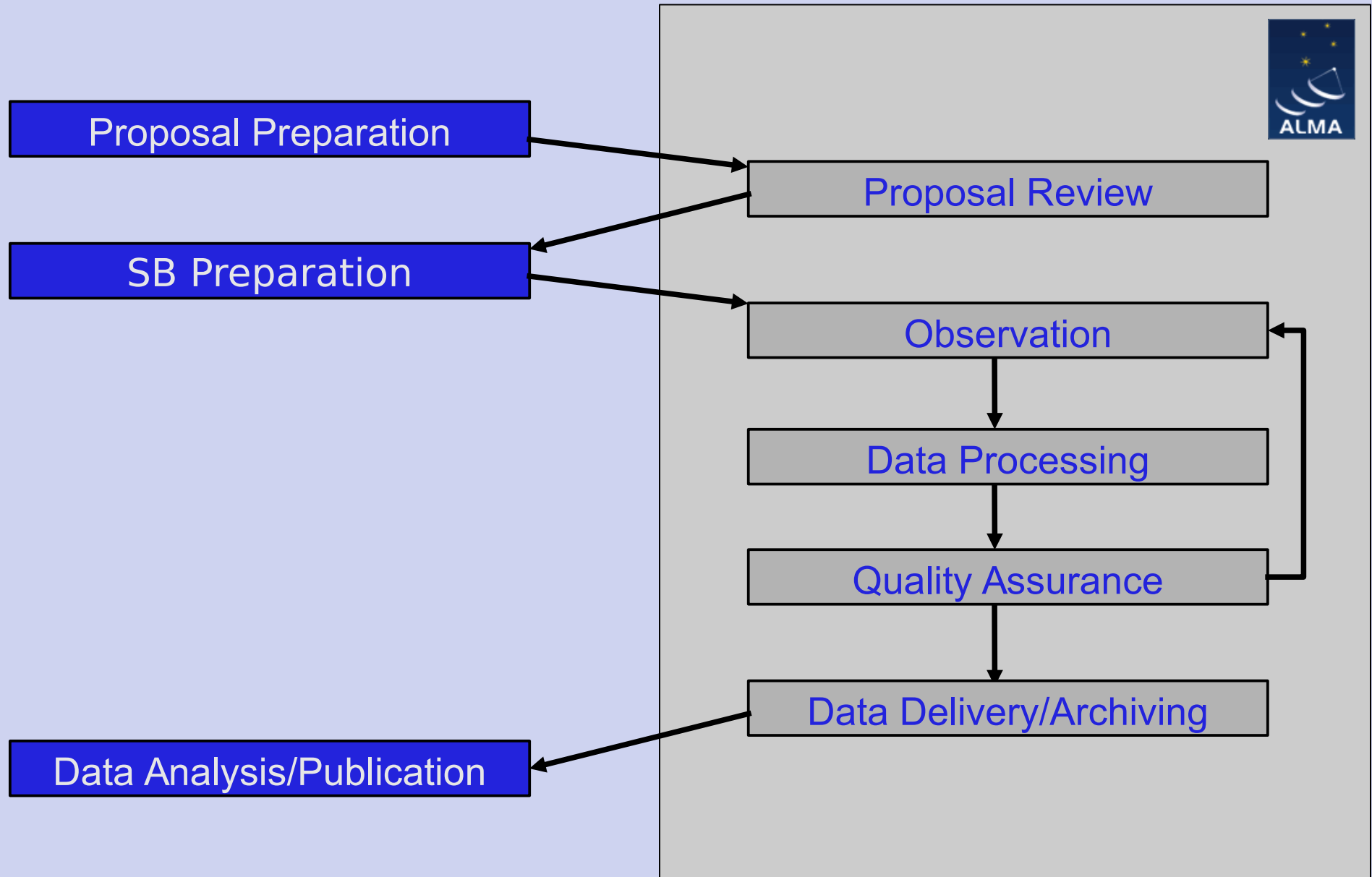# The life of an ALMA project

From a proposal to delivered data
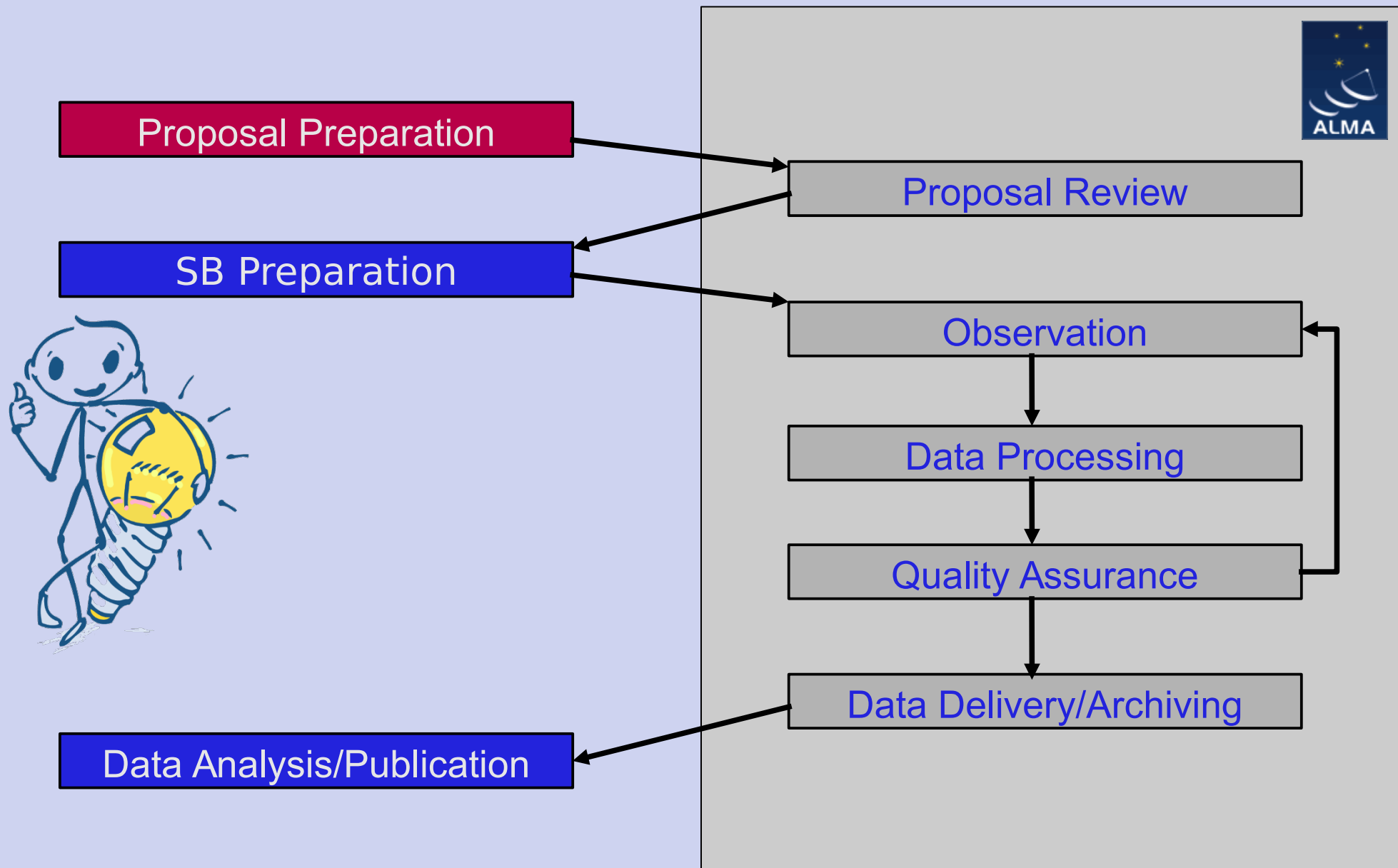
