

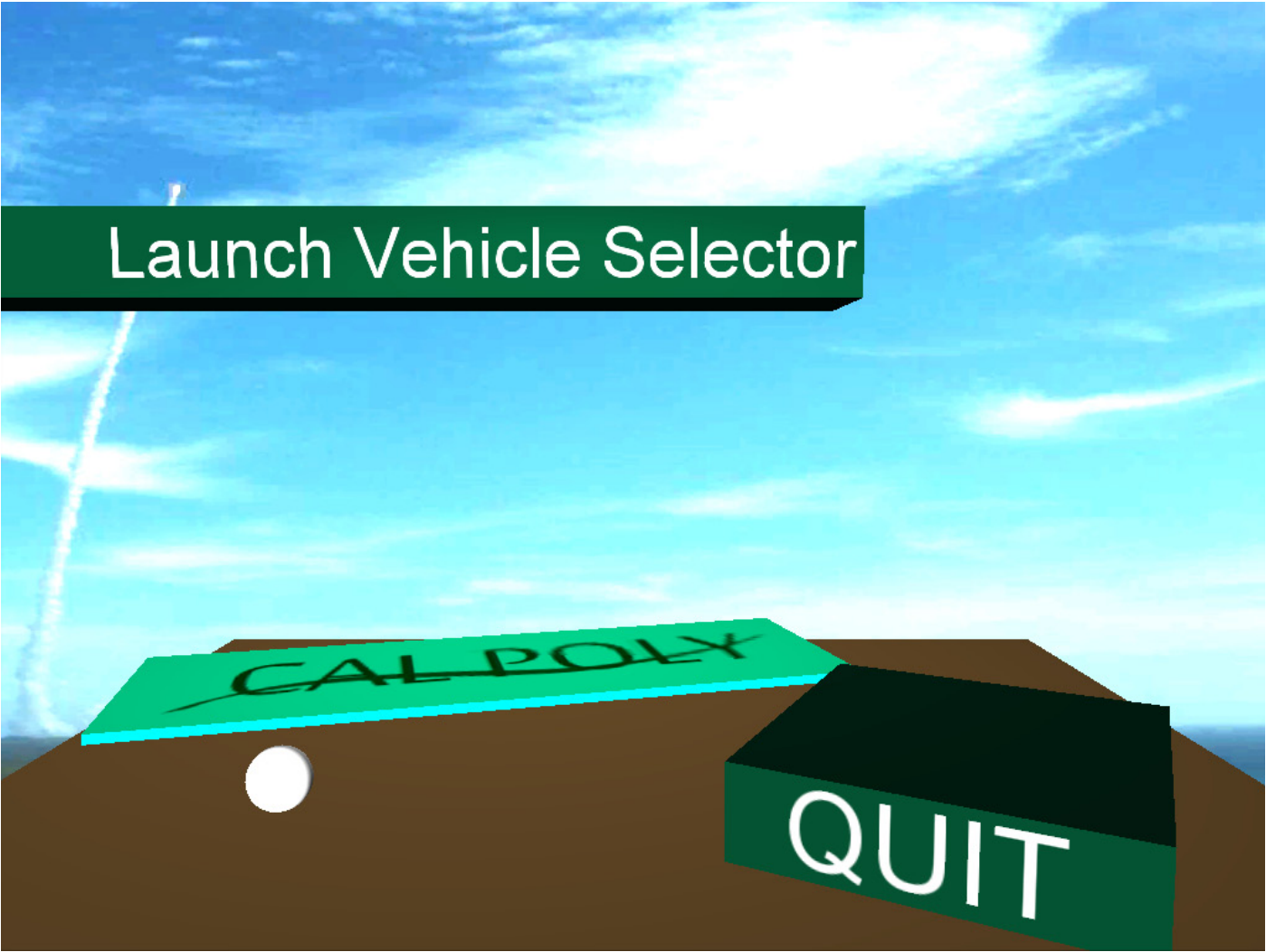
Global Launch Vehicle Selector User Manual

This document will guide the user in the use of the Global Launch Vehicle Selector.

The Global Launch Vehicle Selector is a tool that will assist the user in selecting a launch vehicle based on his/her inputs of a payload characteristic.

