EU ARC QA2 Training

D. Petry, ESO, 9-13 Feb 2015

Schedule

Monday *(room Lupus (C3.01) 10:00-11:30 and 12:30-15:00)***:**
- Introduction
- An example QA2 project
- Your first assignment

Tuesday: *(room Lupus, 10:00-11:30)*
- intermediate discussions on assignment (1)
- attempt to complete assignment (1) by end of day

Wednesday: *(Pavo, 10:00-11:30)*
- concluding discussion of assignment (1), introduction of assignment (2)
- *The pipeline WebLog (Liz Humphreys) (11:00-11:30)*
- work on assignment (2)

Thursday: *(Lupus, 10:00-11:30)*
- *discussion on assignment (2), introduction of assignment (3)*
- work on assignment (3)

Friday: *(Lupus, 10:00-11:30)*
- concluding discussion of assignment (3)
- packaging and AOB

Your offices and accounts:

    C.3.03: Luke + Ilsang
    B.3.48: Devaky + Nuria
    C.2.23: Silvio + Ciro

We will form 2-person working groups
    Group A: Paola - Matthieu
    Group B: Luke - Ilsang
    Group C: Silvio - Ciro
    Group D: Gergely - Ruud
    Group E: Devaky - Nuria

Cluster accounts: "almaXX", see the wiki page
Generally, log in via:
    ssh -X almaXX@arcp1.hq.eso.org
    qi   **(to get interactive shell on least loaded node)**
    see the cluster page and the cluster CASA session page

Your offices and accounts:

    C.3.03: Luke + Ilsang
    B.3.48: Devaky + Nuria
    C.2.23: Silvio + Ciro

We will form 2-person working groups
    Group A: Paola - Matthieu   arcp4
    Group B: Luke - Ilsang   arcp5
    Group C: Silvio - Ciro   arcp6
    Group D: Gergely - Ruud   arcp7
    Group E: Devaky - Nuria   arcp8

Cluster accounts: "almaXX", see the wiki page
Generally, log in via the headnode arcp1:
   ssh -X almaXX@arcp1.hq.eso.org
   qi   (to get interactive shell on least loaded node)
    see **the cluster page** and **the cluster CASA session page**

This week we will use direct login to the "group node"
   ssh -X almaXX@arcpN.hq.eso.org   , N = 4,5,6,7, or 8

Monday, room Lupus, 10:00 h – 11:30h and
12:30h-14:30h:

Outline

- *The present project status w.r.t. QA2*
- *Overview of the QA2 procedure*
- *Brief mention of QA3*
- *Available sources of information for QA2 analysts*
- *The assignment process*
- *Organising your workspace*
- *The checklists*
- *A tour of the QA2 instructions wiki*
- *An example of a QA2 analysis*
- *Your first assignment*

The present situation

Cycle 2 has gone well so far (numbers as of 31 January 2015)

```
Total processed (including QA2_FAIL) since January 2013:
   238 (pass) +  80 (fail) = 318  SBs
   413 (pass) + 155 (fail) = 568  EBs

Total delivered: 238 SBs (413 EBs)
     Manual cal.: 196 SBs
   Pipeline cal.:  42 SBs

For the data observed between 2013/01/24 and 2014/08/27:
Overall Net analysis time  median:       7 working days
Time from observation to delivery median  22 working days
(includes delays due to work at JAO)

Analysis effort 2013+2014 amounts to ca. 2000 working days
        (assuming 75% efficiency, this is ca. 7.5 FTE years)

Since Pipeline became available in October,
> 50% of the calibration is done by pipeline
```
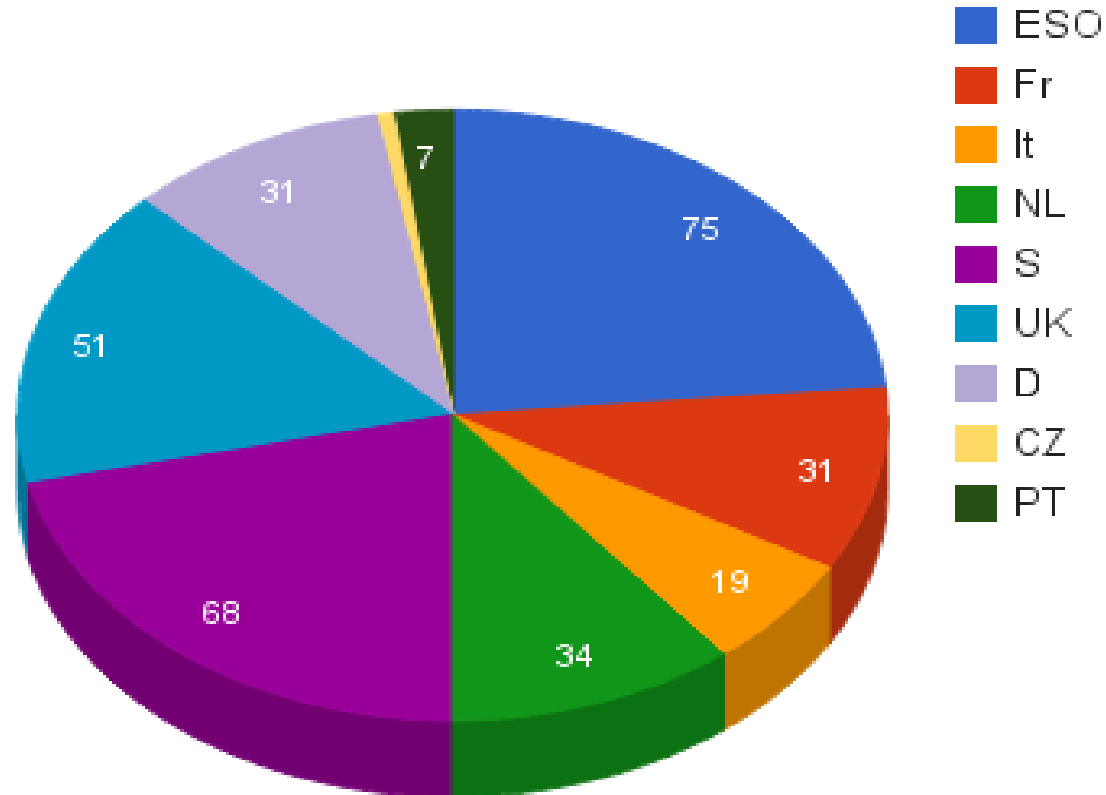
The present situation

