

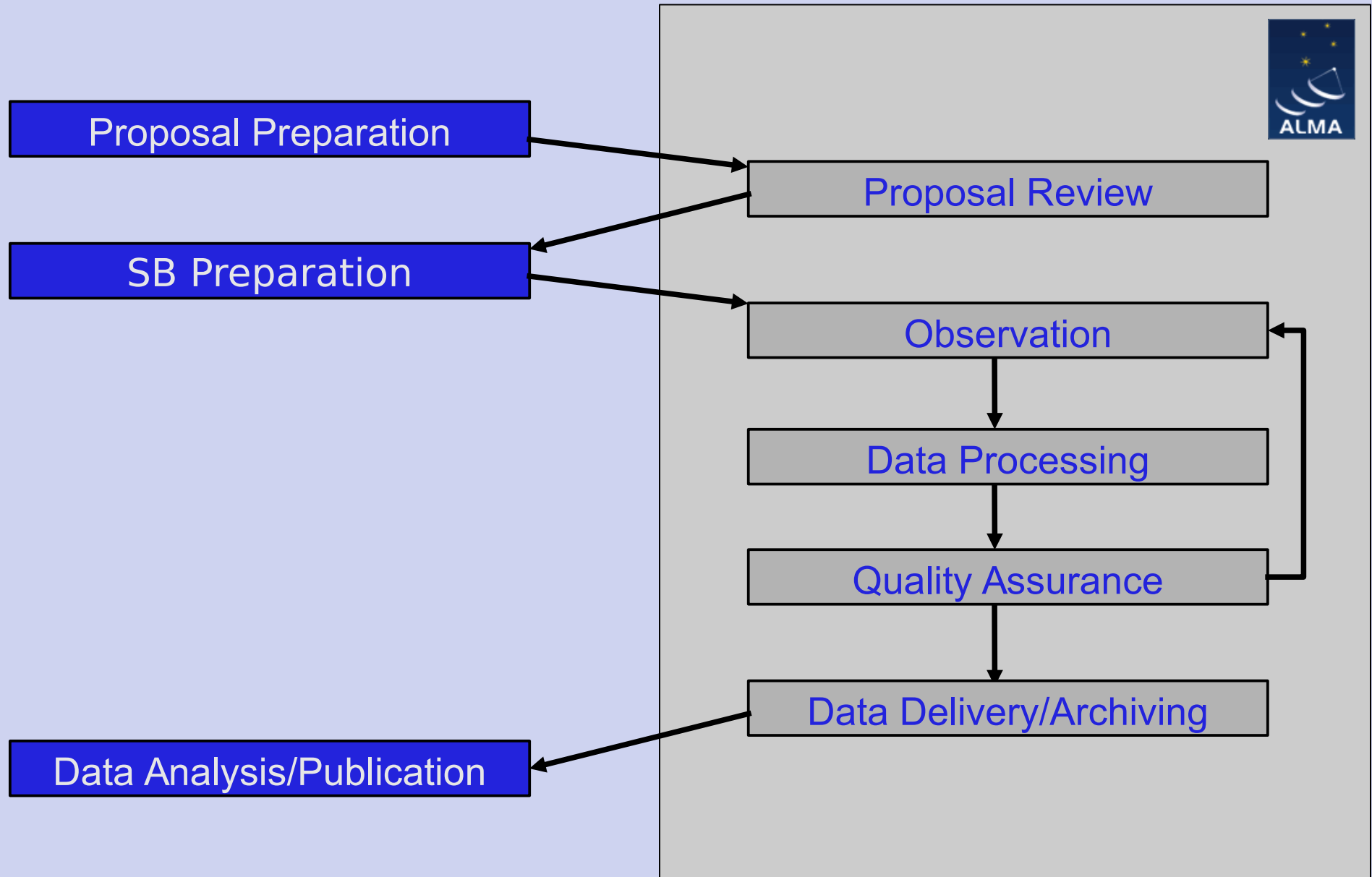
The life of an ALMA project

From a proposal to delivered data

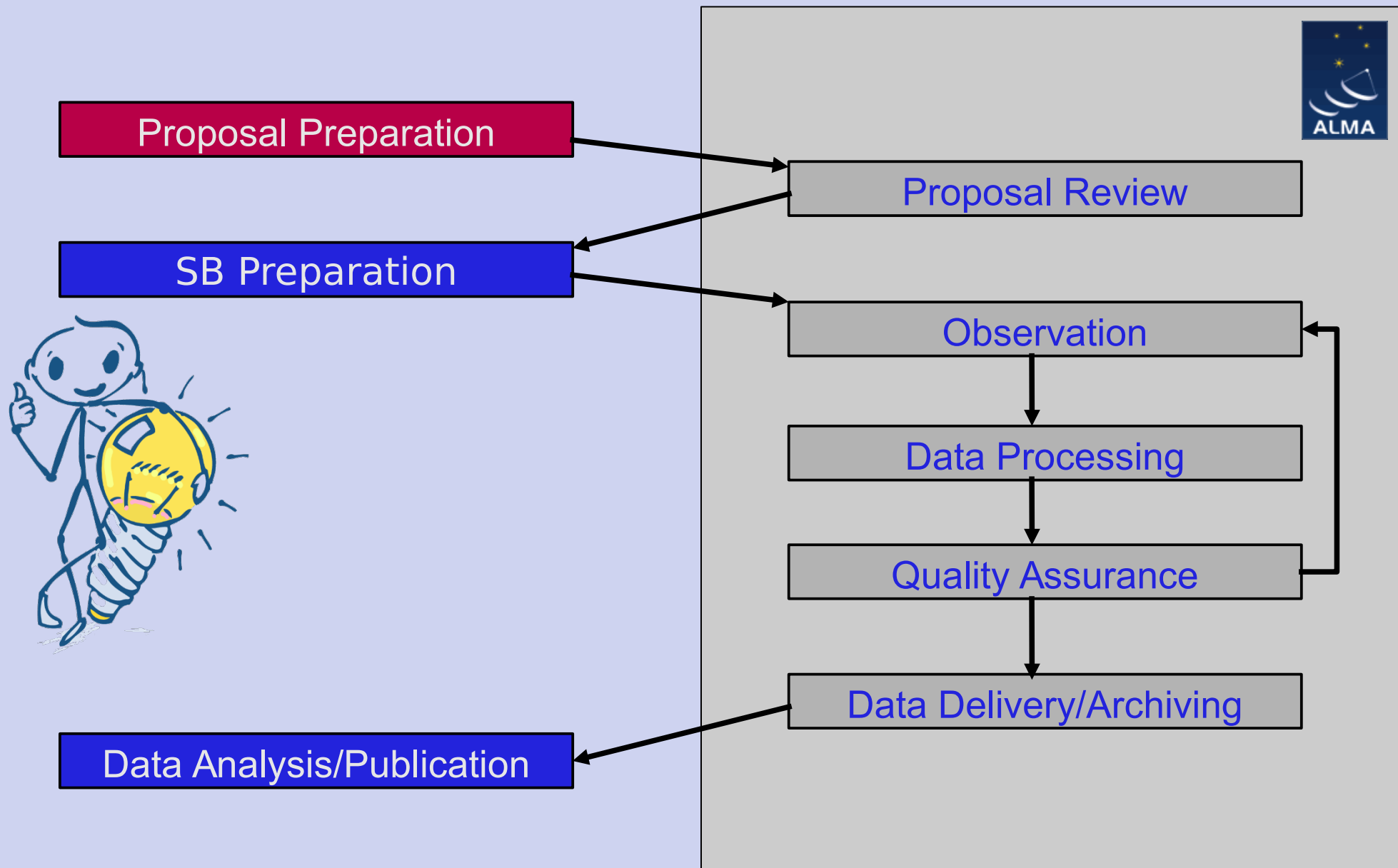
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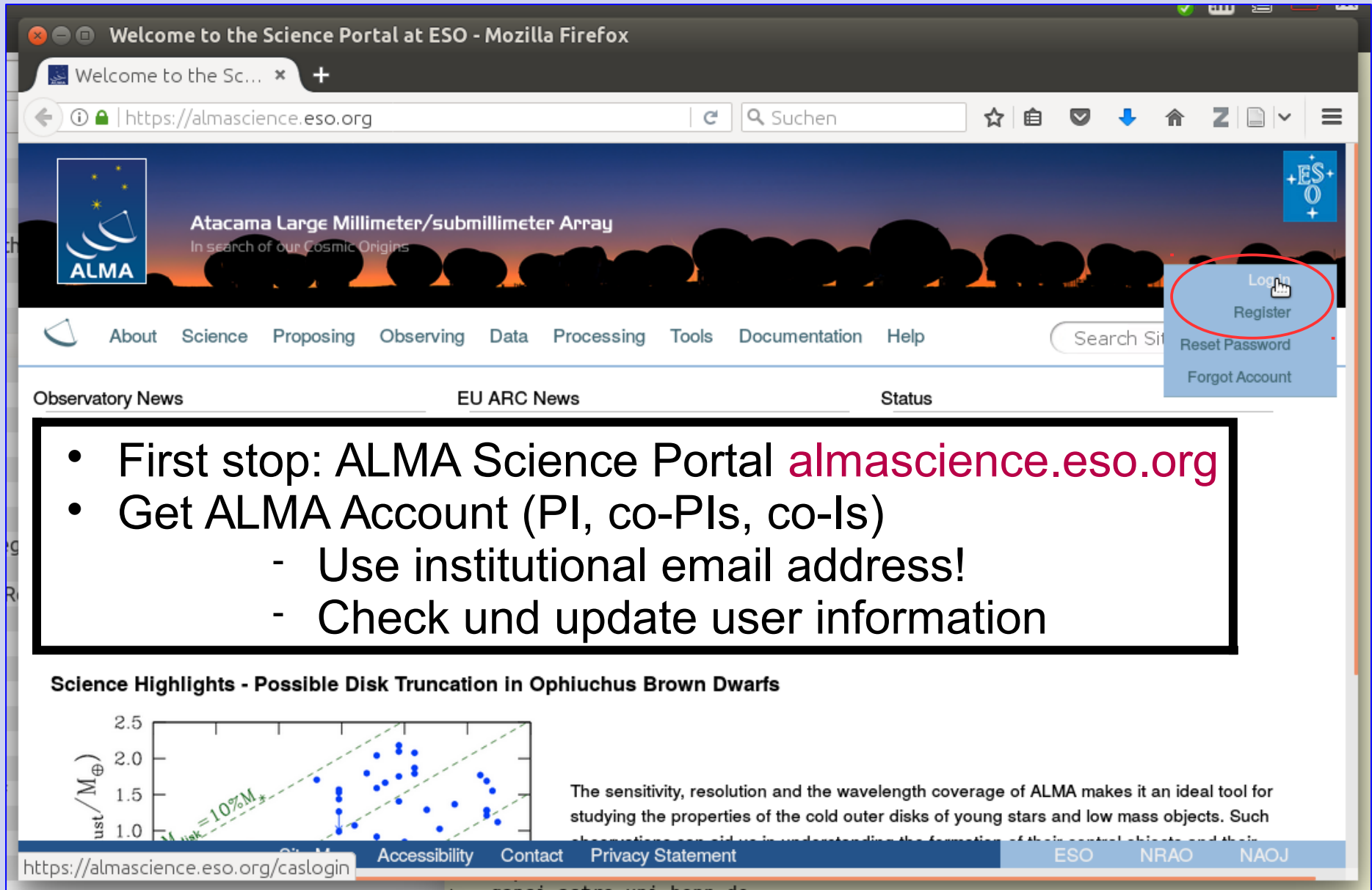
The life of an ALMA project



Proposal Preparation (Phase 1)



Proposal Preparation (Phase 1)



The screenshot shows the ALMA Science Portal website in a Mozilla Firefox browser. The URL is <https://almascience.eso.org>. The page features the ALMA logo and the text "Atacama Large Millimeter/submillimeter Array" and "In search of our Cosmic Origins". A navigation menu includes "About", "Science", "Proposing", "Observing", "Data", "Processing", "Tools", "Documentation", and "Help". A search bar is visible. A dropdown menu is open, showing "Login", "Register", "Reset Password", and "Forgot Account". The "Register" option is circled in red. Below the navigation menu, there are sections for "Observatory News", "EU ARC News", and "Status". A large black-bordered box contains the following text:

- 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

Below the box, there is a "Science Highlights" section titled "Possible Disk Truncation in Ophiuchus Brown Dwarfs". It includes a scatter plot showing the relationship between $\sqrt{M_{\text{disk}}}$ and $M_{\text{disk}} = 10\% M_{\text{star}}$. The plot shows several data points and a dashed line representing the 10% disk mass limit. To the right of the plot, there is a text box explaining that the sensitivity, resolution, and wavelength coverage of ALMA make it an ideal tool for studying the properties of the cold outer disks of young stars and low mass objects. The footer of the page includes links for "Accessibility", "Contact", "Privacy Statement", "ESO", "NRAO", and "NAOJ".