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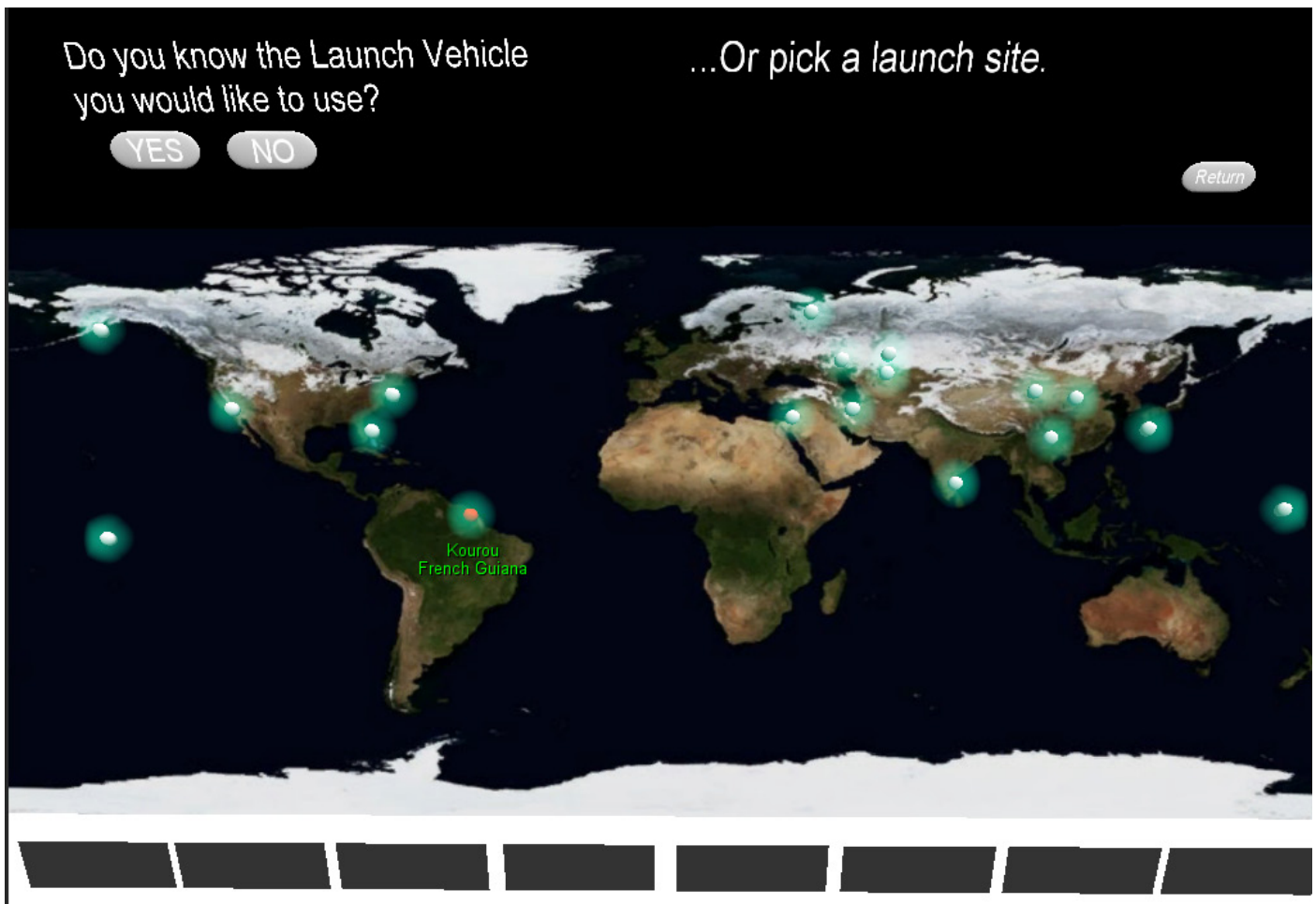


TITLE PAGE ¹


This will be the very first page you will see after starting the GLSV. You can move on by clicking on the bar which is labelled the “Launch Vehicle Selector” **Launch Vehicle Selector**. If you click the block with “Quit” **QUIT** written on it, you will exit out of the application.

OBJECT AND SCRIPT CONNECTION

Object	Script
LV Database	LVSelector (inactive)
LV Selector	LVSelector
Main Camera	Drop Blocks
Quit	LVSelector



SITE SELECTION

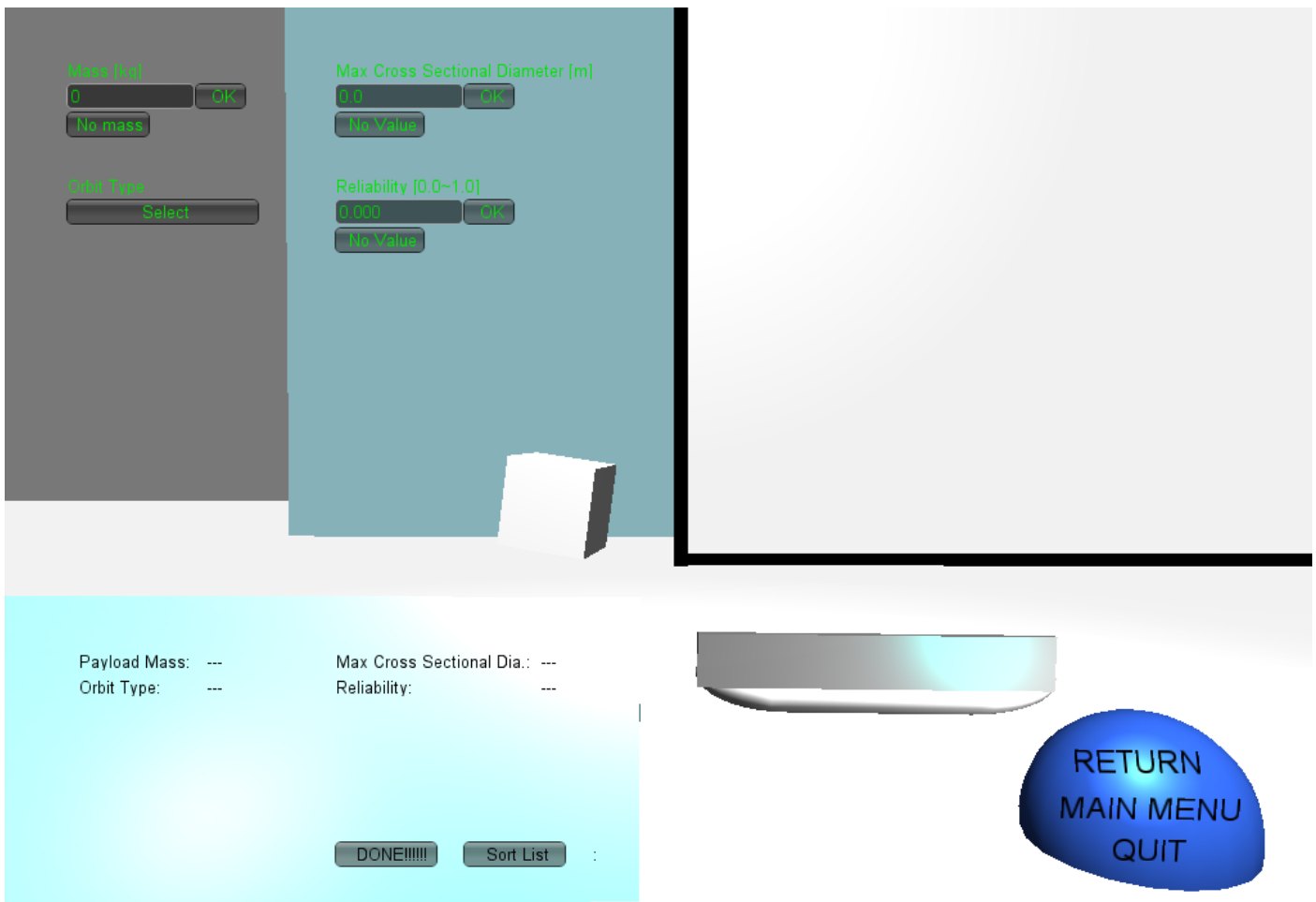
This page is where you can define how you want to select the launch vehicle. The currently active methods are choosing by name, which can be accessed by pressing the “YES” button **YES**, or choosing by payload characteristics which can be accessed by pressing the “NO” button **NO**. Although not fully functional, you can also find a launch vehicle through a launch site by clicking on one of the circles  on the world map. The “Return” button **Return** will take you back to the title page.