- many different analysts from all nodes, PT, and ESO participate
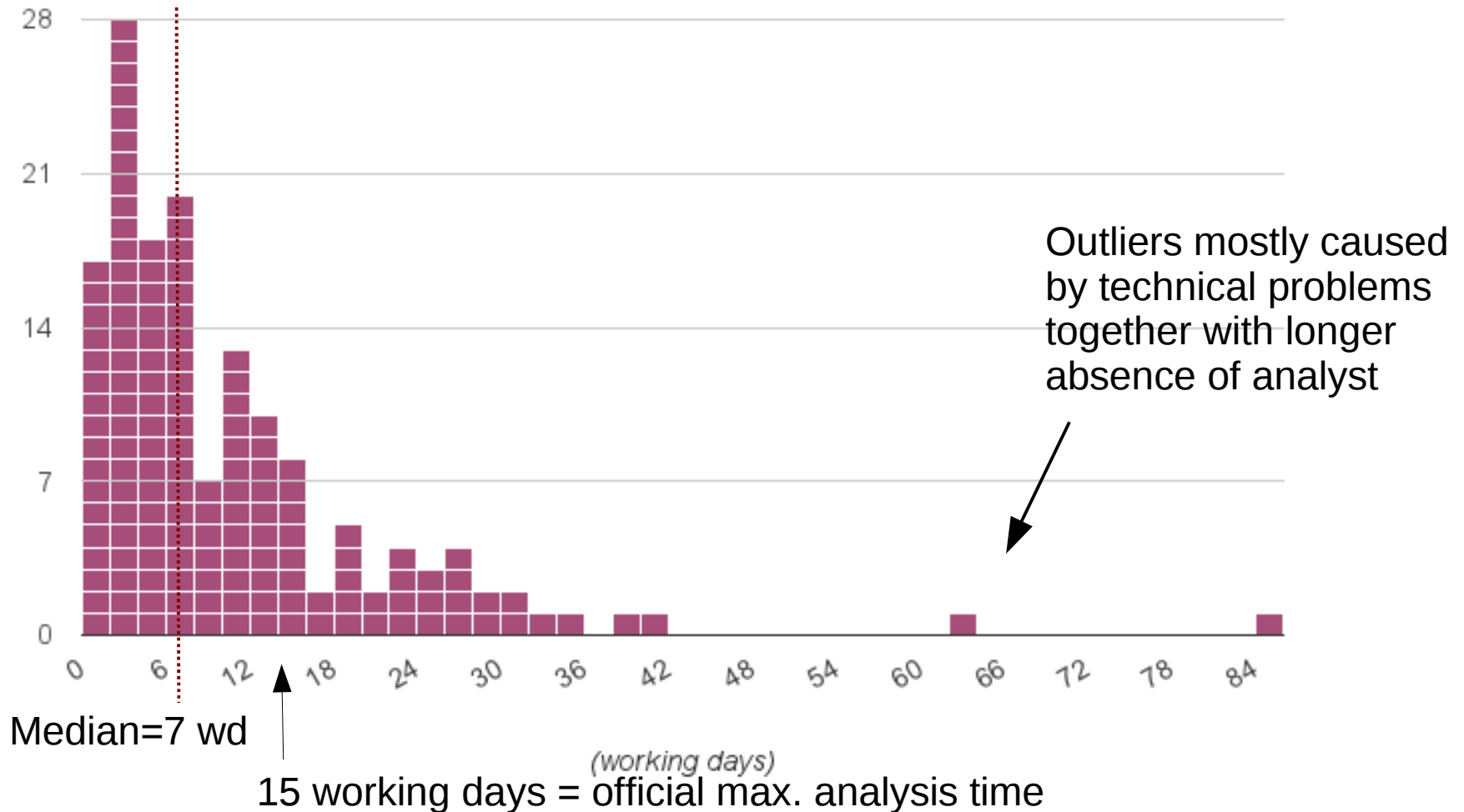

Cycle 1+2 EU ARC QA2 projects (as of 31/01/2015): processed SBs

The present situation

- Net analysis time: range 1-84, median: 7 working days
  Record (held by M. Schmalzl): 1 day

Cycle 1+2 EU ARC QA2 projects (as of 1/09/2014): Net Analysis Time

Outliers mostly caused by technical problems together with longer absence of analyst

Median=7 wd

15 working days = official max. analysis time

(working days)

The QA2 procedure in Cycle 2
(= the present status)

Leads: Balthasar Vila Vilaro + Eric Villard
Analysts: ca. 8 JAO personel (Liza, Harold, Jose, ...)