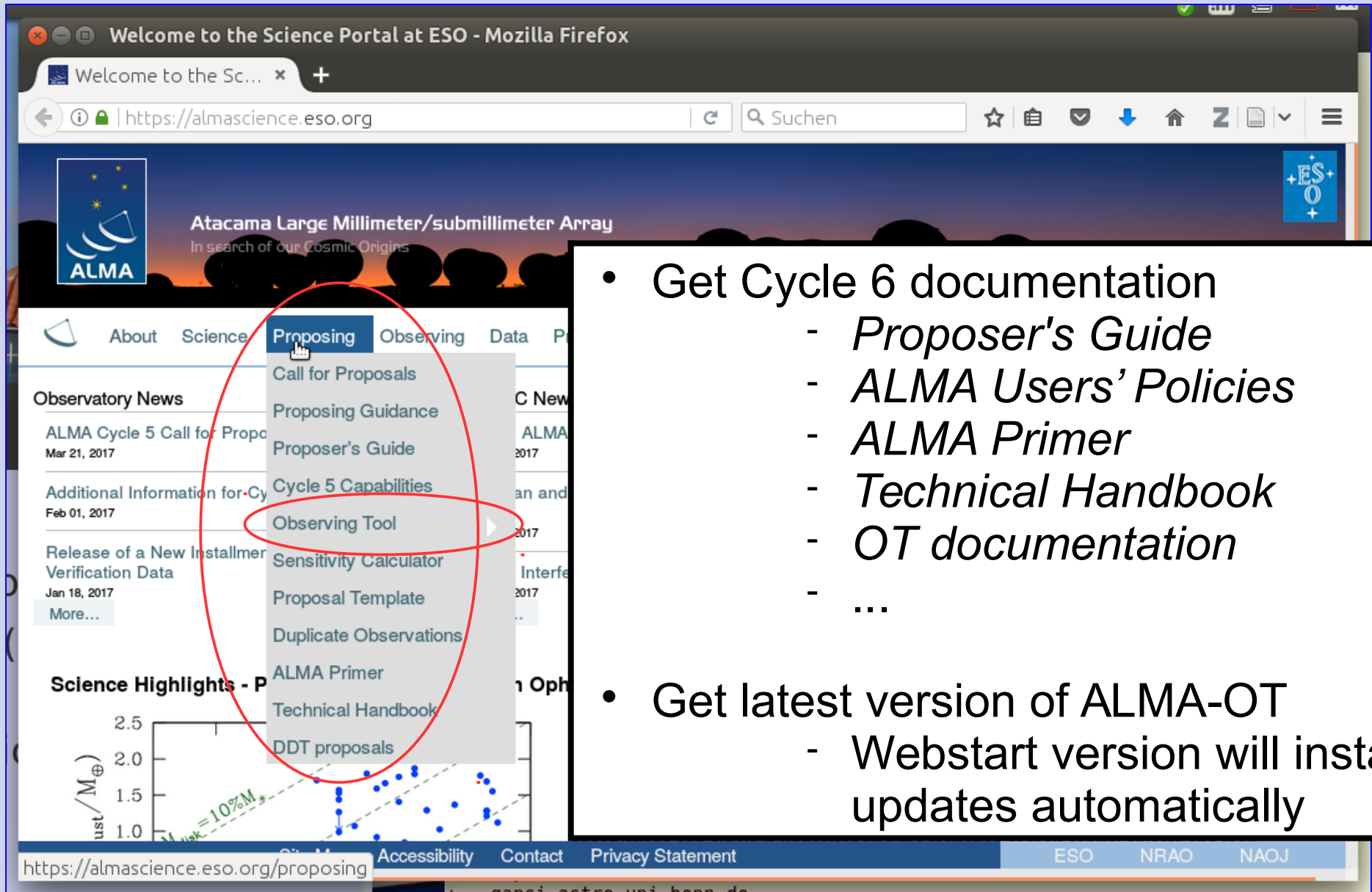
Proposal Preparation (Phase 1)

- 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)



The screenshot shows the ALMA Science Portal website in a Mozilla Firefox browser. The page title is "Welcome to the Science Portal at ESO". The URL is "https://almascience.eso.org". The main navigation menu includes "About", "Science", "Proposing", "Observing", "Data", and "Partners". The "Proposing" menu is open, showing a list of links: "Call for Proposals", "Proposing Guidance", "Proposer's Guide", "Cycle 5 Capabilities", "Observing Tool", "Sensitivity Calculator", "Proposal Template", "Duplicate Observations", "ALMA Primer", "Technical Handbook", and "DDT proposals". A red circle highlights the "Proposing" menu and the "Observing Tool" link. Below the navigation menu, there is a section for "Observatory News" with several articles, and a "Science Highlights" section with a scatter plot showing the relationship between $u_{\text{Jup}}/M_{\oplus}$ and $M_{\text{disk}} = 10\% M_{\oplus}$.