Reinhold Schaaf & Stefanie Mühle

Argelander-Institut für Astronomie
der Universität Bonn
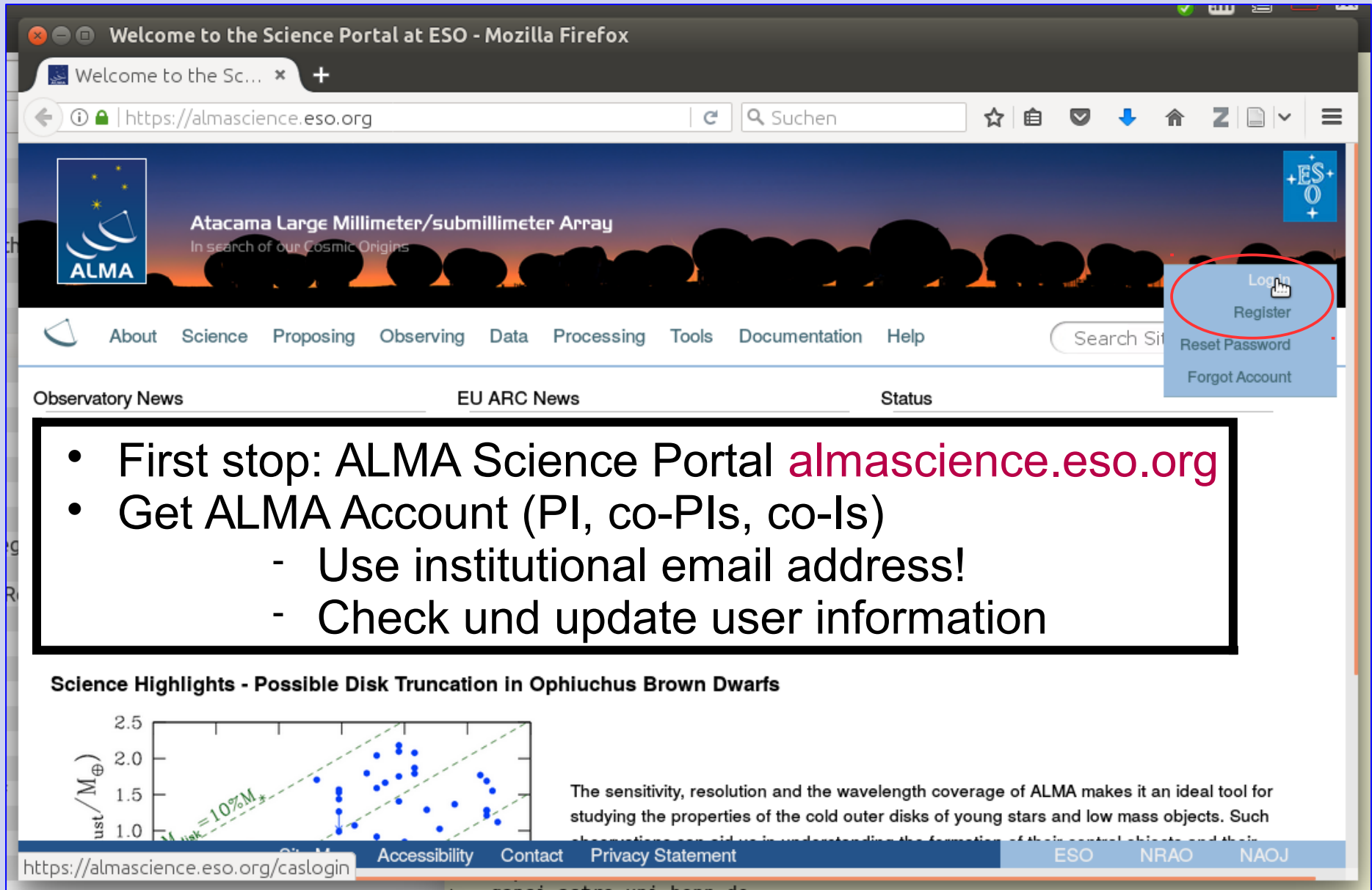
German ALMA Community Day, April 5th 2018