The JAO building at ESO, Santiago

The QA2 procedure in Cycle 2

What does the PI obtain from us?

Example: package for 1 EB

```
|-- 2013.1.00020.S/
|   |-- sg_ouss_id/
|   |   |-- group_ouss_id/
|   |   |   |-- member_ouss_id/
|   |   |   |   |-- README
|   |   |   |   |-- calibration/
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6.calibration.tgz
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6.ms.wvrgcal
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6.calibration.plots/
|   |   |   |   |-- log/
|   |   |   |   |   |-- imaging.log
|   |   |   |   |   |-- calibration.log
|   |   |   |   |-- product/
|   |   |   |   |   |-- PKS1830_uid___A002_X86fcfa_X14a6.spw0_vel_selfcal.flux.fits
|   |   |   |   |   |-- PKS1830_uid___A002_X86fcfa_X14a6.spw0_vel_selfcal.image.pbcor.fits
|   |   |   |   |   |-- calibrated.cont.ms.image.continuum.source3.flux.fits
|   |   |   |   |   |-- calibrated.cont.ms.image.continuum.source3.image.pbcor.fits
|   |   |   |   |   |-- PKS1830_uid___A002_X86fcfa_X14a6.spw0_vel_selfcal.mask/
|   |   |   |   |   |-- calibrated.cont.ms.image.continuum.source3.mask/
|   |   |   |   |-- qa/
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6__qa2_part1.png
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6__qa2_part2.png
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6__qa2_part3.png
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6__textfile.txt
|   |   |   |   |-- script/
|   |   |   |   |   |-- scriptForImaging.py
|   |   |   |   |   |-- scriptForPI.py
|   |   |   |   |   |-- uid___A002_X86fcfa_X14a6.ms.scriptForCalibration.py
```

The QA2 procedure in Cycle 2

Documented in:
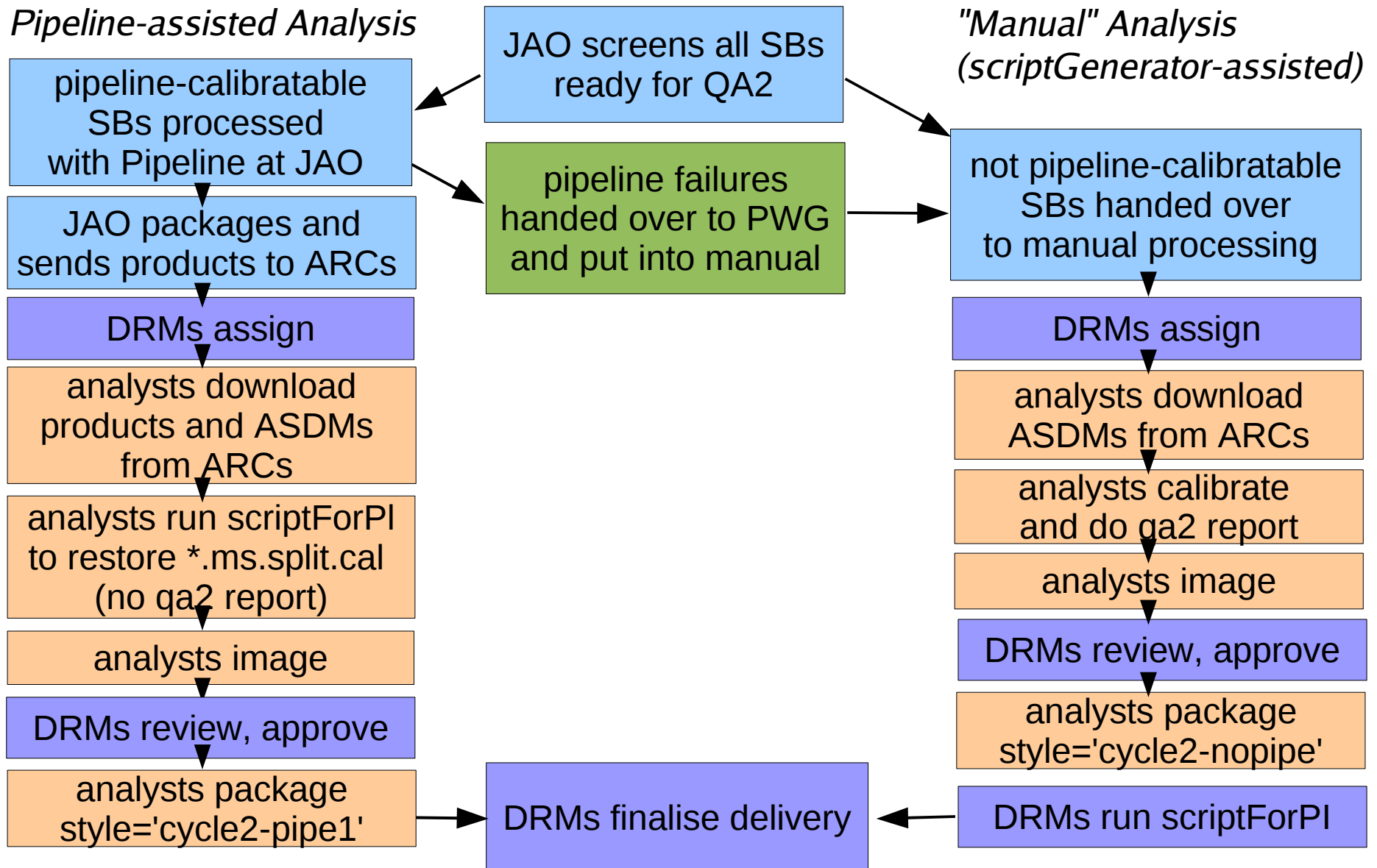 - "How to Analyse ALMA Science Data" (Eric Villard)
  - Our ARC Twiki Cycle2DataReduction
  - The "QA2 Best Practices Document"