OBJECT AND SCRIPT CONNECTION

Object	Script
Baikonur	Tool Tip, LV Site Switch
Cape Canaveral	Tool Tip, LV Site Switch
Dombarovsky	Tool Tip, LV Site Switch
FrenchGuiana	Tool Tip, LV Site Switch
Jiuquan	Tool Tip, LV Site Switch
Kapustin Yar	Tool Tip, LV Site Switch
Kodiak	Tool Tip, LV Site Switch
Marshall Island	Tool Tip Adjust For Right Side, LV Site Switch
Odyssey Platform	Tool Tip, LV Site Switch

OBJECT AND SCRIPT CONNECTION

Palmachim	Tool Tip, LV Site Switch
Plesetsk	Tool Tip, LV Site Switch
Semnam	Tool Tip, LV Site Switch
Sriharikota	Tool Tip, LV Site Switch
Taiyuan	Tool Tip, LV Site Switch
Tanegashima	Tool Tip, LV Site Switch
Vandenberg	Tool Tip, LV Site Switch
Wallops Island	Tool Tip, LV Site Switch
Xichang	Tool Tip, LV Site Switch
Or pick a launch site	Tool Tip Normal
No, continue on to LVSelector	Scene 05Jump To, Tool Tip Normal
YES, I do	Scene 05Jump To, Tool Tip Normal
Return	Tool Tip, Scene 05Jump To