- 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

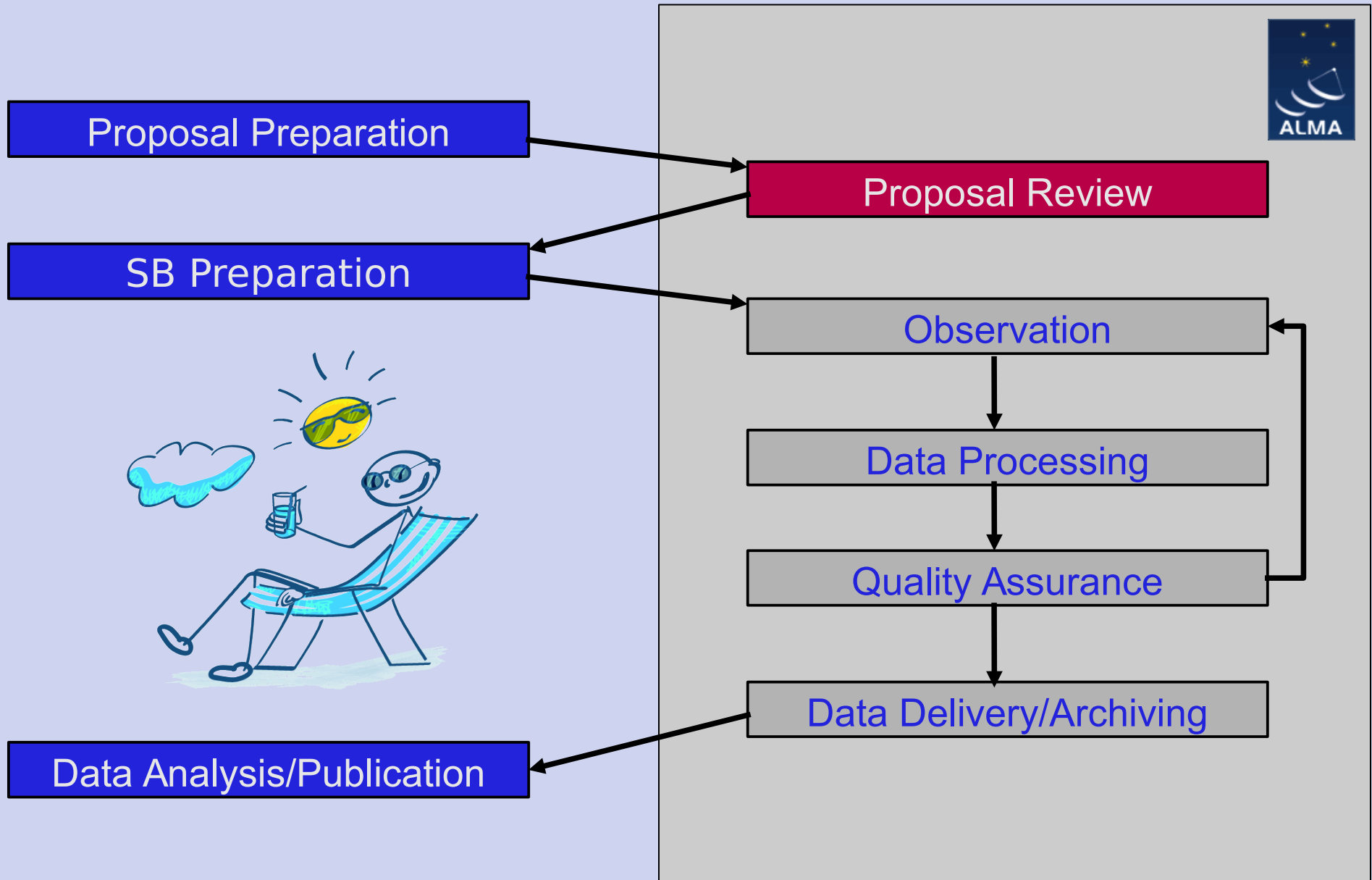
Proposal Preparation (Phase 1)

- 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 retrieve

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

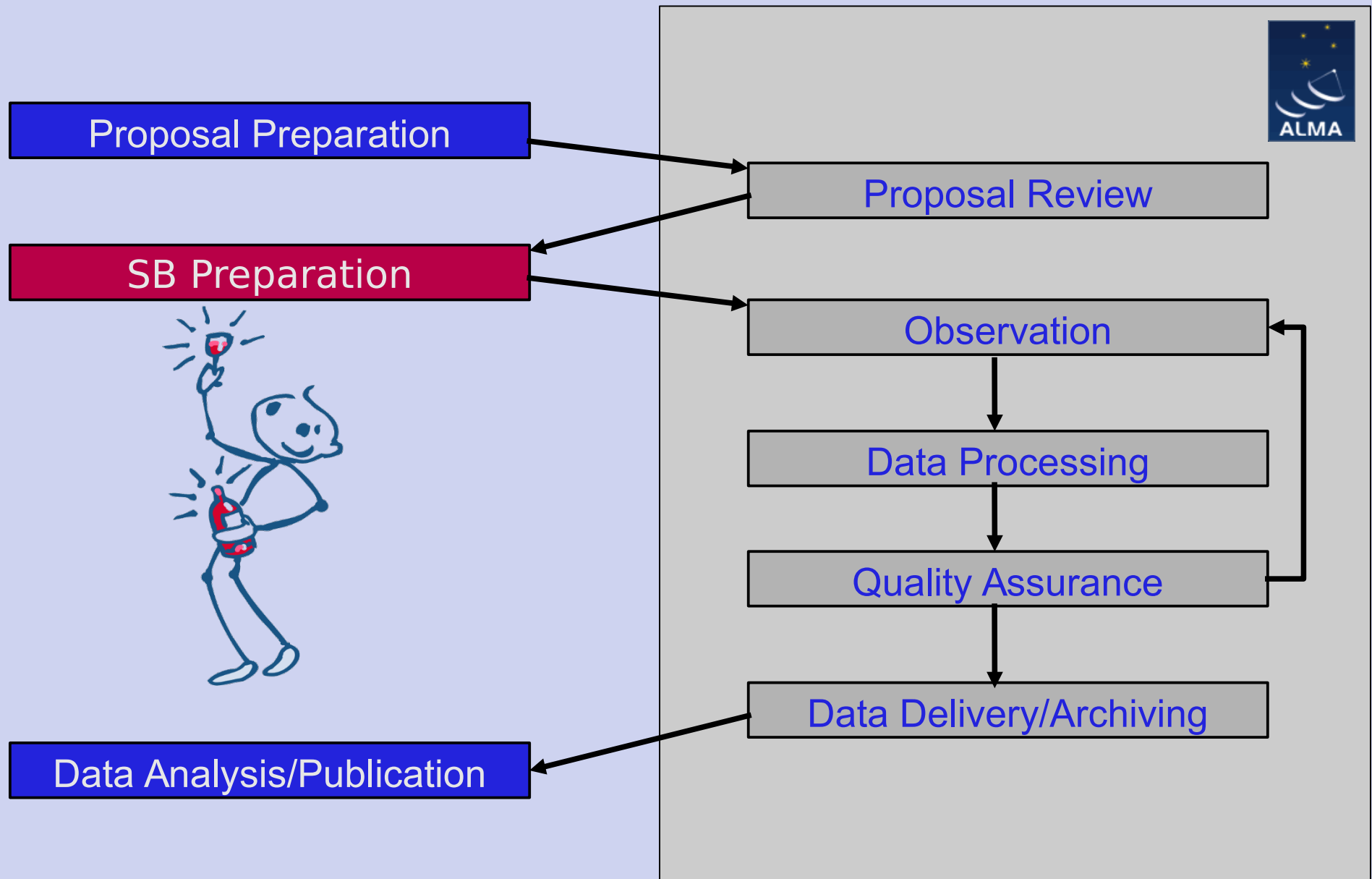
- Shares by proposal types:
 - Large programs: up to 15%
 - Non-standard observing modes: up to 20%
 - Definition of non-standard modes s. *Proposer's Guide*
 - mmVLBI: up to 5%
 - Included in 20% share of non-standard modes
 - DDT Proposals: up to 5%