Basic steps:
1) When SB reaches sufficient number of executions, it is posted on an internal page and **DRMs distribute the work to analysts. Bookkeeping is done via tickets SCOPS-390 (Cycle 1 carry-over) and SCOPS-1191 (Cycle 2).**
2) Analyst at ARC performs QA2 as prescribed in above documents using specialised CASA scripts (the "script generator"). Duration: ca. 1 *day per ASDM*
3) When finished, analyst hands over products to DRM
4) When approved by DRM, data and products are delivered to PIs

ARC node analysts may carry out the QA2 work at their home institute. (Some SBs are also reduced at JAO. Here the leads play the role of the DRM.)

QA2 Workflow

Pipeline-assisted Analysis

"Manual" Analysis (scriptGenerator-assisted)

JAO screens all SBs ready for QA2

pipeline-calibratable SBs processed with Pipeline at JAO

JAO packages and sends products to ARCs

pipeline failures handed over to PWG and put into manual

not pipeline-calibratable SBs handed over to manual processing

DRMs assign

analysts download products and ASDMs from ARCs

analysts run scriptForPI to restore *.ms.split.cal (no qa2 report)

analysts image

DRMs review, approve

analysts package style='cycle2-pipe1'

DRMs assign

analysts download ASDMs from ARCs

analysts calibrate and do qa2 report

analysts image

DRMs review, approve

analysts package style='cycle2-nopipe'

DRMs finalise delivery

DRMs run scriptForPI

The QA2 procedure in Cycle 2

Timeline for a QA2 procedure at the EU ARC:
 Workflow A: *Calibration and imaging at the ARC*

1) DRMs finds SB ready for QA2
2) DRM finds volunteer analyst (ideally CS, not PI; otherwise back to JAO)
3) analyst starts QA2 data processing (data is in ESO archive copy)
4) analyst gives preliminary feedback about data quality
     after one week at the latest
5) analyst completes analysis including imaging and QA2 report
     after three weeks at the latest (15 working days)
6) analyst posts qa2 diagnostic results (ticket.zip) and checklists
    on JIRA reduction ticket for DRM to approve
7) upon approval: analyst packages and puts on server, DRM downloads
     after four weeks at the latest (20 working days)
8) DRM verifies and if necessary corrects packaging, tests **scriptForPI**
9) DRM hands finished tar ball to Archive Operations Group (AOG)
10) AOG uploads tarball to JAO and waits for notification that ingest is fine
11) AOG sends delivery notification to PI.

The QA2 procedure in Cycle 2

Timeline for a QA2 procedure at the EU ARC:
Workflow B: *Calibration at JAO, imaging at the ARC*

1) JAOs finds SB ready for QA2 and runs pipeline on it
2) JAO packages pipeline products and puts them on JAO server
3) DRM transfers package to ESO and finds volunteer analyst
4) analyst gets data and package from ESO; runs scriptForPI to get MS
5) analyst runs checkRMS and gives preliminary feedback
    after 3 working days at the latest
6) analyst completes imaging
    after two weeks at the latest (10 working days)
7) analyst posts qa2 diagnostic results (ticket.zip) and checklists
    on JIRA reduction ticket for DRM to approve
8) upon approval: analyst packages and puts on server, DRM downloads
    after three weeks at the latest (15 working days)
9) DRM verifies and if necessary corrects packaging, tests scriptForPI
10) DRM hands finished tar ball to Archive Operations Group (AOG)
11) AOG uploads tarball to JAO and waits for notification that ingest is fine
12) AOG sends delivery notification to PI.