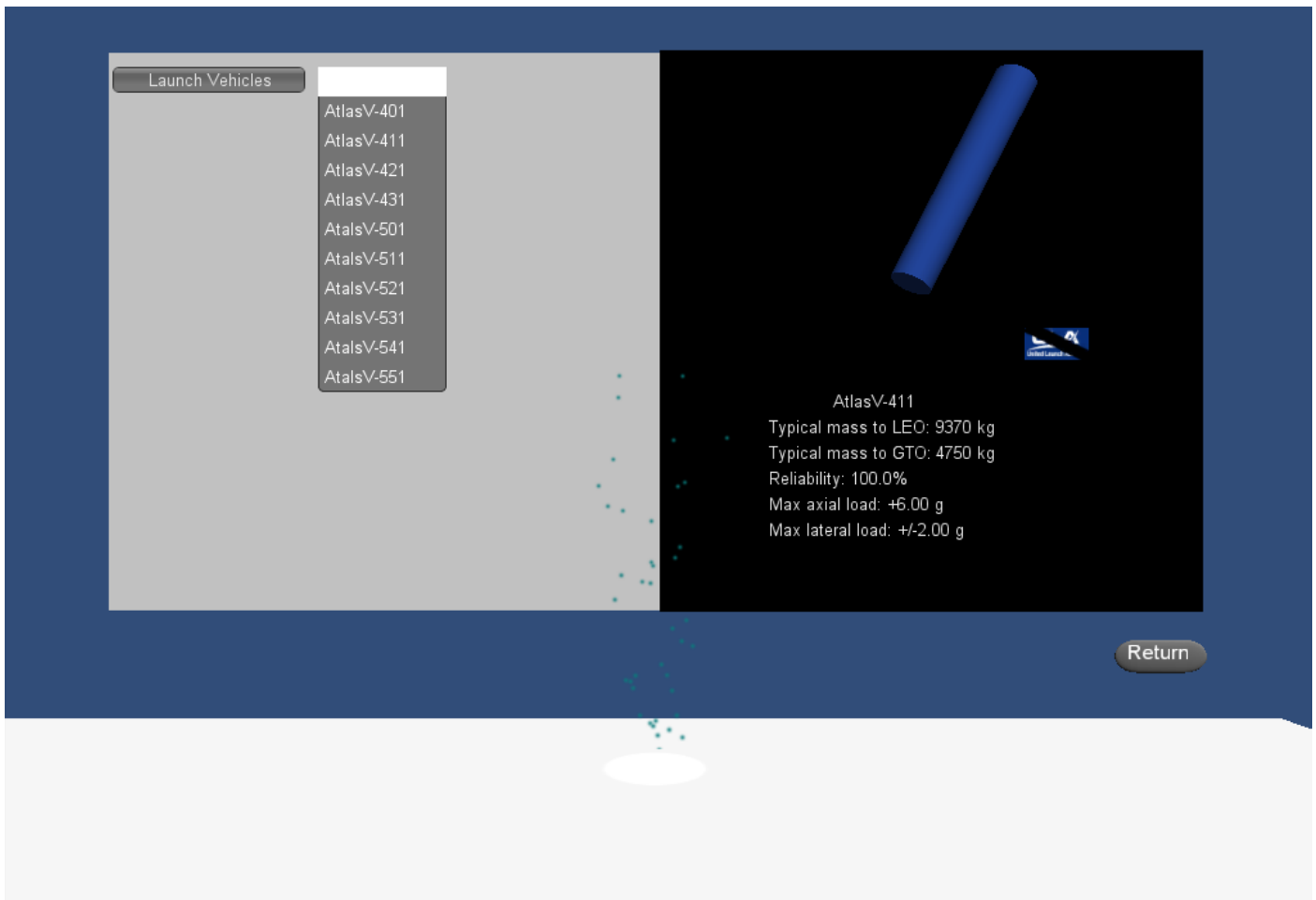


LV selector 1



You will arrive at this page if you hit “NO” **NO**, on the site selection page. This is where you can input your payload parameters. After each input, always press the “OK” button **OK** to have the program read it. You can check your inputs on the bottom left screen. Click “No Value” **No Value** if you do not have any value to input. Any parameter you specify as “No Value” will not be considered during the selection process of a launch vehicle. One of the inputs is the orbit type. In order to specify a orbit and its details, click the “Select” button **Select**. Once you are done with inputting your parameters, click the “DONE!!!” button **DONE!!!!!!** located on the bottom left side of the screen. This will initiate the calculation and give you any launch vehicles that can accomodate your payload on the top right coner of the screen. If you get a list of launch vehicles, the ordering will be completely random. In order to sort the list, click the “Sort List” button **Sort List** located right next to the “DONE!!!!” button. Simply select the criteria you want the list to be ordered by. In the bottom right side of the screen, there are three navigation buttons. The “RETURN” button **RETURN** will take you back to the site selection page. The “MAIN MENU” button **MAIN MENU** will take you back to the title page. The “QUIT” button **QUIT** will terminate the application.

OBJECT AND SCRIPT CONNECTION

Object	Script
Cube	Object Rotate
Main Camera	Input Screen, GUIInput Area, Orbits, LV Calc 1, LVCalc Eq, Compare LV, Result Sort, Result List
MainMenu	Play
QUIT	Play
RETURN Play	