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 approve SBs by

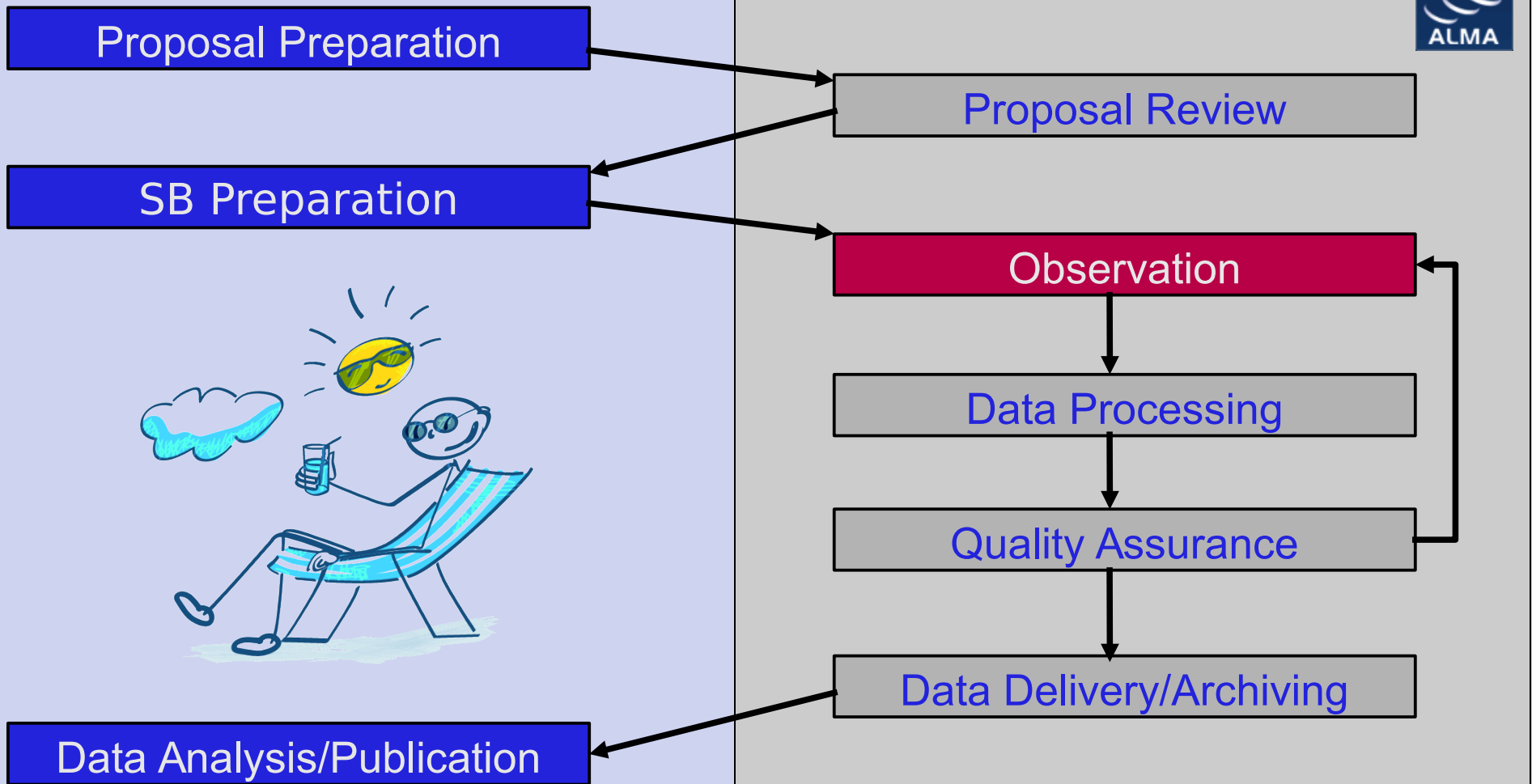
September 6th 2018

- 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

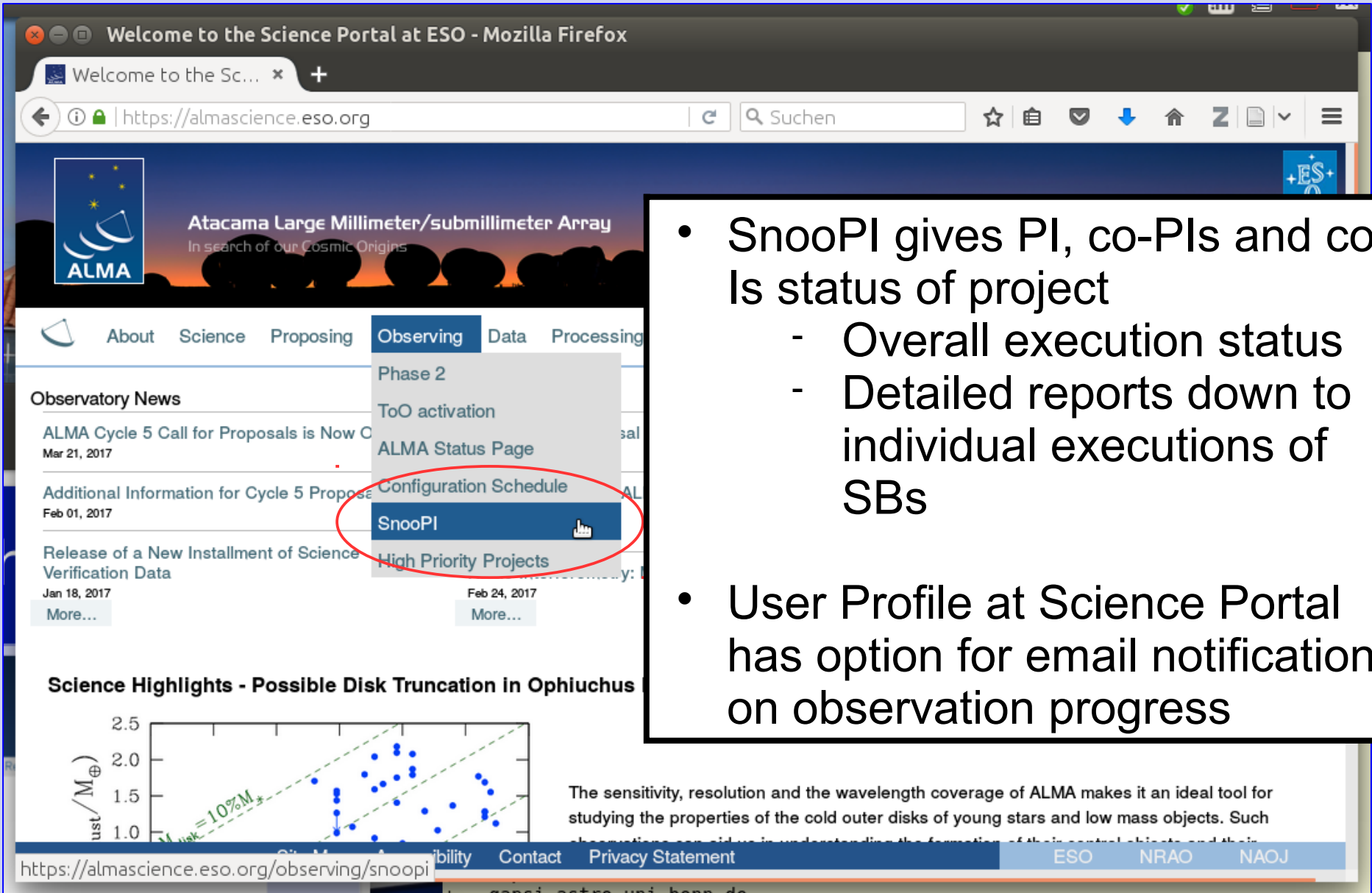
Observation



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



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- 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

- 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

Welcome to the Science Portal at ESO - Mozilla Firefox

Welcome to the Sc... x +

https://almascience.eso.org/observing/alma-status-pag

Atacama Large Millimeter/submillimeter Array
In search of our Cosmic Origins

ALMA

About Science Proposing **Observing** Data Processing

Phase 2
ToO activation
ALMA Status Page
Configuration Schedule
SnooPI
High Priority Projects

ALMA Status Page

Weather Conditions at AOS