QA2 at the EU ARC

Infrastructure at the EU ARC:
  - The ARC cluster 8 nodes: 12 x Intel Xeon 2.4 GHz, 32 GB RAM,
    120 TB Lustre filesystem (only 70% usable: 84 TB actual space)

          Performance ≈ powerful personal workstation
                  (supports up to 6 typical CASA instances at full speed)

Software:
 - We are about to switch to CASA 4.3 but still using CASA 4.2.2
 - AIV analysisUtils and related modules in the JAO CVS repository
   accessible via our mirror in the EU ARC svn repository
   http://svnhq16.hq.eso.org/p16/eso/arc/software/jao-mirror/AIV/science/

Concerning the role of script generator and pipeline

The analysisUtils script generator developed by Eric Villard et al. is *essential* to cross-check and verify the pipeline.

The analysisUtils pipeline will co-exist with the pipeline in the long run. Will serve as a *test-bed* for new analysis procedures and help with problematic/unusual data sets.

QA3 in Cycle 2

1. Initialization of Process
   PI or CS on PI's behalf reports problem to the ARC via helpdesk

2. Initial Review
   Helpdesk ticket assigned to DRM who finds a reviewer for it.
   JAO will maintain QA3 wiki to collect issues and solutions.

3. QA3 JIRA Ticket Creation
   If the solution to the problem is not yet known, a SCOPS ticket is filed.
   All DRMs monitor the further progress of the ticket and inform CSs.

4. Investigation of the Issue
   Remaining undelivered data of the project put on hold.
   JAO forms team to solve the issue.

5. Actions derived from Solution/or lack thereof
   Possibilities: reprocess, reobserve + process,
      Reobserve+process *other* projects;   worst case: reobservation impossible

6. Extensions of the Proprietary Periods
   If PI reports within 2 months: full extension; otherwise: only by QA3 time.

Summary: Available sources of information

... are listed at the top of the instructions wiki

http://www.eso.org/projects/alma/arc/tw/bin/viewauth/Offline/Cycle2DataReduction

under

"Relevant Documents"

       - the "How-To"
       - the "Best Practices"

    For PIs there is now also the document "ALMA QA2 Data Products"
    (available on the ALMA Science Portal), Cycle 2 version still in the works

and

"Reporting and News etc."

       - the JIRA tickets to track procedures
       - the JIRA tickets to track project preparation
       - the JIRA tickets to track project data reduction

The assignment process

- QA2 analyst is trained
- Becomes member of euarc-qa2@eso.org list
- DRM posts Doodle poll of monthly availablity
- Analyst enters availability in monthly **Doodle poll**
  (should only enter if available at least for 5 consecutive days 50% full time)
- When SBs need analysis, DRM sends email to available people
   from adequate node (if possible where contact scientist is based)
- Analyst confirms availability
- DRM sends **assignment email**

The assignment email

Hi,
thanks for agreeing to perform QA2 on project   2012.1.00994.S
SB(s)   SPT_0125-50
   http://jira.alma.cl/browse/SCOPS-574   **project preparation ticket**
   http://jira.alma.cl/browse/SCOPS-739   **data reduction ticket**
The EB UIDs are
      uid___A002_X78774a_X5e5

The data can be downloaded at
   http://almascience.eso.org/arcdistribution/qa2-for-nodes/92e05474ec6959ecdab324510fde34d

The md5 checksum of each tar file can be found in the file md5sums.txt .
In case of doubt verify by running "md5sum" on your downloaded copy.

Please read the instructions at
   http://www.eso.org/projects/alma/arc/tw/bin/view/Offline/Cycle1DataReduction

and don't hesitate to ask in case of any problems (ideally by replying to this email
in order to stay in the same thread).

Please pay special attention to the new EB and SB checklists
(one EB checklist for each EB, one SB checklist for each SB)
which should at the end of your work be attached separately to the data
reduction ticket. See e.g. proj 882, http://jira.alma.cl/browse/SCOPS-655 .

Organising your workspace

... is described in the instructions wiki

http://www.eso.org/projects/alma/arc/tw/bin/viewauth/Offline/Cycle2DataReduction

under

"Setting up the directory structure"

Basically:

```
projectX_SBY/
        science/                -- your snapshot of the analysis utils
        analysis/               -- the later packaging path
            calibrated/         -- where the *.ms.split.cal MS from each EB should be moved
                                   and where flux calibration and imaging take place
            X123/               --
            X456/               --
            X789/               -- where the calibration for each EB takes place
```

At ESO, use the *startqa2.sh* script.

The EB Checklist (only used in manual calibration)

For each EB, you should track your analysis in the EB checklist

All checklist forms can be found in
http://svnhq16.hq.eso.org/p16/eso/arc/software/jao-mirror/AIV/science/qa2/checklists

For Cycle 2 use: Cycle2_QA2_Checklist.txt

Rename to Checklist-*EB-UID*.txt (unique name)

To be attached to the Data Reduction JIRA Ticket.