The life of an ALMA project

Proposal Preparation (Phase 1)

Proposal Preparation (Phase 1)

- First stop: ALMA Science Portal almascience.eso.org
- Get ALMA Account (PI, co-PIs, co-Is)
  - Use institutional email address!
  - Check und update user information

Proposal Preparation (Phase 1)

- One PI:

  - Responsible for proposal
  - Official contact between ALMA and proposing team
  - Affiliation of PI determines supporting ARC

- Any number of Co-PIs:

  - Large Programs & mmVLBI only
  - Share overall responsibility in conducting the proposed science
  - Supporting ARC for Large Programs can be changed to that of a Co-PI

- Any number of Co-Is:

  - Any other individual actively involved

Proposal Preparation (Phase 1)

- Proposal types:
  - Regular proposals
  - Target of Opportunity (ToO) proposals
    - Target and time not known in advance
  - Large Programs
    - More than 50 hrs 12-m array or 150 hrs stand-alone ACA
  - mm-VLBI proposals
    - Additional proposal at VLBI network required
  - Director Discretionary Time (DDT) proposals
    - Proposals may be submitted at any time

Proposal Preparation (Phase 1)

- Get Cycle 6 documentation
    - *Proposer's Guide*
    - *ALMA Users' Policies*
    - *ALMA Primer*
    - *Technical Handbook*
    - *OT documentation*
    - ...

- Get latest version of ALMA-OT
    - Webstart version will install updates automatically

Proposal Preparation (Phase 1)

- OT allows in Phase 1

  - Preparation & validation of proposal

  - Local storage of proposals

  - Submission and multiple re-submissions until deadline

  April 19th 2018, 15:00 UT

- Only PI can submit and re-submit

  - Co-PIs and Co-Is can retrive

Proposal Review
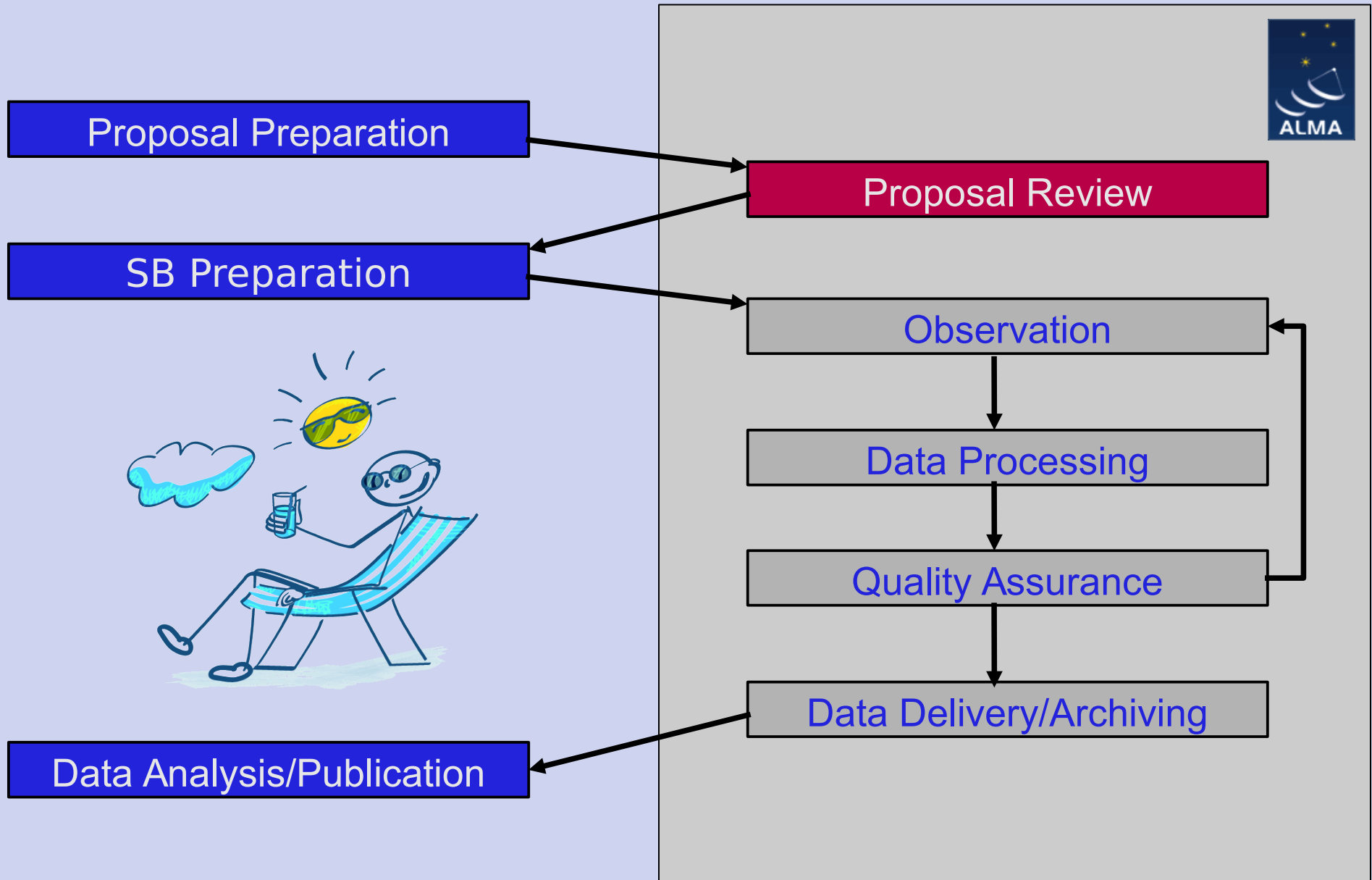
Proposal Review

- Every proposal will be assessed scientifically (at least one review panel per science category)