Current Date	Current Time	Loc	Temperature	Dewpoint	Wind Direction	Wind Speed	Pressure
2017/03/24	15:41:04 UTC	Cen	3.11 ° C	-15.30 ° C	293.00 °	6.40 m/s	557.04 hPA

[More...](#)

Recent observations (QA0 Pass)

Project	Source	PI
Origin and evolution of atomic gas in debris discs - A new way of studying planetary systems		
2016.1.01253.S	HD131835	Kral, Quentin
The role of OH outflows in the high redshift Universe		
2016.1.00284.S	J142413.9+022303	Bernard-Salas, Jeronimo
Probing the chromospheric heating regions of the solar analogue alpha Centauri with ALMA		

Public observations

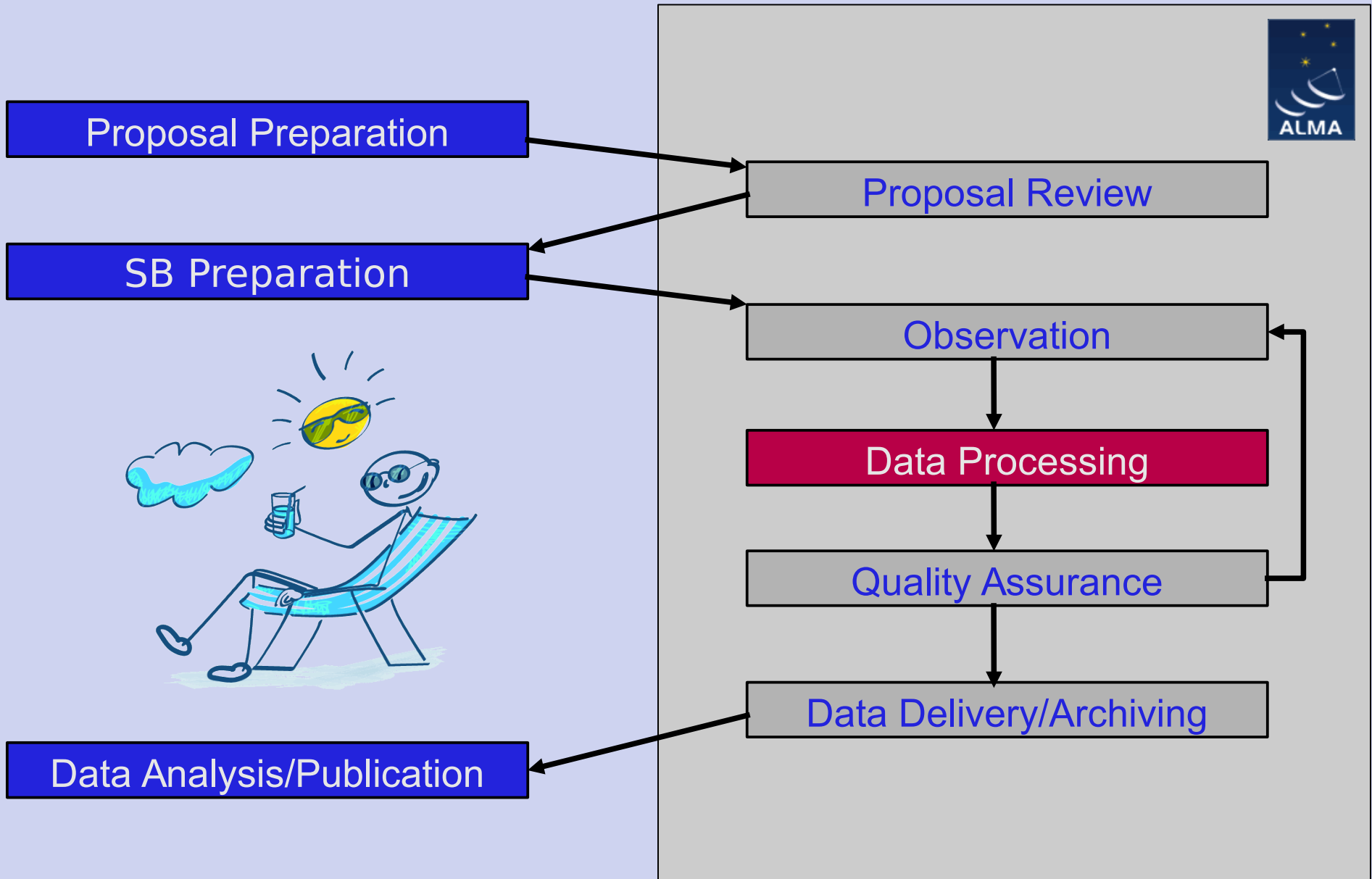
Project	Source	PI
Bulge Asymmetries and Dynamical Evolution (BAaDE) II		
2015.1.01289.S	ad3a-07606	Sjouerman, Lorant
Bulge Asymmetries and Dynamical Evolution (BAaDE) II		
2015.1.01289.S	ad3a-07616	Sjouerman, Lorant
Bulge Asymmetries and Dynamical Evolution (BAaDE) II		
2015.1.01289.S	ad3a-07622	Sjouerman, Lorant