Examples abound on JIRA.
A recent example is at
http://jira.alma.cl/secure/attachment/180928/Checklist-uid___A002_X86fcfa_X14a6.txt

An EB Checklist example (header)

```
*********** ALMA Cycle 2 QA2 Calibration Checklist *****************

Checklist Version: $Id: Cycle2_QA2_Checklist.txt,v 1.1 2014/07/11 12:08:18 dpetry Exp $
CASA version: 4.2.1
analysisUtils version: $Id: analysisUtils.py,v 1.1872 2014/08/16 20:30:48 thunter Exp $

Reduction Start Date     : 2014/08/18
Reduction Completion Date: 2014/08/20
Analyst Name(s)          : D. Petry

Project code      : 2013.1.00020.S
Contact Scientist: Ivan Marti-Vidal
PI                : S. Muller
SB Name           : PKS1830-211_b_07_TE
ASDM UID          : uid___A002_X86fcfa_X14a6

Observation Dates and Total Integration Time (from listobs):
Data records: 865920       Total integration time = 2952.1 seconds
 Observed from   18-Jul-2014/03:26:09.1   to   18-Jul-2014/04:15:21.2 (UTC)

PWV                      : 0.5 mm
Number of good antennas: 29 (flagged: DA54 bad Tsys, DV07 bad WVR (may be rescued), DV14 bandpass)
Band(s)                  : 7
TDM/FDM/both             : FDM
bandwidth switching (different spectral setup for phasecal and target): yes/no? no

Fields by intent (paste from reduc script):
AMPLI, ATMOSPHERE, BANDPASS, FLUX, FOCUS, PHASE, POINTING, TARGET
# CALIBRATE_AMPLI: J1924-292
# CALIBRATE_ATMOSPHERE: J1924-2914,J1924-292,PKS1830-211
# CALIBRATE_BANDPASS: J1924-2914
# CALIBRATE_FLUX: J1924-292
# CALIBRATE_PHASE: J1832-2039
# CALIBRATE_POINTING: J1924-2914
# OBSERVE_TARGET: PKS1830-211
```

An EB Checklist example (header)

```
********** ALMA Cycle 1 QA2 Calibration Checklist *****************

Checklist Version: $Id: Cycle1_QA2_Checklist.txt,v 1.8 2014/01/13 14:30:33 dpetry Exp $
CASA version: 4.2.1
analysisUtils version: $Id: analysisUtils.py,v 1.1523 2014/04/12 21:38:53 thunter Exp $

Reduction Start Date    :  13 Apr 2014
Reduction Completion Date:  16 Apr 2014
Analyst Name(s)         :  M Schmalzl

Project code      : 2012.1.00350.S
Contact Scientist: K Wang
PI                : C Caceres
SB Name           : Continuum + CO line - Chamaleonis
ASDM UID          : uid___A002_X762210_Xf0

Observation Dates and Total Integration Time (from listobs):
Total integration time = 2162.3 seconds
Observed from    18-Mar-2014/09:13:01.6   to   18-Mar-2014/09:49:03.9 (UTC)

PWV                     : 2.361 mm
Number of good antennas: 24
Band(s)                 : 6
TDM/FDM/both            : FDM
bandwidth switching (different spectral setup for target and phasecal): yes/no? no

Fields by intent (paste from reduc script):
AMPLI, ATMOSPHERE, BANDPASS, FLUX, FOCUS, PHASE, POINTING, TARGET
# CALIBRATE_AMPLI: Ceres
# CALIBRATE_ATMOSPHERE: Ceres,J0635-7516,J1107-4449
# CALIBRATE_BANDPASS: J1107-4449
# CALIBRATE_FLUX: Ceres
# CALIBRATE_PHASE: J0635-7516
# CALIBRATE_POINTING: J0635-7516,J1107-4449
# OBSERVE_TARGET: CHX_22,V_star_EH_Cha,V_star_EI_Cha,V_star_HI_Cha
```

An EB Checklist example (sections A 1, 2)

```
                                                           Done?
DATA IMPORT ---------------------------------------------------[X]
  Comments:                                        Yes   No
  - asis='Antenna Station CalAtmosphere Receiver Source'  [X]  [ ]
A) INTERFEROMETRIC CALIBRATION --------------------------------[X]
  1) Apriori calibration --------------------------------------[X]
  Comments:                                       Yes   No
    - fixplanets necessary?                       [ ]   [X]
    - fix of SYSCAL table time necessary?         [ ]   [X]
    - checked WVR tables?                         [X]   [ ](ACA)
    - checked Tsys tables?                        [X]
    - checked tsysmap?                            [X]
      Is tsysChanTol > 1 necessary?               [ ]   [X]
    - Antenna position table necessary?           [ ]   [X]
    - checked Weights?                            [X]
  2) Other flagging and set cal models --------------------------[X]
  Comments:
   No flagging of atmospheric features: Ceres does not have an atmosphere
    - flagged edge channels (TDM mode)?          [ ]   [ ]
    - flagged atmospheric lines?                 [ ]   [X]
        SPW and channel ranges:
    - spatially resolved flux calibrator         [X]   [ ]
      - flagged channels with spectral features of the calibrator?
        (if not in Butler-JPL-Horizons 2012)
         CO lines
           115.3 GHz Band 3                         [ ]
           230.5 GHz Band 6                         [ ]
           343.7 GHz Band 7 (narrow)                [ ]
           345.8 GHz Band 7 (broad)                 [ ]
           691.6 GHz Band 9                         [ ]
      - checked model amp vs uvdist?             [X]
          uvrange (m) for later gaincal:
    - Quasar flux calibrator                     [ ]   [X]
      - reference value from ASDM Source tbl? [ ]
      - other reference:                       [ ]
```