    - Subset will be assessed technically by ALMA experts

    - See *Principles of the ALMA Proposal Review Process* and *Proposer's Guide* for details

Proposal Review

- PI will receive notification (July/August 2018)

  - Assigned grade

  - Report on scientific strengths and weaknesses

- Priority flags for accepted proposals:

  - **A:** Highest priority, carried over to Cycle 7 if not completed in Cycle 6

  - **B:** Highest priority, not carried over to Cycle 7

  - **C:** Filler project, executed if conditions allow no higher priority project

- Proposals may be de-scoped for technical or scientific reasons

  - E.g. sources deleted due to duplication

Proposal Review

- Time shares of nominal time (4000 hrs + 3000 hrs ACA):

    - A: up to 33%

    - A + B: 100%

    - C: up to additional 50%

- Regional shares:

    - Europe: 33.75%

    - North America: 33.75%

    - East Asia: 22.5%

    - Chile: 10%

    - Open Sky: up to 5%

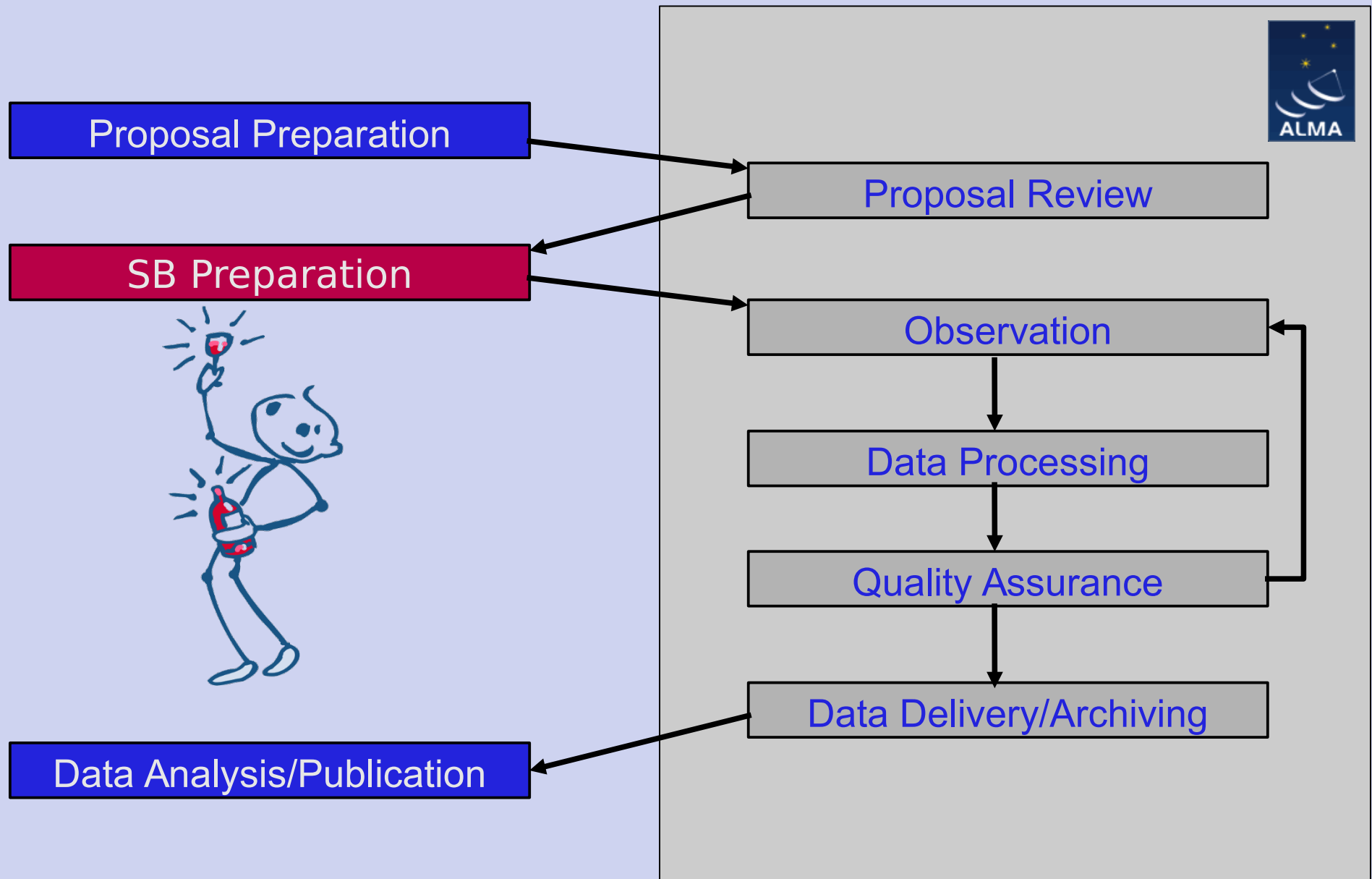# Proposal Review

- Shares by proposal types:

    - Large programs: up to 15%

    - Non-standard observing modes: up to 20%

        - Definition of non-standard modes s. *Proposer's Guide*

    - mmVLBI: up to 5%

        - Included in 20% share of non-standard modes

    - DDT Proposals: up to 5%

Proposal Review

- Details for

  - Duplications

  - Non-standard observing modes

  - Large Programs

  - De-scoping

  - Publication of proposal metadata

  see *Proposer's Guide* and *ALMA Users' Policies*

SB Preparation (Phase 2)