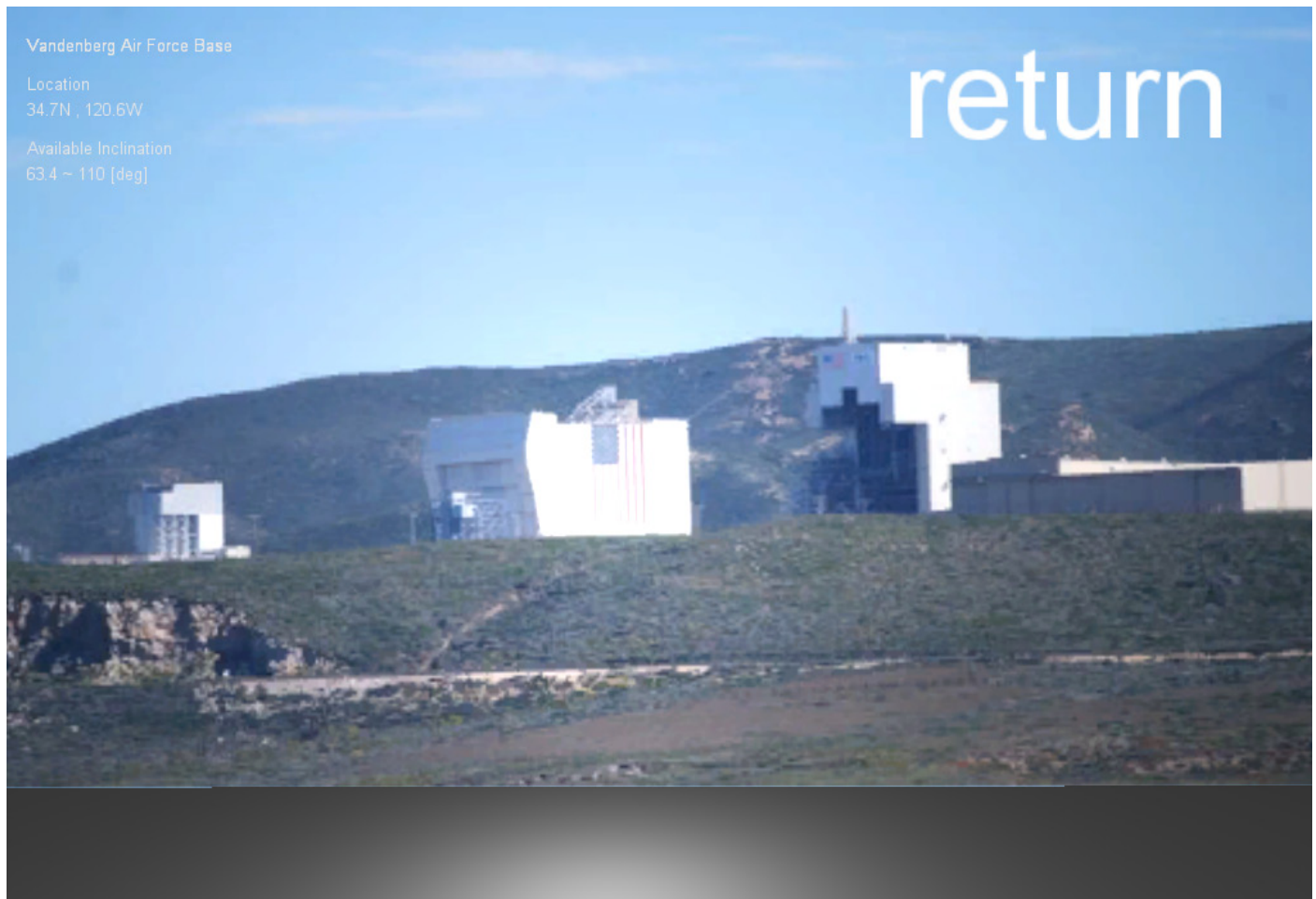
LV Selector 2

If you selected “YES”  on the site selection page, this page will open. Here, you can pick your launch vehicle by its name. Simply go through the pop down list and pick a launch vehicle. Once a launch vehicle is selected, you will see some facts about it on the right side of the screen. By selecting the “Return” button , you can return back to the site selection page.

OBJECT AND SCRIPT CONNECTION

Object	Script
Main Camera	LVMenu, Atlas Fam, Delta Fam, Ariane Fam, Dnepr Fam, H2Fam, Falcon Fam, Gslv Fam, Kosmos Fam, Long March Fam, Minotaur Fam, Pegasus Fam, Proton Fam, Pslv Fam, Rock-ot Fam, Safir Fam, Shavit Fam, Soyuz Fam, Taurus Fam, Start Fam, Vega Fam, Zenit Fam, Long March Fam 3C, LV Data
Return	Return

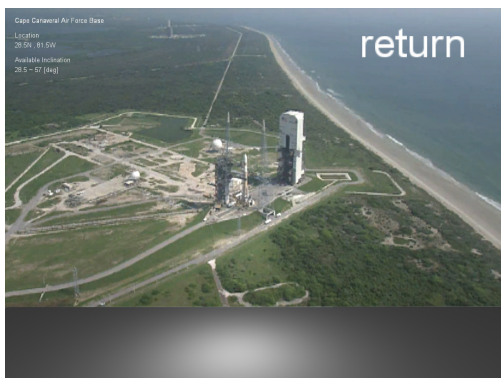
Unity Scene: Vandenberg



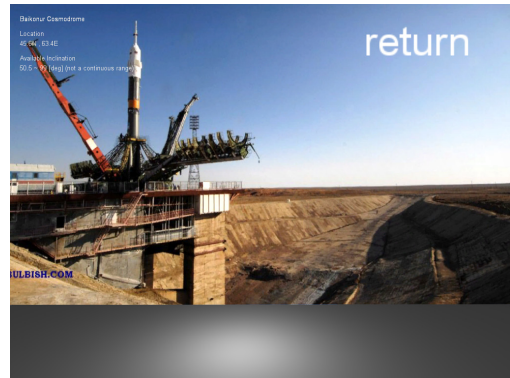
Site pages (Above shows Vandenberg Air Force Base ²⁾)

This is the type of page you will see when you select a launch site on the site selection page. The image above is the page you will get when you click on Vandenberg AFB on the world map in the site selection page. Some facts about the launch site and a list of launch vehicles launched from that site will be shown (work in progress). You can return by clicking over the letters reading “return”. The rest of the sites are shown as reference in the following pages.