An EB Checklist example (sections A 3)

```
                                                                      Done?
3) bandpass ------------------------------------------------[X]
Comments :
 The automatically chosen antenna DV11 showed some unwanted effects
 (low gain in some scans, strong spike in the bandpass). I changed
 it to DA47.

 - Is REFANT chosen by script gen. good?    [ ]  [X]
     Name of REFANT: DA47
 - checked .ap_pre_bandpass table?          [X]
 - mixed: used solint = 'inf,XMhz'?         [ ]
 - TDM and mixed: checked .bandpass table?  [ ]
 - FDM: checked .bandpass_smooth20ch table? [X]
```

An EB Checklist example (sections A 4)

```
                                              Done?
  4) amp cal of all calibrators (gaincal) ----------------------[X]
     Comments:

The derived flux densities for J1107-4449 and J0635-7516 are higher than what
is returned by aU.getALMAFluxForMS. At 221.418 GHz, I get the following values:
J1107      aU: 0.85 Jy,  fluxscale: 0.98 Jy
J0635      aU: 0.57 Jy,  fluxscale: 0.63 Jy
The fluxscale values are 1.15 and 1.09 times higher. The time difference between
the observations and the values from getALMAFluxForMS are 3 days.

     - For resolved flux cal: limited uvrange?  [ ]  [X]
     - For resolved flux cal:
        paste .fluxscale file here
Flux density for J1107-4449 in SpW=0 is: 1.0093 +/- 0.00885402 (SNR = 113.993, N = 20)
Flux density for J1107-4449 in SpW=1 is: 1.00123 +/- 0.00922962 (SNR = 108.48, N = 20)
Flux density for J1107-4449 in SpW=2 is: 0.958836 +/- 0.0097336 (SNR = 98.5079, N = 20)
Flux density for J1107-4449 in SpW=3 is: 0.948837 +/- 0.0104096 (SNR = 91.1501, N = 20)
Flux density for J0635-7516 in SpW=0 is: 0.653922 +/- 0.00668452 (SNR = 97.8265, N = 18)
Flux density for J0635-7516 in SpW=1 is: 0.648357 +/- 0.00640269 (SNR = 101.263, N = 18)
Flux density for J0635-7516 in SpW=2 is: 0.604962 +/- 0.00730067 (SNR = 82.8638, N = 18)
Flux density for J0635-7516 in SpW=3 is: 0.599123 +/- 0.00746842 (SNR = 80.2209, N = 18)
Fitted spectrum for J1107-4449 with fitorder=1: Flux density = 0.97925 +/- 0.000751038
        (freq=221.418 GHz) spidx=-0.824988 +/- 0.0238147
Fitted spectrum for J0635-7516 with fitorder=1: Flux density = 0.626134 +/- 0.000527653
        (freq=221.418 GHz) spidx=-1.22514 +/- 0.0262835

     - checked .phase_int table?                [X]
     - checked .ampli_inf table?                [X]
     - checked .phase_inf table?                [X]
     - checked uv data on calibrators?          [X]
```

An EB Checklist example (sections A 5, 6, 7, B)

```
                                                                   Done?
   5) applycal and split out of .split.cal dataset ---------------[X]

   6) generated qa2 report ---------------------------------------[X]

   7) In case of good flux calibration: upload of flux info ------[ ]
        Solar system flux calibrator:
          Put comments on issues in *.fluxscale2 file and upload
          *.fluxscale, *.fluxscale2, and *scriptForCalibration.py
          to ftp://pub.alma.cl/fluxes
        Quasar flux calibrator:
          Upload only *.fluxscale and *scriptForCalibration.py
          to ftp://pub.alma.cl/fluxes



B) SINGLE-DISH CALIBRATION ---------------------------------------[ ]
     T.B.D.
```

Not anonymous FTP! For user and password, see QA2 Instruction wiki section "In the case your data was of good quality: upload flux information!"

The SB Checklist (always used)

For each SB, you should track your analysis steps
after basic calibration in the SB checklist

All checklist forms can be found in
http://svnhq16.hq.eso.org/p16/eso/arc/software/jao-mirror/AIV/science/qa2/checklists

For Cycle 2 use: Cycle2_QA2_SB_Checklist.txt

Rename to Cycle2_QA2_SB_Checklist_*SB-name*.txt

To be attached to the Data Reduction JIRA ticket.