SB Preparation (Phase 2)

- Scheduling Blocks (SBs) are smallest observable units

- SB Preparation (aka Phase 2): Proposal actually made executable (ALMA)

- PI must retrieve, review and approveSBs by

September 6th 2018

- PI can delegate this only in the case of an emergency **(vacations no emergency)!**

- **Delay may result in downgrade of project!** (s. *Users' Policies*)

SB Preparation (Phase 2)

- ALMA

  - Creates SBs including necessary changes (due to de-scoping or technical considerations)

  - Assigns a Contact Scientist (CS) at an ARC node

- PI

  - PI retrieves and reviews SBs, discusses issues with CS, and may make **minor** changes with OT

    - **non-minor** changes require formal change request and are strongly discouraged

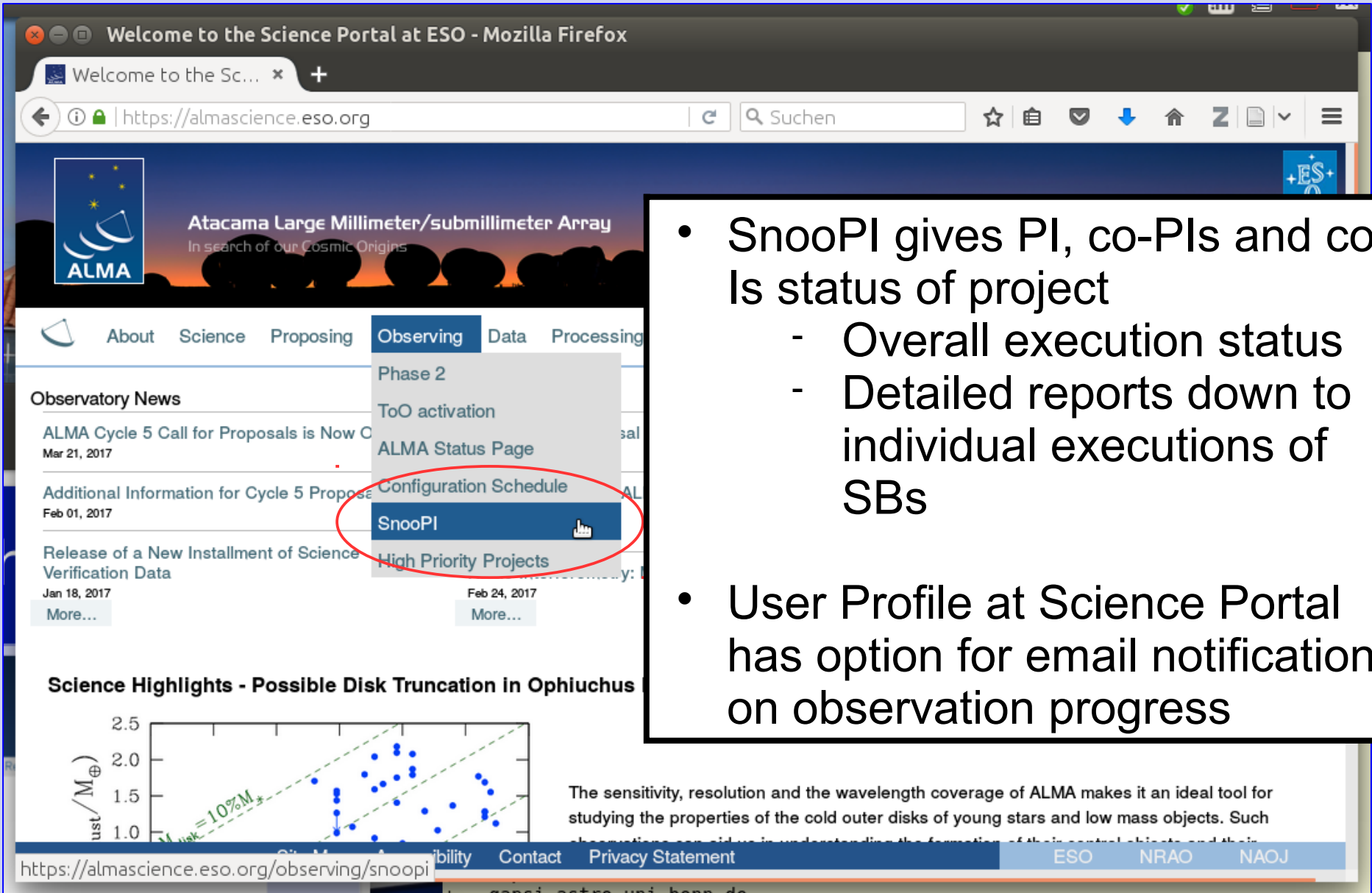 - PI approves SBs for execution by submitting them with OT

