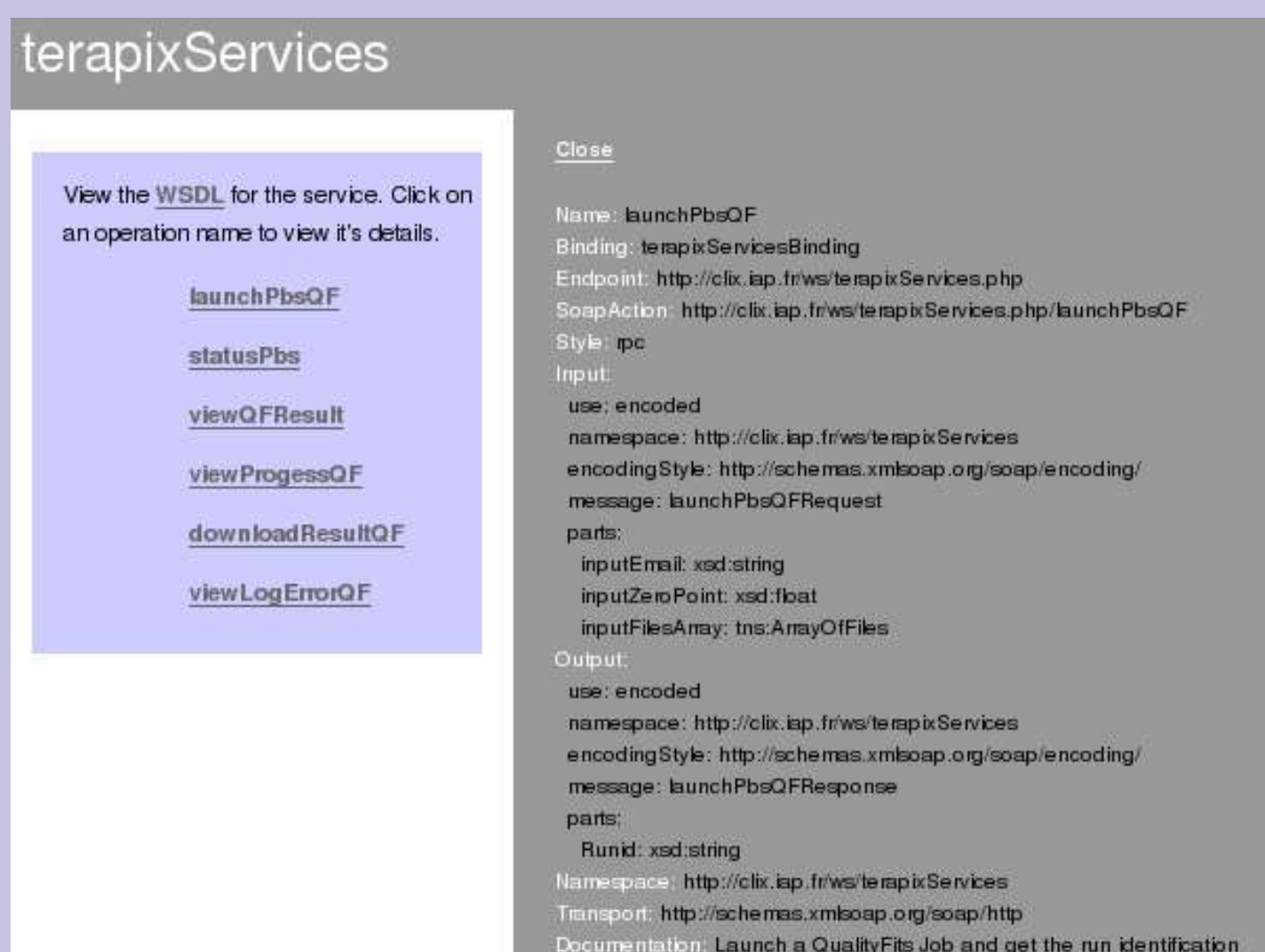
An image quality assessment tool available from a web service

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Introduction

Large mosaic cameras like MEGACAM have become increasingly common in recent years, and such cameras are producing very large quantities of data. Not every astronomer has access to sufficient computing power to process these datasets in a timely manner. However, thanks to the falling costs and increasing capacity of network connections between institutes, it is now practical to offer remote processing of even gigabyte-sized datasets, or “web services” as they are called. TERAPIX (Institut d'Astrophysique de Paris) intends to provide most of the common processing tasks to the community in this fashion ; starting with the image quality assessment tool “QualityFITS”.