Examples abound on JIRA.
An example is at
http://jira.alma.cl/secure/attachment/206252/Cycle2-SB-checklist-Orion_In_a_03_TE.txt

An SB Checklist example (header)

```
********** ALMA Cycle 2 QA2 SB Analysis Checklist **********************

Checklist Version: $Id: Cycle2_QA2_SB_Checklist.txt,v 1.2 2014/08/13 08:15:13 dpetry Exp $
CASA version: 4.2.1
analysisUtils version: $Id: analysisUtils.py,v 1.1872 2014/08/16 20:30:48 thunter Exp $


Reduction Start Date     : 2014/08/18
Reduction Completion Date: 2014/08/20
Analyst Name(s)          : D. Petry


Project code     : 2013.1.00020.S
Project title    : Hydrides as diagnostic tools for the z=0.89 absorption toward PKS 1830-211
Contact Scientist: Ivan Marti-Vidal
PI               : S. Muller
SB Name          : PKS1830-211_b_07_TE


EBs in calibrated dataset:
uid___A002_X86fcfa_X14a6



Observation Dates and Total Integration Time
(from listobs of concatenated dataset):
Data records: 865920       Total integration time = 2952.1 seconds
 Observed from   18-Jul-2014/03:26:09.1   to   18-Jul-2014/04:15:21.2 (UTC)



Number of good antennas: 29
Band(s)                  : 7
TDM/FDM/both             : FDM
```

An SB Checklist example (sections A, B, C)

```
A) Calibration done by Pipeline --------------------------[ ]
     Where? (JAO, ARC, ...):

     Used scriptForPI.py to obtain *.ms.split.cal?        [ ]
        Describe encountered problems if any:


B) es.checkRMS -------------------------------------------[x]
       Result:
0 -> 1.22313723461 -> FAIL -> need 0.0877233753471 additional executions
1 -> 1.22313723461 -> FAIL -> need 0.0877233753471 additional executions
2 -> 1.22313723461 -> FAIL -> need 0.0877233753471 additional executions
3 -> 1.22313723461 -> FAIL -> need 0.0877233753471 additional executions


C) Imaging preparation/flux equalisation -----------------[x]

     Moved all .ms.split.cal MSs to directory "calibrated"
        before generating scriptForFluxCalibration.py       [x]

     Made sure the call to split to generate .ms.split.cal MS
     happens at the end of each uid...Calibration.py script
     and not in scriptForFluxCalibration.py                 [x]

     Removed POINTING table (needed if image is mosaic!)
     and put the code for that into scriptForFluxCalibration? [ ]

     Comments:



D) ACA - Main Array Combination --------------------------[ ]

     Comments:
```

An SB Checklist example (section D)

```
E) Imaging ------------------------------------------------[x]

                                            Yes No
    Needed tapering to adjust beam?         [ ] [x]


    Made mixed mode (TDM and FDM) continuum image:  [ ] [x]
      Adjusted weights using weights.py (CASA4.2.1)  [ ] [x]


    For _all_ images (also continuum):
     Set outframe correctly: BARY (extragal objects) [x]
                             LSRK (gal. objects)    [ ]
     Used pbcor = False                             [x]
     Added impbcor to produce *.pbcor.fits image    [x]
         and *.flux.fits image                      [x]


    Solar system object:                    [ ] [ ]
         attached ephemeris with fixplanets      [ ]
         cvelled to outframe SOURCE             [ ]



    Comments:

continuum: RMS 2.7 mJy/beam, beam 0.36" x 0.32", peak 1.11 Jy, dyn range 411


Line: not detected
  RMS 4 mJy/beam, beam 0.38 x 0.36", peak 1.135 Jy, dyn. range 283


After one round of selfcal:


RMS 1.8 mJy (or better), beam 0.36" x 0.32" achieved in all SPWs
```

A tour of the QA2 instructions wiki

Let's go over the instructions wiki ...

http://www.eso.org/projects/alma/arc/tw/bin/viewauth/Offline/Cycle2DataReduction

An example QA2 project

Project: 2013.1.00020.S

SB: PKS1830-211_b_07_TE

EB UID: uid://A002/X86fcfa/X14a6

(see separate slides)

Your first assignment

Project: 2012.1.00978.S

SB: AzTEC-1

EB UID: uid://A002/X87c075/X4c02

http://jira.alma.cl/browse/SCOPS-770
http://jira.alma.cl/browse/SCOPS-1198

A dataset from July 2014. Manual calibration.

- get assignment email
- try to get as far as possible by tomorrow, 10:00 h, and prepare questions for meeting
- should finish by tomorrow evening

Your second assignment: pipeline-calibrated data

Project: 2013.1.01267.S

SB: XMMU_J22_a_03_TE

EB UIDs: uid://A002/X98ed3f/X627
uid://A002/X98ed3f/Xb6

http://jira.alma.cl/browse/SCOPS-1524
http://jira.alma.cl/browse/SCOPS-1650

A dataset from 5 January 2015.

- get assignment email (contains path to the pipeline product package)
- use the script "runscriptforpi.sh" to obtain calibrated MSs
- study WebLog and aot file (from project prep ticket)
- create scriptForFluxCalibration to concatenate MSs -> calibrated.ms
- create scriptForImaging.py according to requirements from aot file
- try to finish by tomorrow, 10:00 h

Optional: Your third assignment - ACA data

Project: 2013.1.00991.S

SB: NGC_1614_b_03_7M

EB UIDs: 1 EB uid://A002/X8440e0/X4b44

http://jira.alma.cl/browse/SCOPS-1084
http://jira.alma.cl/browse/SCOPS-1279

A dataset from June 2014, manual calibration.

- get assignment email
- try to get as far as possible by tomorrow, 10:00 h, and prepare questions for meeting
- should finish by tomorrow evening