Use Case 1: Monitor Pre-Launch Activities
Scope: Launch Simulator
Level: Flight Controller Goal
Primary Actor: Flight Controller
Secondary Actor: Astronaut, Engineer/Technician
Related Use Cases: None
Stakeholders & Interrests:

- Flight Controller: wants to monitor the Pre-Launch Data
- Flight Controller: wants to monitor the Countdown Time
- Flight Controller: wants to asses the validity of the Countdown
  - Continue the Countdown
  - Hold the Countdown
  - Abort the Countdown
- Engineer/Technician: wants to montior selected Pre-Launch data to ensure the System is working properly and advise the Flight Controller
- Astronaut: wants to monitor Countdown Time
- Astronaut: wants to monitor Pre-Launch Data for System awareness

Pre-Conditions: All the parts of the System are ready to begin the Countdown, the Launch Simulator is running
Post-Conditions: The Countdown is at zero, the System transitioned from Pre-Launch to Initiate Launch

Main Success Scenario:

Flight Controller	**System**
1. Start the Pre-Launch Sequence	
	2. Request Countdown Time Entry
3. Enters the Countdown Time	
	4. Returns Countdown Time
5. Starts the Countdown	
	6. Displays Countdown Time to all actors
	7. Repeats 6 for the entire countdown
	8. Monitors Pre-Launch Data
	9. Returns Pre-Launch Data to all the actors
	10. Repeats 7,8 for the entire Countdown
	11. Alerts actors when Countdown reaches zero
12. Initiate Launch Sequence	
	13. Transitions out of Pre-Launch into Intiate Launch
	14. Informs the actors of the transition

Alternative Flows:

* At anytime, the Flight Controller can hold the Countdown if conditions arise that warant that.

* At anytime, if the Countdown is on hold, the Flight Controller can resume the Countdown if the State of the System warants such a transition; the Countdown continues at the time stopped

* If the Countdown is on Hold, the Flight Controller can chose to abort the Countdown. The System responds by abandoning the Countdown, alerting the Actors of the Abort

3c. If the Flight Controller enters an unacceptatble Countdown Time, then the System refuses to set the time and instructs the Flight Controller to enter an acceptable Countdown Time

9c. If the System detects an anomaly in the Pre-Launch Data, then the System alerts the Users of the anomaly for the Flight Controller to determine if the anomaly warants a hold in the Countdown

9d. If there is a Countdown hold, and the System continues to detect an anomaly in the Pre-Launch Data sent to the Users, then the Flight Controller can chose to abort the Launch, the System indicates the Aborted Launch

9e. If there is a Countdown hold, the Flight Controller will resume the countdown if

1. The Anomaly is fixed and there are no other anomalies
2. The Flight Controller determines the Anomaly is not a threat to the mission integrity
3. The Anomaly is determined to be errant

The System alerts the Users the Countdown hold is lifted

Special Requirements:

- There is only one point of Decision for the Countdown Hold/ Countdown Abort. That currently rests with the Flight Controller. The Engineers/Technicians and Astronaut can advise the Flight Controller, in addition to the System: all based on Pre-Launch Data.
- There must be a Countdown Time of 1 hour entered before the Countdown can begin.

Technology & Variations List:

* All actors can chose to view all the Pre-Launch data at once, or chose to view selected pre-launch data. This is very useful for the Engineers/Technicians for monitoring Their individual System responsibilities

3d-5c. The Flight Controller can change the Countdown Time as desired prior to starting the Countdown. The System changes the Countdown time, reflects the change to the Filght Controller. The Flight Controller Starts the Countdown as typical

6c-14c If the System is automated, once the Flight Controller inputs the Countdown Time, the System could Initiate the Launch, hold the Countdown, abort the Countdown. The Flight Controller would have final authority.

9f. If the System is automated at Countdown and the System detects an anomaly, then the System can hold the Countdown, alerting the Users; the Flight Controller can override the hold and resume the Countdown

12c. If the System is automated at Countdown, them the System will initiate the Launch Sequence at the discretion of the Flight Controller

Frequency of Occurence: Almost continuously: based on the frequency of desired Launches.

Open Issues:

- What about a fully automated System?
  - The Flight Controller would need to maintain ultimate control?

- Can the Countdown be Aborted without the Hold?
  - Currently goes Countdown-Hold-Abort for a Countdown Abort
- What happens if the Countdown Timer fails?