Observation
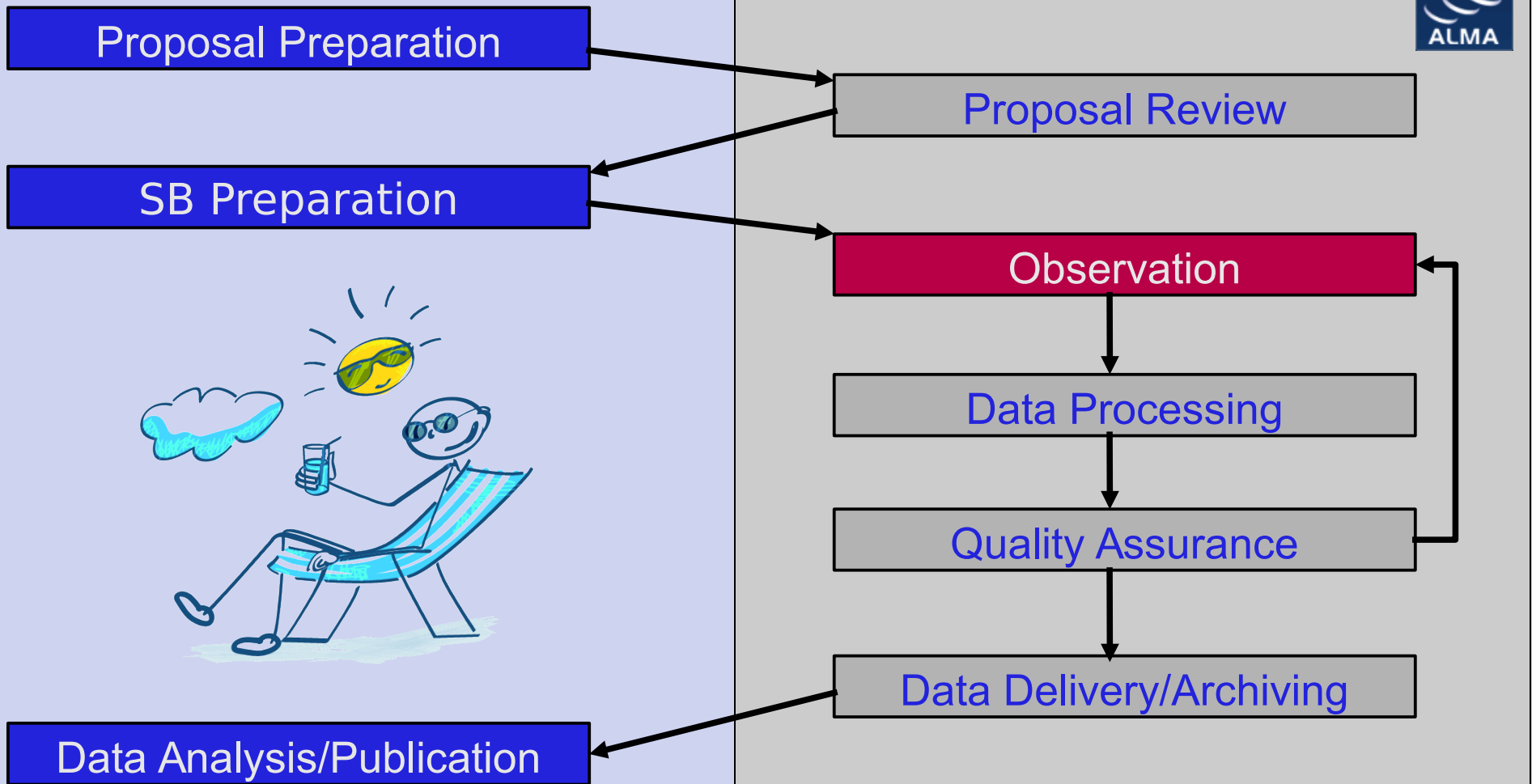
Observation

- Observations typically require no interaction with PI

- Individual SBs are executed repeatedly until

  - scientific goals as defined in proposal are achieved or

  - SB cannot be executed in scheduling period

- Actual observation times may differ from time estimates in proposal

Observation

- SnooPI gives PI, co-PIs and co-Is status of project
  - Overall execution status
  - Detailed reports down to individual executions of SBs

- User Profile at Science Portal has option for email notifications on observation progress

Observation

Observation

- ALMA Status page gives information about
    - Current status of weather, array etc.
    - Recent observations and publications
    - Observing and configuration schedule for remaining part of cycle

Data Processing

Data Processing

- Performed by ALMA with CASA
    - Standard modes: pipeline
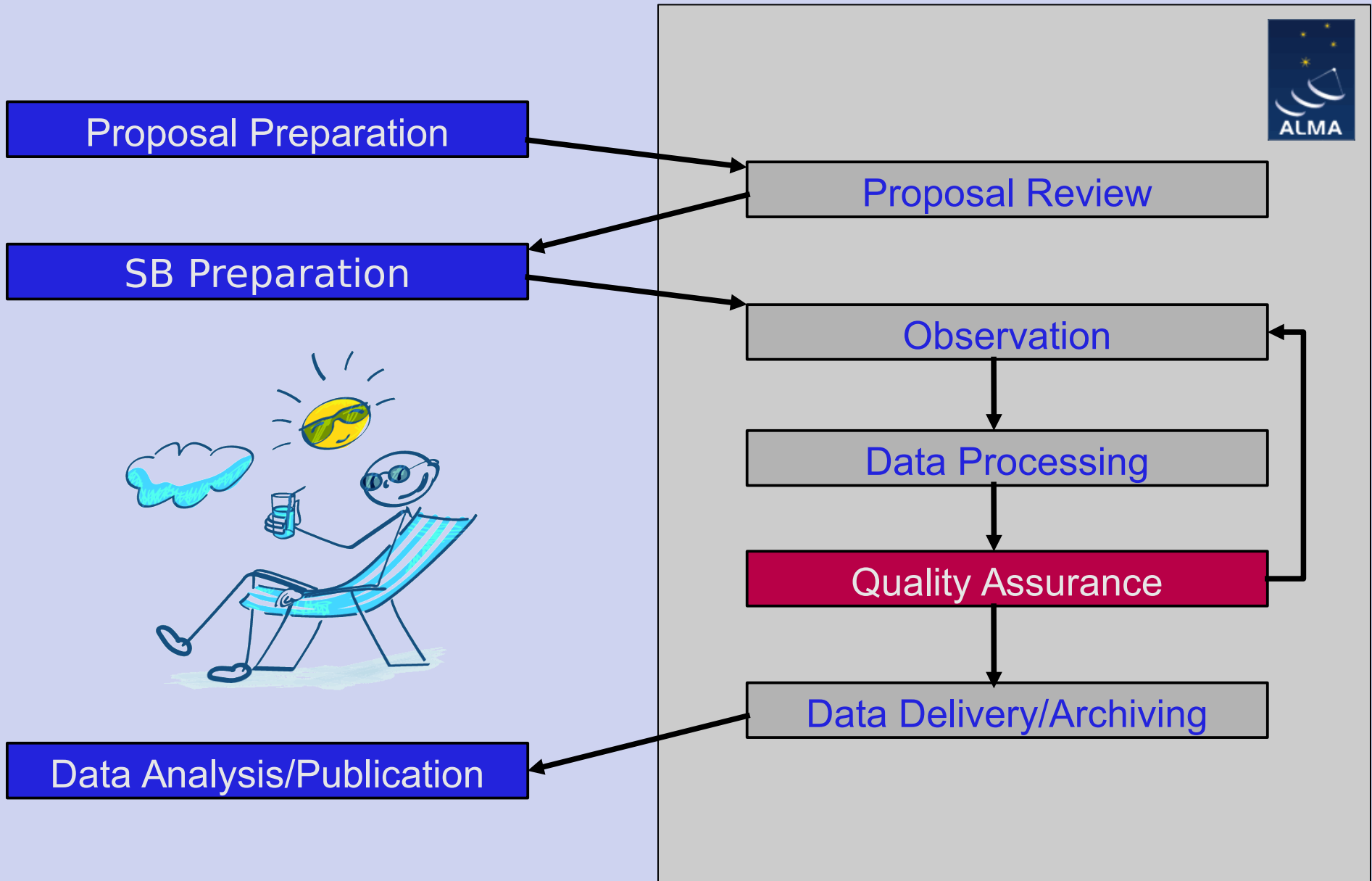   - Non-standard modes: manual
- Involves calibration, flagging, imaging
- Results used for Quality Assurance and delivered to PI

