1. Create a science plan

Use Case Name: Create a science plan	**ID:** 1	**Importance Level:** High
Primary Actor: Astronomer		**Use Case Type:** Detail, Essential
Stakeholders and Interests: ● Astronomer - wants to create a science plan		
Brief Description: The use case describes the process of an astronomer creating a science plan		
Trigger: An astronomer wants to create a science plan **Type:** External		
Preconditions: The astronomer must successfully log in to the system.		
Relationships: **Association:** Astronomer **Include: -** **Extend: -** **Generalization: -**		
Normal Flow of Events: 1. The astronomer creates a science plan. 2. The system records the created science plan. 3. The system shows the created science plan. 4. The system shows the created science plan.		
Subflows:		
Alternate/Exceptional Flow: - Exception for event 1: If the input is incomplete or invalid input format. a. If the input is incomplete. i. The system displays “Please fill out this field”. b. If the input is invalid. i. The system displays “Invalid input format”.		

2. Validate a science plan

Use Case Name: Validate a science plan	**ID:** 2	**Importance Level:** High
Primary Actor: Science Observer		**Use Case Type:** Detail, Essential
Stakeholders and Interests: ● Science Observer - wants to validate a science plan.		
Brief Description: This use case describes how the science observer validates a science plan.		
Trigger: The astronomer submits a science plan and the science observer receives the science plan to validate it. **Type:** External		
Preconditions: The science observer must successfully log in to the system.		
Relationships: **Association:** Science Observer **Include:** **Extend:** **Generalization:**		
Normal Flow of Events: 1. The science observer gets a list of TESTED science plans. 2. The system presents a list of tested science plans. 3. The science observer selects the science plan by a number he or she wants to validate. 4. The science observer validates the science plan. 5. The science observer sets the status of the validated science plan to be VALIDATED. 6. The system displays “Update Successful”.		
Subflows:		

Alternate/Exceptional Flow:

- Exception for event 1: If the system cannot find any science plan.
  The system displays “Not Found”.
- Exception for event 4: If the science plan is invalid.
  The science observer sets the status of the science plan to be INVALIDATED.
- Exception for event 6: If the status updating the validated science plan is false.
  The system displays “Update Failed”.

3. Create an observing program

Use Case Name: Create an observing program	**ID:** 3	**Importance Level:** High
Primary Actor: Science Observer		**Use Case Type:** Detail, Essential
Stakeholders and Interests: ● Science Observer – wants to create an observing program.		
Brief Description: This use case describes the process of how the science observer transforms a science plan into an observing program.		
Trigger: After the science observer validates a science plan, a science observer will transform a science plan into an observing program. **Type:** External		
Preconditions: 1. The science observer must log in to the system first. 2. The science observer must have validated the science plans.		
Relationships: **Association:** Science observer **Include: -** **Extend: -** **Generalization: -**		
Normal Flow of Events: 1. The science observer gets a list of VALIDATED science plans. 2. The system presents a list of validated science plans. 3. The science observer selects a validated science plan he or she wants to create. 4. The science observer creates an observing program from the validated science plan. 5. The system records the created observing program. 6. The system shows the created observing program.		
Subflows:		
Alternate/Exceptional Flow: - Exception for event 1: If the system cannot find any validated science plan data. The system displays “Not Found” - Exception for event 4: If the input is invalid or incomplete		

c. If the input is incomplete.
    i. The system displays “Incomplete input”.
d. If the input is invalid.
    i. The system displays “Invalid input”.