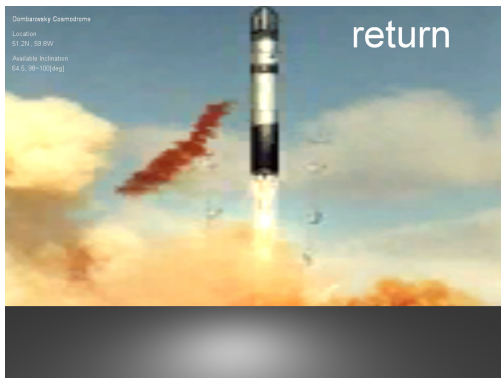
OTHER LAUNCH SITES



Cape Canaveral Air Force Station ³
Unity Scene: Cape



Baikonur Cosmodrome ⁴
Unity Scene: Baikonur



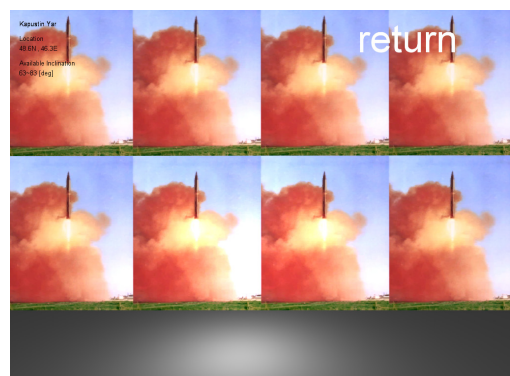
Dombarovsky Cosmodrome ⁵
Unity Scene: Dombarovsky



Guiana Space Center ⁶
Unity Scene: FrenchGuiana



Jiuquan Satellite Launch Center ⁷
Unity Scene: Jiuquan



Kapustin Yar ⁸
Unity Scene: Kapustin Yar



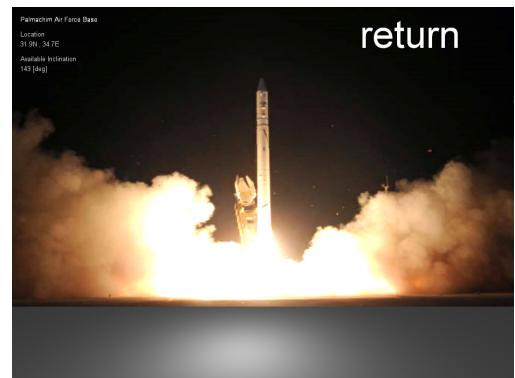
Kodiak Launch Complex⁹
Unity Scene: Kodiak



Kwajalein Missile Range¹⁰
Unity Scene: Kwajalein



Odyssey Platform¹¹
Unity Scene: Odyssey



Palmachim Air Force Base¹²
Unity Scene: Palmachim



Plesetsk Cosmodrome¹³
Unity Scene: Plesetsk



Semnan Space and Missile Center¹⁴
Unity Scene: Semnan



Satish Dhawan Space Center ¹⁵
Unity Scene: Sriharikota



Taiyuan Satellite Launch Center ¹⁶
Unity Scene: Taiyuan



Tanegashima Space Center ¹⁷
Unity Scene: Tanegashima



Wallops Flight Facility ¹⁸
Unity Scene: Wallops



Xichang Satellite Launch Center ¹⁹
Unity Scene: Xichang

SCRIPTS

The majority of the scripts are written in Unity's version of Javascript. This Javascript incorporated in Unity is also referred to as Unityscript due to the different nature of the language compared to the true Javascript. In this document, the language will simply be referred to as Javascript. The other language used for scripting is C#. Below you will see all the scripts used for this project. The scripts with filename extension ".js" are written in javascript, while ".cs" are written in C#. Scripts are available upon request.

compareLV.js	H2Fam.js
GUIInputArea.js	KosmosFam.js
inputScreen.js	LongMarchFam.js
LVCalc1.js	LongMarchFam3C.js
LVCalcEq.js	LVMenu.js
LVData.js	MinotaurFam.js
LVSelector.js	PegasusFam.js
LVSiteInfoBaikonur.js	ProtonFam.js
LVSiteInfoCape.js	PslvFam.js
LVSiteInfoDomb.js	RockotFam.js
LVSiteInfoKapustin.js	SafirFam.js
LVSiteInfoKodiak.js	ShavitFam.js
LVSiteInfoKwajalein.js	SoyuzFam.js
LVSiteInfoOdyssey.js	StartFam.js
LVSiteInfoPalmachim.js	TaurusFam.js
LVSiteInfoPlesetsk.js	VegaFam.js
LVSiteInfoSemnan.js	ZenitFam.js
LVSiteInfoSriharikota.js	textcontrol.js
LVSiteInfoTaiyuan.js	toolTip.js
LVSiteInfoTanegashima.js	Popup.cs
LVSiteInfoVand.js	
LVSiteInfoWallops.js	
LVSiteInfoXichang.js	
LVsiteSwitch.js	
objectRotate.js	
Orbits.js	
play.js	
ResultList.js	
ResultSort.js	
return.js	
returnSiteSelect.js	
Scene05JumpTo.js	
toolTipAdjustForRightSide.js	
toolTipNormal.js	
dropBlocks.js	
Ariane5Fam.js	
AtlasFam.js	
DeltaIVFam.js	
DneprFam.js	
FalconFam.js	
GslvFam.js	

LAUNCH VEHICLES

Ariane5

Ariane 5 ECA

Ariane 5 ES/ATV

AtlasV

AtlasV 401

AtlasV 411

AtlasV 421

AtlasV 431

AtlasV 501

AtlasV 511

AtlasV 521

AtlasV 531

AtlasV 541

AtlasV 551

DeltaIV

DeltaIV Medium

DeltaIV M+(4,2)

DeltaIV M+(5,2)

DeltaIV M+(5,4)

DeltaIV Heavy

Dnepr 1

Dnepr 1

Falcon

Falcon 1

Falcon 1e

Falcon 9

GSLV

GSLV MkII

GSLV MkII(c)

