Use Case 2: Iniate Launch
Scope: Launch Simulator
Level: Flight Controller Goal
Primary Actor: Flight Controller
Related Use Cases: *Use Case 1: The Users shall monitor Pre-Launch Activities*
Stakeholders & Interrests:

- Flight Controller: wants to initiate Launch
- Astronaut: wants successful Launch
- Flight Controller: wants a successful Launch
- Administrator: wants a successful Launch
- Local and Federal Politicians: want a successful Launch for campaign, re-election and other political purposes

Pre-Conditions: All Pre-Launch Activities are complete: the Countdown is at Zero, there is no hold nor abort on the Countdown, the System indicates no errors in the Pre-Launch Data
Post-Conditions: The Trasistion to Launch successful

Main Success Scenario:

Flight Controller	**System**
	1. Indicates Countdown at zero and ready to launch
2. Intiates Lauch	
	3. Directs Engines to ignite
	4. Returns confirmation of the engine ignition
	5. Monitors Launch Data
	6. Returns Launch Data
	7. Repeat 5 & 6 Until Transition out of Launch Initialization
	8. Rocket ready to Launch
9. Launch Rocket	
	10. Execute the Launching Mechanism (Launches Rocket)
	11. Monitors Rocket for Clearing the Launch Tower
	12. Returns Rocket's current height
	13. Repeats 11 & 12 until Rocket Clears Launch Tower
	14. Returns Rocket Cleared Tower
	15. Transitions to Launch upon Rocket Clearing the Launch Tower
	16. Informs of Transition

Alternative Flows:

2a The Flight Controller can chose not to Initiate the Launch

4a If the Engines do not ignite, then the System Alerts the Flight Controller of the issue, the Flight Controller aborts the laumch and all the actors follow their repsective Launch Abort Procedures

5a-8a If the System communicates an error/issue in the Launch Data, then the System alerts the Flight Controller of the error/issue, with recomendation (abort/not abort Launch).

9a If the Flight Controller can abort the Launch, the System will not activate the Launch Mechinism, all the actors are to follow their respective Launch Abort Procedures.

16a In the event of a Launch Abort, the System will not transition to Launch

Special Requirements:

- The Launch Initialization is from when the Flight Director Initiates the Launch Sequence to when the Rocket Clears the Launch Tower. The Flight Director has the ability to Abort the Lauch Initialization. Special Abort Procedures must be developed and followed by the Flight Controller, and the Astronauts.
- Several factors and data points are required to determine if/when the Rocket is ready to Launch. The System will monitor all of these factors. All of these factors must be in a stable and exprected state before the System will advise on launching the Rocket.
- There is only one point of Decision for the Abort. That decision rests with the Flight Controller. Currently, the Flight Controller takes no advisement other than System Data.
- The Launch Mechanism will not release the delivery system (rocket) until enough lift thrust is built up.

Technology & Variations List

* The Launch Initialization data can be viewed simultaneously, or chose to view selected Pre-Launch data, at the discretion of the Flight Controller.
* If the System is automated, then the System would determine when to ignite the engines, when to execute the Launching Mechanism, and make the decision to abort the Launch Sequence. The Flight Director would have final authority.

Frequency of Occurrence: Almost continuoulsy. Based on the Frequency of desired Launches.

Open Issues:

- Need to create a list of the Lauch Data to monitor: needed for the decision for when to launch the Rocket
- What are the abort procedures?
- Consider shutting down the Rocket engines as part of the abort procedures
- If the Rocket engines are not capable of shutdown, consider other possible abort procedures
- Should the Astronauts have the ability to abort the Launch initialization?