https://almascience.eso.org/observing/alma-status-pag

Contact Privacy Statement

ESO NRAO NAOJ

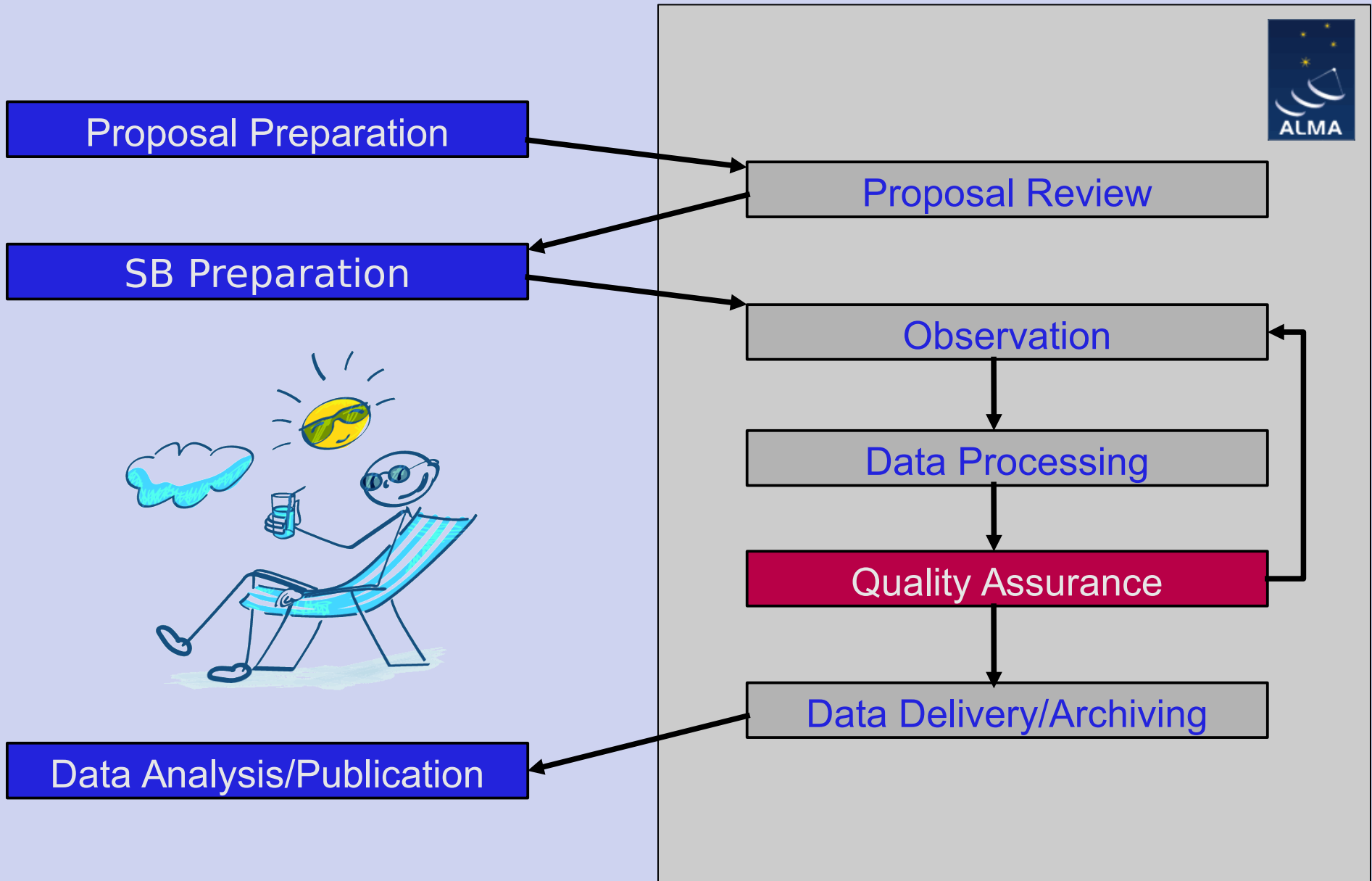
Data Processing



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

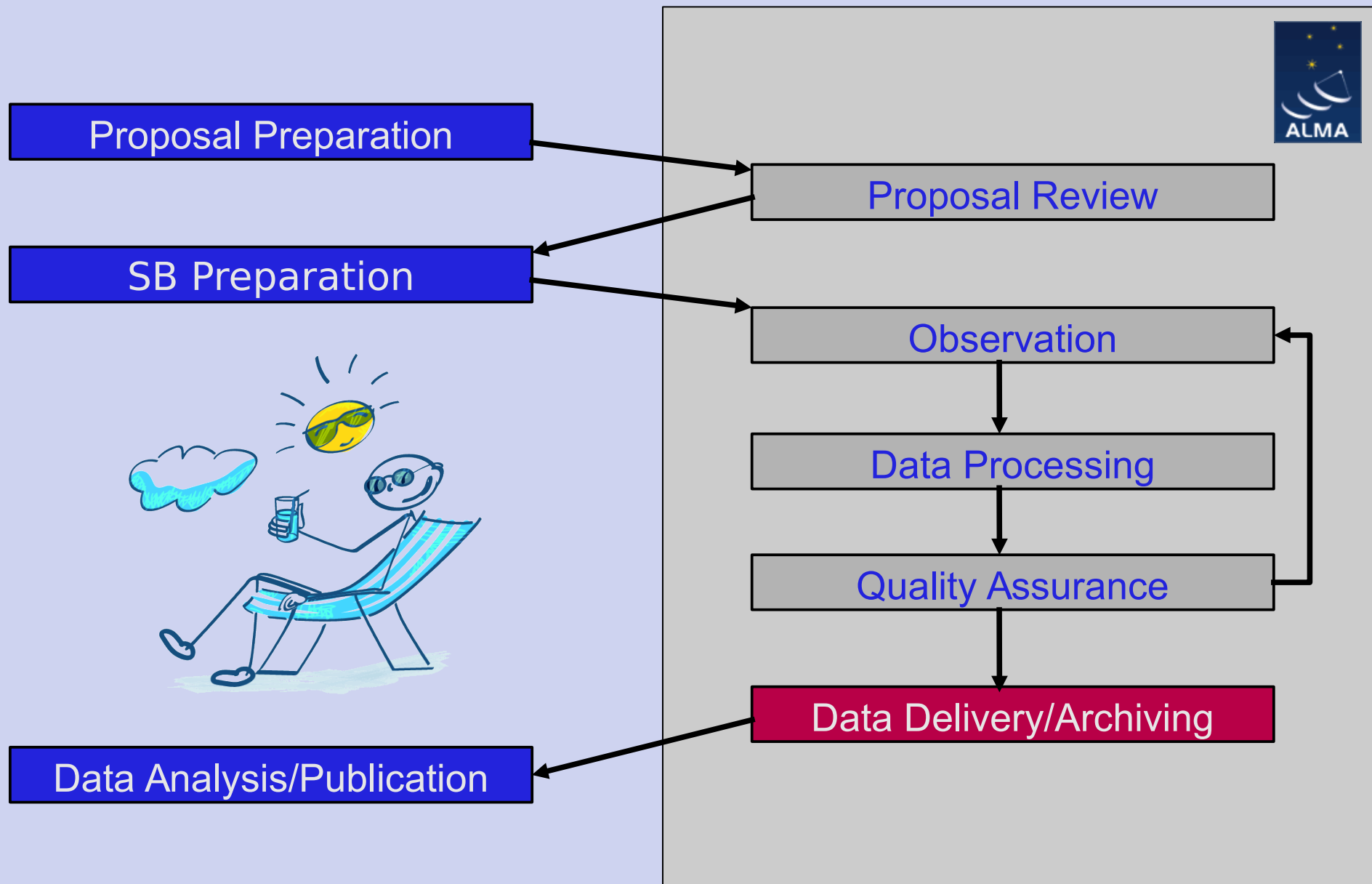
Quality Assurance



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

The screenshot shows the ALMA Science Portal website in a Mozilla Firefox browser. The URL is <https://almascience.eso.org/alma-data/archive>. The page features a navigation menu with 'Data' highlighted, which has opened a dropdown menu containing 'Archive', 'Calibrator Catalogue', 'Science Verification', 'Publication', and 'Acknowledgement'. The 'Archive' option is circled