QualityFITS web service



A web service is a software system which can be used in your proper code over a network. The dialog client/server is transmitted by messages enclosed in a SOAP envelope. To process data and manage results, our web service (<http://clix.iap.fr/ws/terapixServices>) uses two main packages (QualityFITS and TORQUE/MAUI) encapsulated in six methods available to the users:

- **launchPbsQF** : Send job on computing nodes according to resources available on our cluster
- **statusPBS** : Check job status and provide statistics about processing
- **viewProgressQF** : Follow QualityFITS processing steps
- **viewQFResult** : View results online from an URL
- **downloadResultQF** : Download a compressed tar archive of QualityFITS results
- **viewLogErrorQF** : View the last lines of the QualityFITS error log

QualityFITS

Its aim is to provide a quick quality assessment of flat fielded images. For each image, QualityFITS performs the following tasks :

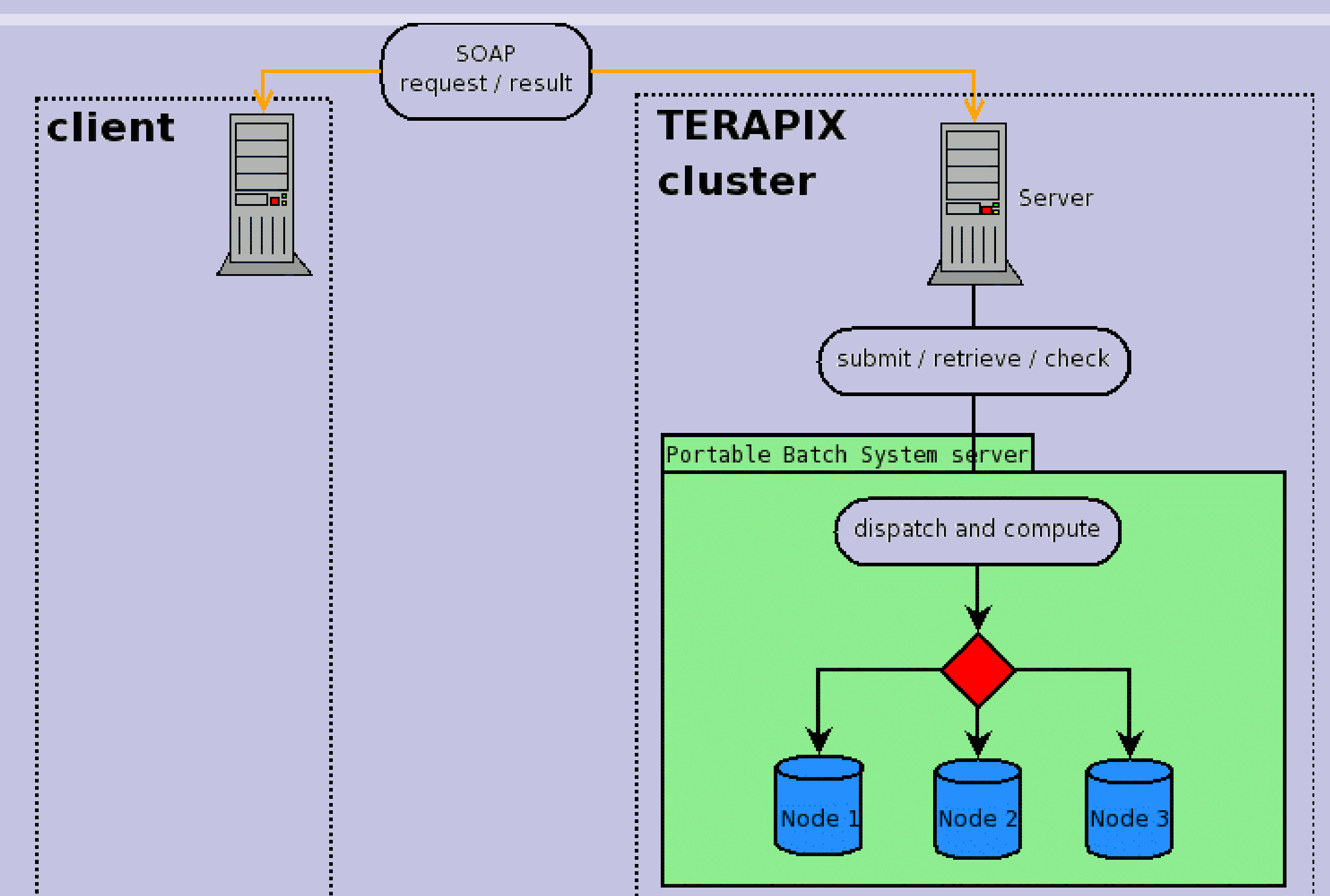
- measurement of the sky background and generation of map and histogram
- measurement of the FWHM of the PSF and generation of map and histogram
- detection of cosmic rays and image mask construction
- building of weight and flag maps using a master flat-field, the cosmic ray mask and any provided mask
- building of PNG images and its associated weightmap
- computation of star and galaxy counts
- plotting of a PSF model and computation of PSF ellipticity
- creation of a FITS table and a XML file summarizing the above statistics



