

# Liquid Galaxy Stellarium Documentation

## Stellarium

GitHub: <https://github.com/miths/LG-Stellarium>

Documentation:

<https://docs.google.com/document/d/1YZBzDPrXASSS4Ua54d7br8sVbmowQ6OiAKcl18svUBA/edit?usp=sharing>

Project proposal:

[https://docs.google.com/document/d/1jaNFuTGfSAolsqrYugq4qFKBgJpD\\_QzrBPBN04oYg-o/edit?usp=sharing](https://docs.google.com/document/d/1jaNFuTGfSAolsqrYugq4qFKBgJpD_QzrBPBN04oYg-o/edit?usp=sharing)

## Electron-based desktop application

GitHub: <https://github.com/miths/LG-Stellarium-Application>

Documentation:

[https://docs.google.com/document/d/17omHpx8A54TOnR0CVO\\_Yvd4z0hYvk-uFfUZNUYt-g00/edit?usp=sharing](https://docs.google.com/document/d/17omHpx8A54TOnR0CVO_Yvd4z0hYvk-uFfUZNUYt-g00/edit?usp=sharing)

Project proposal:

[https://docs.google.com/document/d/1fbFTx5iSbstbG5M00YajZIFl1ta-tcQn\\_MKX3Nv4hfM/edit?usp=sharing](https://docs.google.com/document/d/1fbFTx5iSbstbG5M00YajZIFl1ta-tcQn_MKX3Nv4hfM/edit?usp=sharing)

## Usage

Download Stellarium from :[GitHub](#) and follow these steps

1. Build from the source code. Refer:  
<https://github.com/Stellarium/stellarium/blob/master/BUILDING.md>
2. Refer this to locate config.ini file in your PC  
[http://stellarium.sourceforge.net/wiki/index.php/Advanced\\_Use#Files\\_and\\_Directories](http://stellarium.sourceforge.net/wiki/index.php/Advanced_Use#Files_and_Directories)
3. Open config.ini file as administrator and enter following lines of code in beginning:  
There should be only 1 master and rest can be slaves. Master should be in the center of grid.
  - a. Master:  
[LGConnect]

```
ip_addr      =  
Offset       = 0  
thisPC       = 1
```

```
[LGConnect]  
ip_addr      =  
offset       = 0  
thisPC       = 1
```

b. Slave:

```
[LGConnect]  
ip_addr      = <Master's IP address>  
Offset       = <unit distance from master>  
thisPC       = 0
```

```
[LGConnect]  
ip_addr      = 192.168.43.12  
offset       = 1  
thisPC       = 0
```

4. Start Stellarium on master and make sure it's up and running properly.
5. Start Stellarium on all slave PCs.

All displays should be synced now.

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## To make changes to code and build application

refer- <https://github.com/Stellarium/stellarium/blob/master/BUILDING.md>

# Implementation

## Function details

```
static void LG_communicate_master(StelCore *core, StelMovementMgr *mmgr,
QSettings* conf, StelMainScriptAPI *msapi);
```

- Location: core->StelLGConnect.cpp
- Responds to requests by slaves with current parameters.
- Only runs on master PC.

```
static void LG_communicate_slave(StelCore *core, StelMovementMgr *mmgr,
QSettings* conf, StelMainScriptAPI *msapi, int unsigned microsecond,
QString ip);
```

- Location: core->StelLGConnect.cpp
- Initiates UDP connection with master.
- Continuously requests the master for current set of parameters.
- If parameters have changed, then call set functions to set new parameters.
- Only runs on slave PC.

```
static size_t split(const std::string &txt, std::vector<std::string> &strs,
char ch)
```

- Location: core->StelLGConnect.hpp
- Split string by '|' when it arrives from master.
- Done on slave PC.

```
UDP_connect(StelCore *_core, StelMovementMgr *_mmgr)
```

- Location: core->StelLGConnect.hpp.
- Constructor function.
- Called when initializing StelMovementMgr.
- Reads parameters from config.ini file and calls either slave or Master related functions.

```
void lookAtJ2000(const Vec3d& pos, const Vec3d& up, QSettings* conf=  
StelApp::getInstance().getSettings());
```

- Location: core-> StelCore.cpp and StelCore.hpp
- Used for rotating view matrix by certain offset

## Edited or added Files

### ***core-> StelLGConnect.hpp and StelLGConnect.cpp (added)***

- Contains LGConnect class to communicate with master and slave.
- Contains functions to establish UDP connection and transfer data continuously.

### ***src-> CMake (edited)***

- Added StelLGConnect.hpp and StelLGConnect.cpp to list of files to build under core.

### ***core-> StelMovementMgr.cpp (edited)***

- It makes new object of LGConnect while initializing.

### ***core->StelCore.cpp (edited)***

- Edited lookAtJ2000() function to incorporate horizontal FOV offset.

## Getter and Setter function for different parameters

### **View Direction**

getViewDirectionJ2000()

setViewDirectionJ2000()

### **FOV**

getCurrentFov()

setCurrentFov()

### **Time**

getPresetSkyTime()

setPresetSkyTime()

### **Time rate**

getTimeRate()

setTimeRate()

### **JDay (not used)**

getMJDay()

setMJDay()

### **Atmosphere flag**

getFlagAtmosphere()

setFlagAtmosphere()

### **Landscape flag**

getFlagLandscape()

setFlagLandscape()

### **Cardinal Points flag**

getFlagCardinalsPoints()

setFlagCardinalsPoints()

### **Constellation art flag**

getFlagArt()  
setFlagArt()

#### **Constellation lines flag**

getFlagLines()  
setFlagLines()

#### **Constellation label flag**

getFlagLabels()  
setFlagLabels()

#### **Location**

getObserverLocation()  
setObserverLocation()

#### **Date**

getDate()  
setDate()

## Plugins

- *Satellite plugin*: <https://sites.google.com/site/stellariumuserguide/plugins#TOC-Satellites>