in red. Below the navigation, there is an 'Archive' section with an 'Archive Query' button. A 'Data delegation' section is also circled in red, containing text about granting access to project data. A text box on the right side of the page contains two bullet points: 'Only PI can download data' and 'Data delegation (= grant access to project data to other ALMA users) possible'. The footer includes links for 'Contact' and 'Privacy Statement', and logos for ESO, NRAO, and NAOJ.

- 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

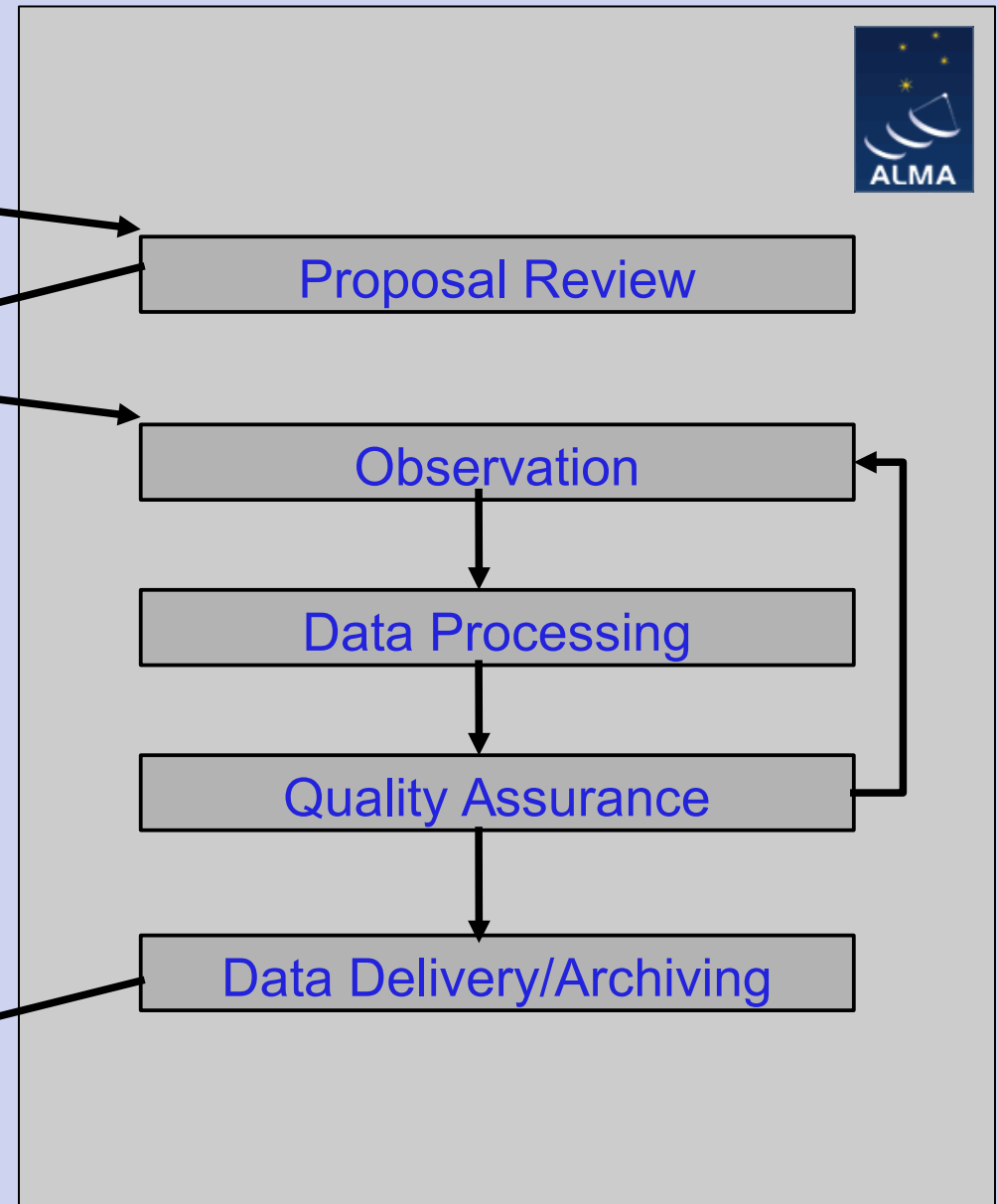
Data Analysis/Publication

Proposal Preparation

SB Preparation



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! :-)