Resource and queue manager

To manage the queued job on the TERAPIX cluster, the QualityFITS web service uses :

- a resource manager, TORQUE (Tera-scale Open-source Resource and QUEue manager - <http://www.clusterresources.com/products/torque/>) based on the original PBS (Portable Batch System) project, which provides control over batch jobs and distributed computing nodes.
- an advanced job scheduler, MAUI (<http://www.clusterresources.com/products/maui/>), capable of supporting a large array of scheduling policies, dynamic priorities, extensive reservations.



TERAPIX Client interface

An user-friendly interface, using the QualityFITS web service, is available at <http://clix.iap.fr/QualityFitsWS/> to process your data.

➢ 1st step : Upload data

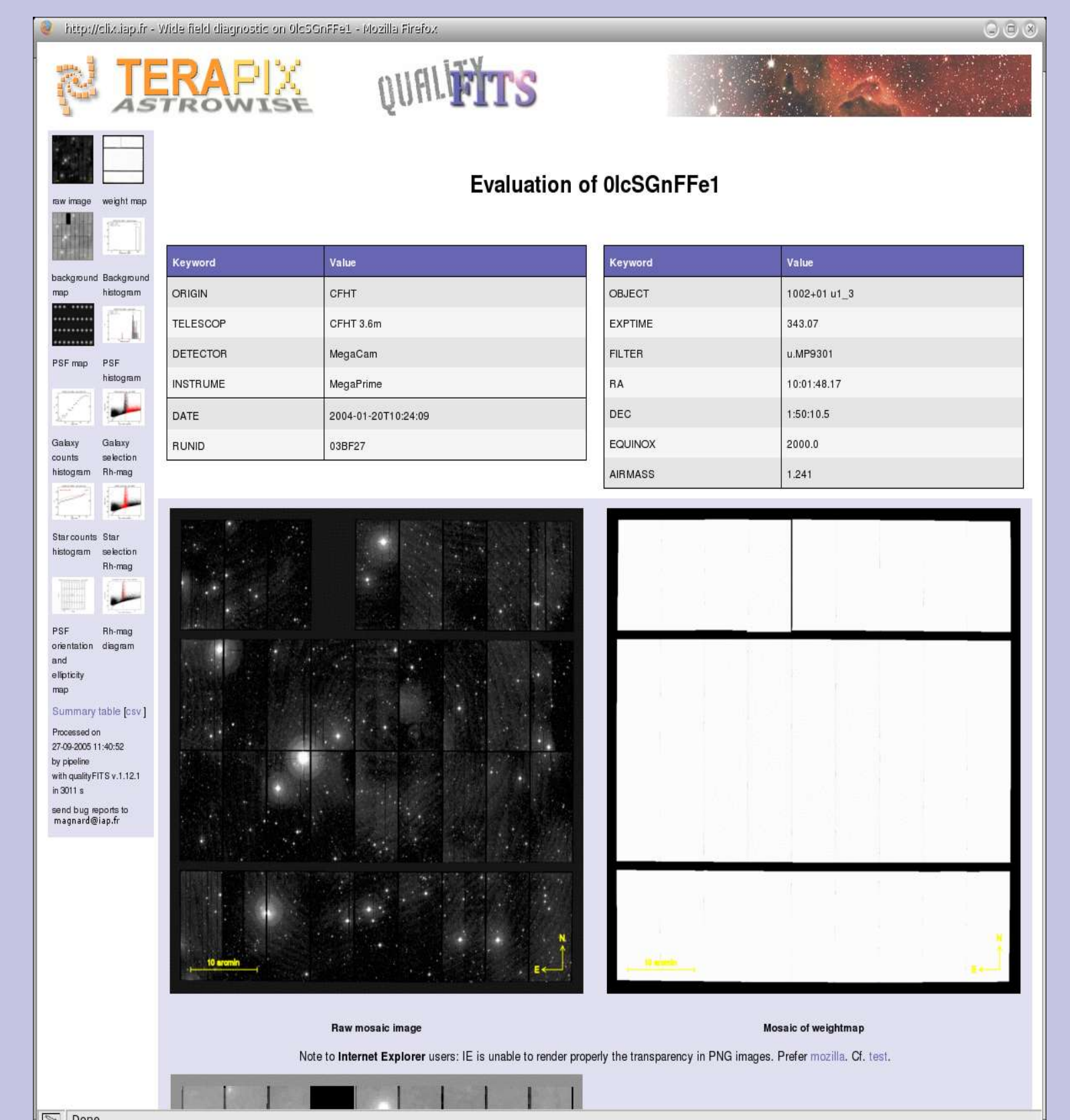
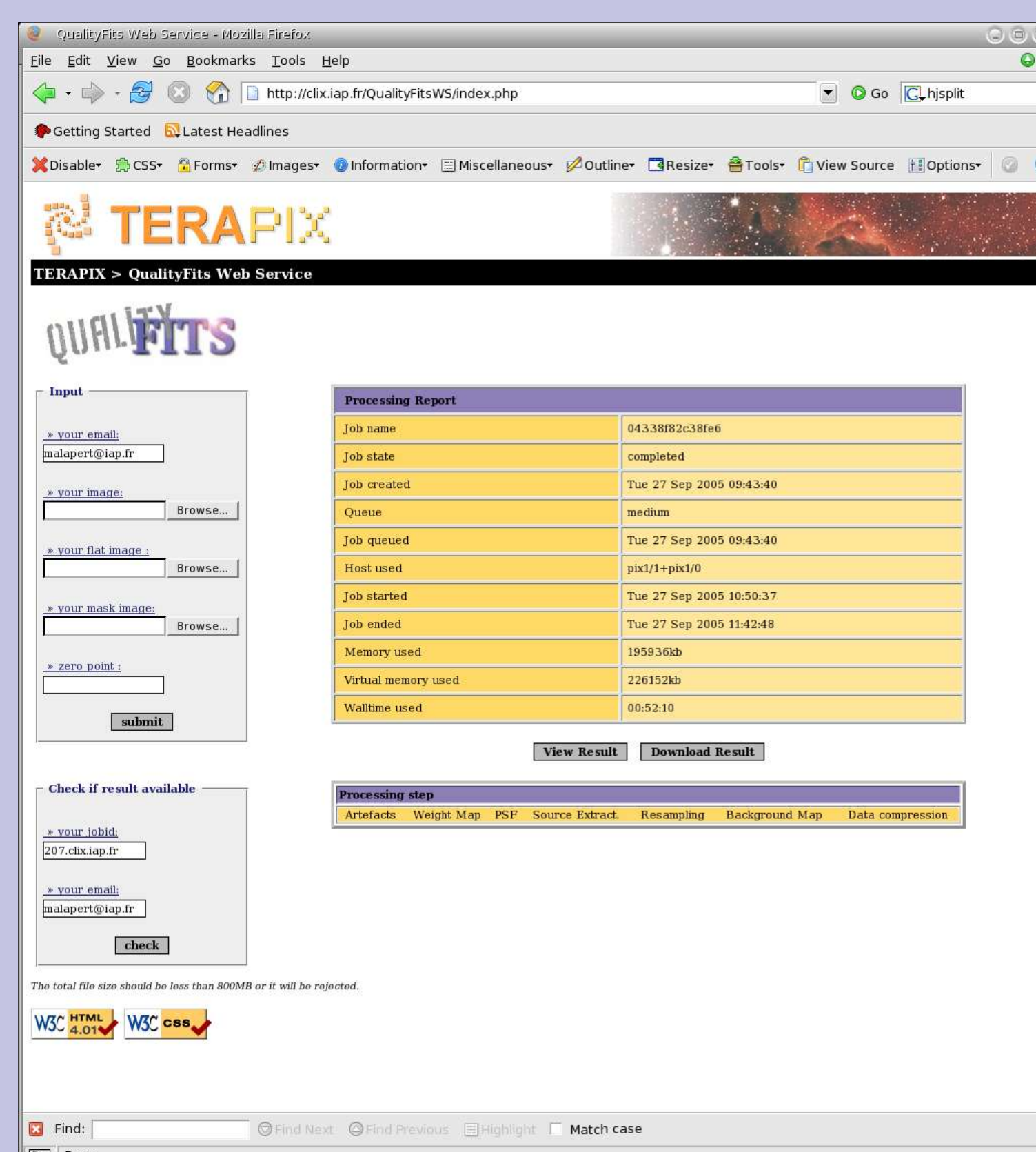
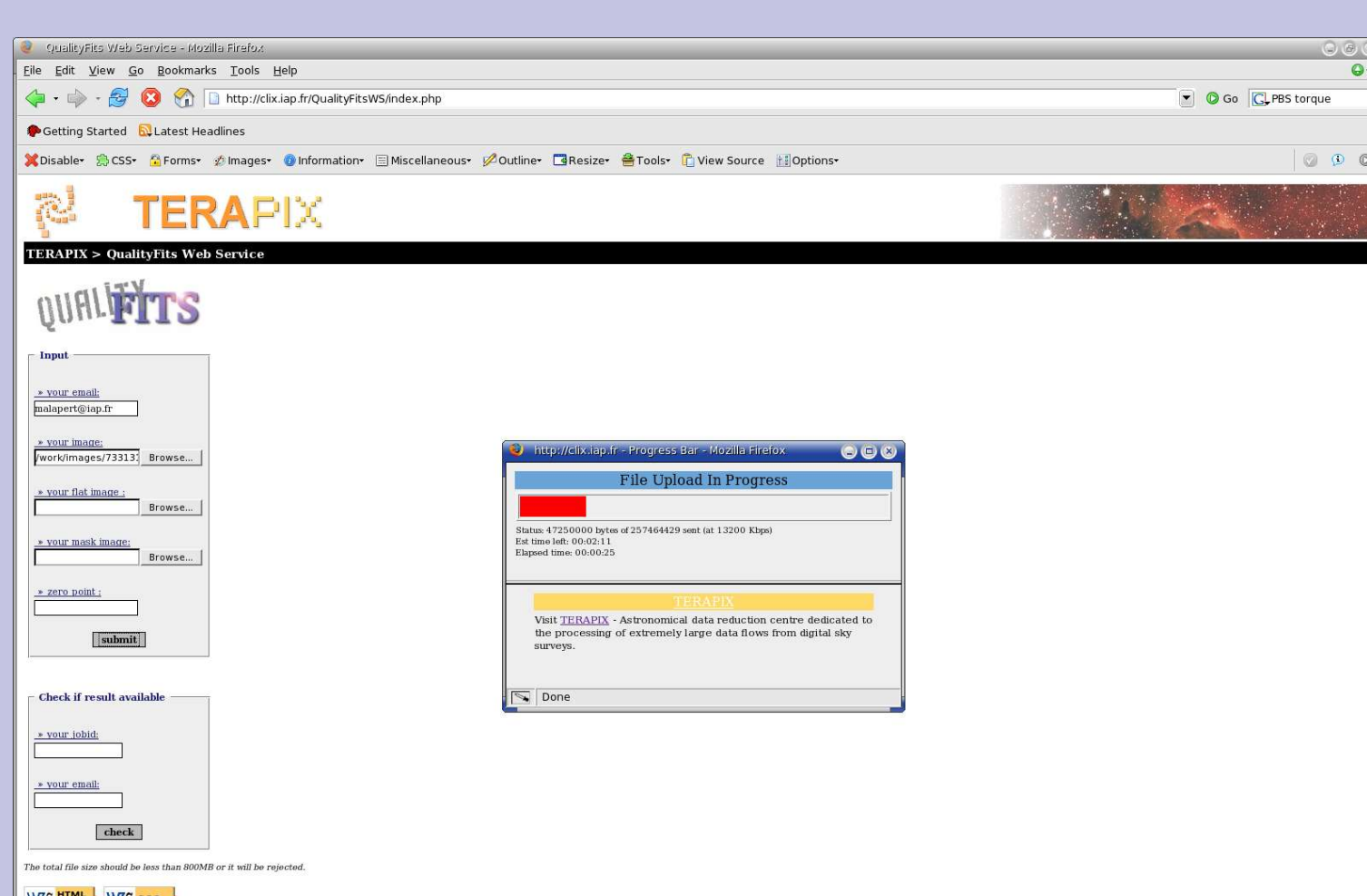
Give your email, an image on your disk or URL.

➢ 2nd step : Check results

When your job id appears on the interface, press once the check button to view an automatic update of the processing state.

➢ 3rd step : Download data or view results

Once your job id completed, you can either view results on the web or download all QualityFITS products from a compressed tar archive.



Next improvements

- MIME support
- Web service for astrometric
- AVO consistent and photometric calibration
- WS security (SCAMP)