Quality Assurance

Quality Assurance

- QA0, QA1, QA2 during data taking and data processing
  - Failure to meet pass criteria leads automatically to re-observation of affected SBs if scheduling is possible
- QA3 after data delivery
  - Feedback from PI through helpdesk
  - ASAP, since re-observation may be necessary and proprietary period may be affected (s. *Users' Policies* for details)

Data Delivery/Archiving
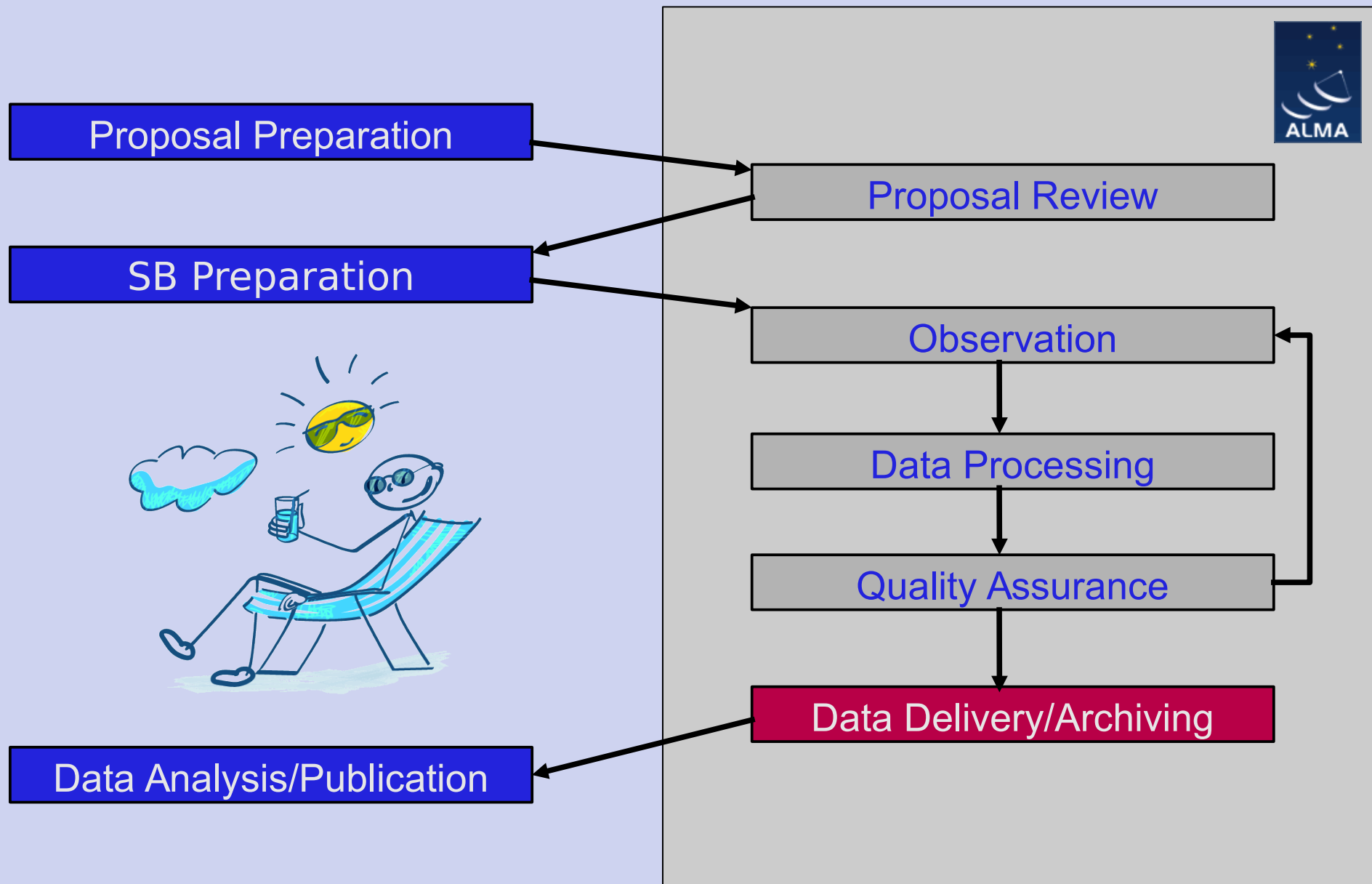
Data Delivery/Archiving