H-II

H2A 202

H2A 204

H2B

	LEO	GSO	GTO	SSO	C3	Sub/Super	Human	Elliptical	3D Model
Ariane 5									
Ariane 5 ECA	[2]	[3]	[2]	[1]	[3]	[3]	[3]	[3]	
Ariane 5 ES/ATV	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
AtlasV									
AtlasV401	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV411	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV421	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV431	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV501	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV511	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV521	[1]	[3]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV531	[1]	[2]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV541	[1]	[2]	[1]	[3]	[2]	[3]	[3]	[1]	
AtlasV551	[1]	[2]	[1]	[3]	[2]	[3]	[3]	[1]	
DeltaIV									
DeltaIV Medium	[1]	[2]	[1]	[1]	[2]	[1]	[3]	[3]	
DeltsIV M+(4,2)	[1]	[2]	[1]	[1]	[2]	[1]	[3]	[3]	
DeltaIV M+(5,2)	[1]	[2]	[1]	[1]	[3]	[1]	[3]	[3]	
DeltaIV M+(5,4)	[1]	[2]	[1]	[1]	[2]	[1]	[3]	[3]	
DeltaIV Heavy	[1]	[2]	[1]	[1]	[2]	[1]	[3]	[3]	
Denpr									
Denpr 1	[1]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Falcon									
Falcon 1	[1]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Falcon 1e	[1]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Falcon 9	[1]	[3]	[1]	[1]	[1]	[3]	[3]	[3]	
GSLV									
GSLV MkII	[2]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
GSLV MkII(c)	[2]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
H-II									
H2A202	[2]	[3]	[3]	[3]	[2]	[3]	[3]	[3]	
H2A204	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
H2B	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	

REFERENCES

[1] User Manual

[2] International Reference Guide to Space Launch Systems

[3] None/ Insufficient amount of data/ not applicable

	Complete		Incomplete		no work
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LAUNCH VEHICLES

Kosmos3M

KOSMOS 3M

Long March

Long March 2C

Long March 2D

Long March 2F

Long March 3A

Long March 3B

Long March 3C

Long March 4B

Long March 4C

Minotaur

Minotaur I

Minotaur AFRL

Minotaur IV

Pegasus

PegasusXL

PegasusXL HAPS

Proton

Proton BreezeM

PSLV

PSLV

PSLV-CA

PSLV-XL

Rockot

Rockot Breeze KM

Safir

Safir 1

	LEO	GSO	GTO	SSO	C3	Sub/Super	Human	Elliptical	3D Model
Kosmos									
KOSMOS 3M	[2]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Long March									
Long March 2C	[2]	[3]	[3]	[2]	[3]	[3]	[3]	[1]	
Long March 2D	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Long March 2F	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Long March 3A	[3]	[3]	[1]	[1]	[1]	[3]	[3]	[3]	
Long March 3B	[3]	[3]	[1]	[1]	[1]	[3]	[3]	[3]	
Long March 3C	[3]	[3]	[1]	[1]	[1]	[3]	[3]	[3]	
Long March 4B	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Long March 4C	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Minotaur									
Minotaur I	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[1]	
Minotaur AFRL	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[1]	
Minotaur IV	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[1]	
Pegasus									
Pegasus XL	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[3]	
Pegasus XL HAPS	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[3]	
Proton									
Proton Breeze M	[2]	[1]	[1]	[3]	[3]	[3]	[3]	[3]	
PSLV									
PSLV	[2]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
PSLV-CA	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
PSLV-XL	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Rockot									
Rockot Breeze KM	[1]	[3]	[3]	[2]	[3]	[3]	[3]	[1]	
Safir									
Safir 1	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	

REFERENCES

[1] User Manual

[2] International Reference Guide to Space Launch Systems

[3] None/ Insufficient amount of data/ not applicable

	Complete		Incomplete		no work
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LAUNCH VEHICLES

Shavit

Shavit 1

Soyuz

Soyuz (Starsem)

Soyuz (Arianespace)

Start

Start 1

Taurus

Taurus 2110

Taurus 2210

Taurus 3110

Taurus 3210

Vega

Vega

Zenit

Zenit 3SL

	LEO	GSO	GTO	SSO	C3	Sub/Super	Human	Elliptical	3D Model
Shavit									
Shavit 1	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[2]	
Soyuz									
Soyuz (Starsem)	[1]	[3]	[3]	[1]	[1]	[3]	[3]	[1]	
Soyuz (Arianespace)	[3]	[1]	[3]	[1]	[1]	[1]	[3]	[1]	
Start									
Start 1	[1]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Taurus									
Taurus 2110	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[3]	
Taurus 2210	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[3]	
Taurus 3110	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[3]	
Taurus 3210	[1]	[3]	[3]	[1]	[3]	[3]	[3]	[3]	
Vega									
Vega	[1]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Zenit									
Zenit 3SL	[1]	[3]	[1]	[3]	[1]	[3]	[3]	[1]	