- All data that passes Quality Assurance (QA0 – QA2) ingested into ALMA Archive
    - Located in Santiago
    - Mirrors at each ALMA Regional Center (ARC)
    - European mirror at ESO Garching
- Data delivered after scientific goals were achieved
    - Exception: No chance to achieve goals due to end of cycle or scheduling restrictions
- PI informed via email that data is available for download from Science Archive

Data Delivery/Archiving

- Only PI can download data
- Data delegation (= grant access to project data to other ALMA users) possible

Data Delivery/Archiving

- Data package includes
    - Raw Data
    - Calibration & imaging products
    - Fits images & cubes
    - QA2 report
    - Data processing script
    - Processing log files

Data Delivery/Archiving

- Proprietary period 12 months
  - Clock starts when PI is informed that data available for download
  - DDT proposals: 6 months
  - For some special cases (ToOs, "stale data") see *ALMA Users' Policies*
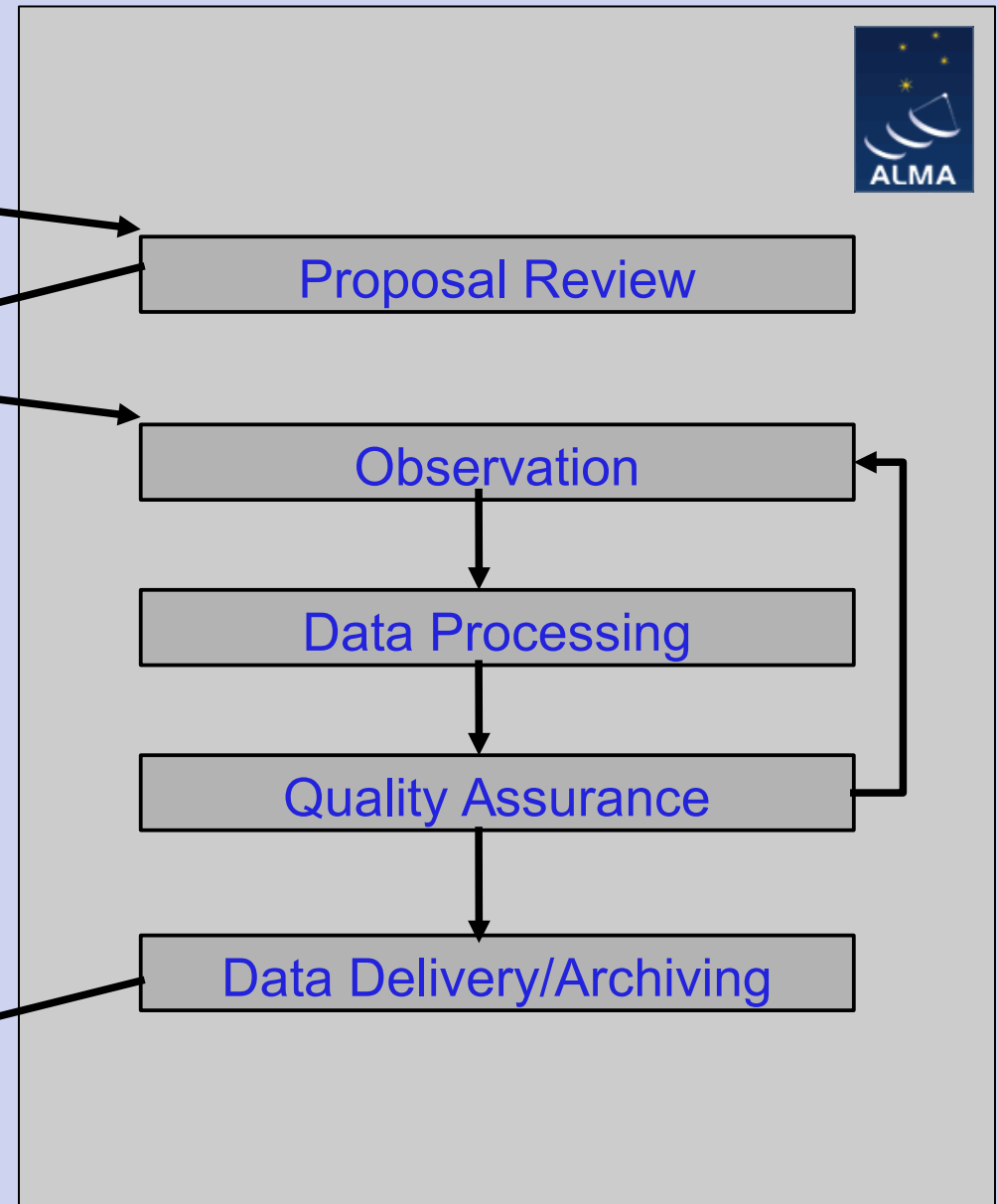 - Parental / military / sick leaves can be added to proprietary period

Data Analysis/Publication

Data Analysis/Publication

- CASA

- You are not on your own! Your ARC node provides help

    - Expert advice for data analysis questions

    - Face-to-face support on request through ALMA helpdesk

- Don't forget the standard ALMA acknowledgement (s. *Users' Policies*) in publications!

- If you got help from your ARC (node), an acknowledgement of this help is appreciated! :-)