REFERENCES

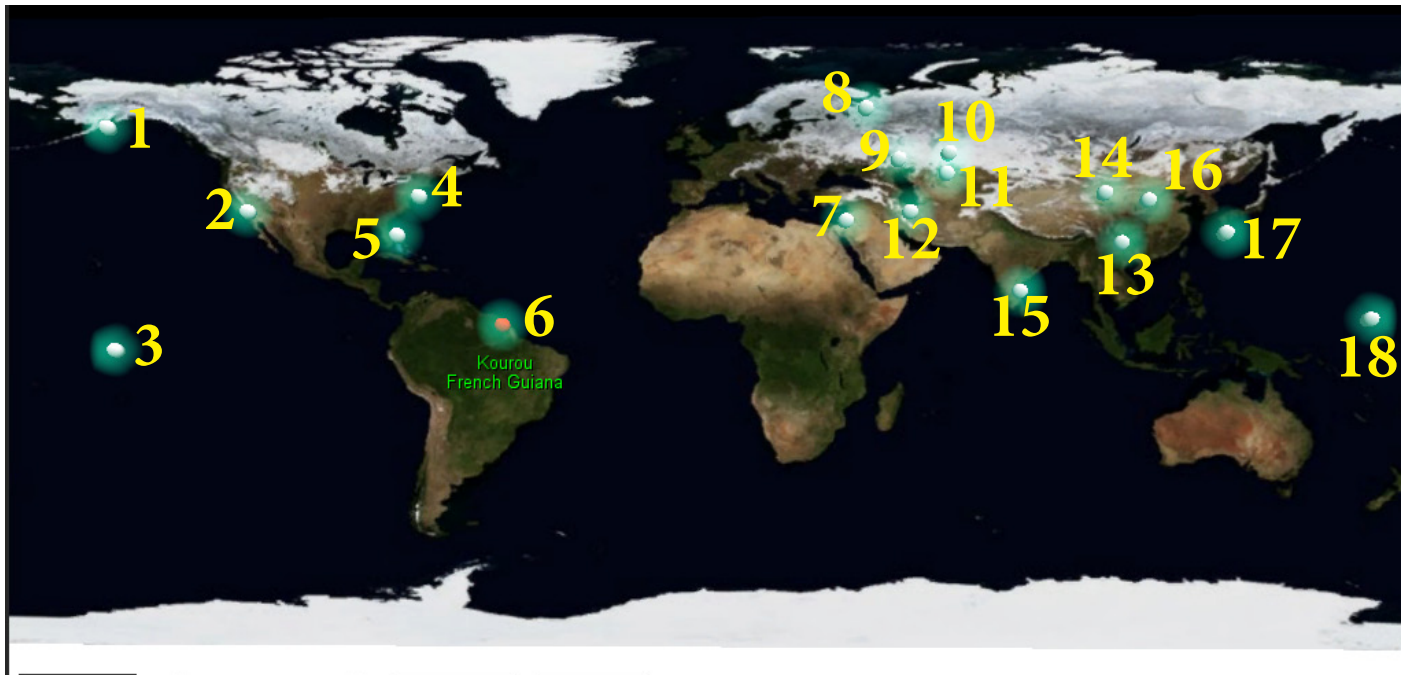
[1] User Manual

[2] International Reference Guide to Space Launch Systems

[3] None/ Insufficient amount of data/ not applicable

	Complete		Incomplete		no work
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LAUNCH SITES



1. Kodiak Launch Complex
2. Vandenberg Air Force Base
3. Odyssey Platform
4. Wallops Flight Facility
5. Cape Canaveral Air Force Station
6. Guiana Space Center
7. Palmachim Air Force Base
8. Plesetsk Cosmodrome
9. Kapustin Yar
10. Dombrovsky Cosmodrome
11. Baikonur Cosmodrome
12. Semnan Space and Missile Center
13. Xichang Satellite Launch Center
14. Jiuquan Satellite Launch Center
15. Satish Dhawan Space Center
16. Taiyuan Satellite Launch Center
17. Tanegashima Space Center
18. Kwajalein Missile Range

1.Kodiak Launch Complex							
Available LVs	Minotaur	Taurus					
2.Vandenberg Air Force Base							
Available LVs	Atlas V	DeltaIV	Falcon	Minotaur	Pegasus	Taurus	
3.Odyssey Platform							
Available LVs	Zenit						
4.Wallops Flight Facility							
Available LVs	Minotaur	Pegasus	Taurus				
5.Cape Canaveral Air Force Station							
Available LVs	Atlas V	DeltaIV	Falcon	Minotaur	Pegasus	Taurus	
6.Guiana Space Center							
Available LVs	Ariane5	Soyuz	Vega				
7. Palmachim Air Force Base							
Available LVs	Shavit						
8. Plesetsk Cosmodrome							
Available LVs	Soyuz	Kosmos	Rocket				
9. Kapustin Yar							
Available LVs	Soyuz	Kosmos					
10. Dombrovsky Cosmodrome							
Available LVs	Dnepr						
11. Baikonur Cosmodrome							
Available LVs	Soyuz	Dnepr	Proton				
12. Semnan Space and Missile Center							
Available LVs	Safir						
13. Xichang Satellite Launch Center							
Available LVs	LongMarch						

Launch Vehicle selection in the site pages is not available on the current version.

	Complete		Incomplete
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14. Jiuquan Satellite Launch Center							
Available LVs	LongMarch						
15. Satish Dhawan Space Center							
Available LVs	PSLV	GSLV					
16. Taiyuan Satellite Launch Center							
Available LVs	LongMarch						
17. Tanegashima Space Center							
Available LVs	H-II						
18. Kwajalein Missile Range							
Available LVs	Falcon	Pegasus					

Launch Vehicle selection in the site pages is not available on the current version.

	Complete		Incomplete
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