

# **ATC radar software** for Flight Gear multiplayer

Version 3.02 (november 2011)



# 1 About

This software is designed to simplify air traffic controlling. It is written for Flight Gear Flight Simulator (FGFS) and it's special multiplayer protocol. This software is made as stand alone application independent on FGFS or any it's library. For using this application you don't need have neither FGFS nor SimGear installed, except some data files with navigation and airports data.

Application shows neighbourhood of selected airport as seen by radar. You can select what objects of interest are shown on screen. You can chat with other players via FGFS multiplayer chat and/or talk to them using FGCom software connected to this application.

## 1.1 Supported operating systems

This application is written in Lazarus, because I wanted to know, how powerful Lazarus is. Bad thing is, that it is pacal ;-)

Supported is Linux (tested on Fedora8 and Fedora10 with GTK2 and Fedora 12) and MS Windows (tested on W2K and XP). Theoretically is possible to compile this application for any system supported by Lazarus (especially MAC OS).

# 2 Installation

## 2.1 From binaries

If you have successfully downloaded binary zip file, extract it to any folder you want.

Next step is adding FGFS database files from base package. Required files are: apt.dat, fix.dat, nav.dat. These files must be in the same folder as executable file of this application and they must be decompressed (ungzipped).

## 2.2 From source files

Download source files and project file for Lazarus. Then you can compile it as any other application.

Required Lazarus library/component is „lnet“ for network communication.

# 3 Launching

Run downloaded or compiled file „radarac“. Dialog for selecting airport and other settings will be displayed (see the picture below).

Airport ICAO code	ICAO code of airport which you want control
Callsign	Your multiplayer callsign (default value is ICAO code with „_TW“ appendix)
Server	Internet address of multiplayer server (same as if you are running FGFS in multiplayer mode).
Port	Multiplayer server port (usually „5000“).
Repeat (ms)	Time interval (in miliseconds) for sending mp info to server
Fgcom server port from	Port number for FGCom server socket. Enter any unused port number greater than 1024. (This is not required when you don't want use FGCom for voice communication.)

Fgcom server port to	Address of computer, where the FGCom is running and number of port the FGCom is listening to (usually 16661). Enter „localhost:16661“ if FGCom is listening to port 16661 and is running on the same computer as this application.
Weather info	Informations for downloading weather info from automatic weather services.
Url	Url from which is weather information downloaded
Port	Used port (80 for standard http communication)
Repeat (min)	Time interval (in minutes) for weather information refresh
Metar from airport	ICAO code of airport providing relevant weather information

The image shows a 'Select airport' dialog box with the following fields and values:

- Airport ICAO code: KSFO
- Callsign: KSFO\_TW
- MPChat nickname: KSFO\_TW
- Server: mpserver05.flightgear.org
- Port: 5000
- Repeat (ms): 500
- FGCom server port: from 16660 to localhost:16661
- Weather info:
  - Url: weather.noaa.gov/pub/data/obse
  - Port: 80
  - Repeat (min): 2
- Metar from airport: KSFO

An 'OK' button is located at the bottom right of the dialog.

If there is not tower position record in apt.dat file for selected airport, warning message is displayed. The tower position is set as middle of first defined runway on airport. If the airport is not found in airports database, application is terminated.

### 3.1 Example with FGCom

Running radaratc with FGCom on one computer:

Set FGCom server port from = 16660 (if not used by another application, otherwise set any unused port number)

Set FGCom server port to = localhost:16661

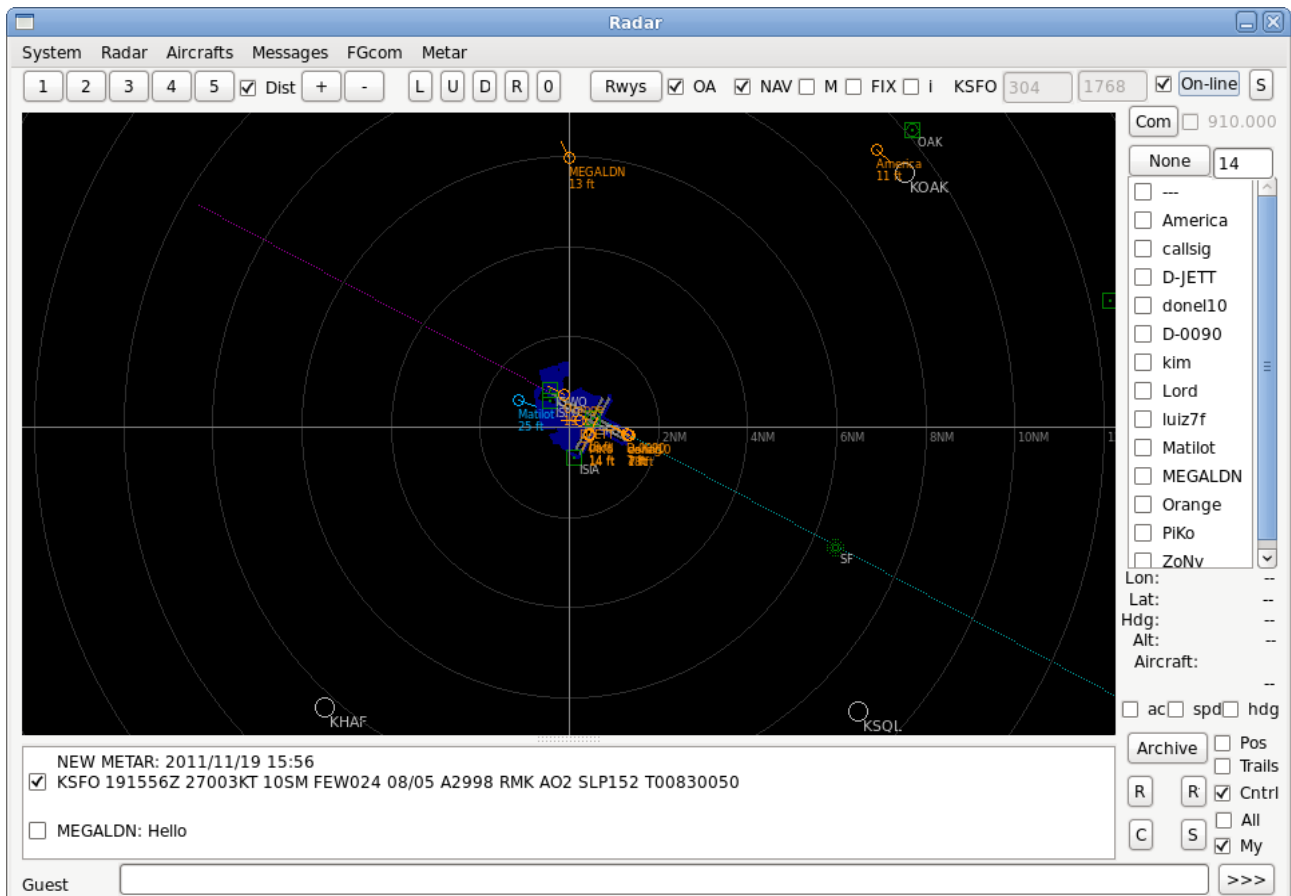
Run FGCom with these parameters:

```
./fgcom --voipserver=fgcom.flightgear.org.uk -slocalhost -p16661
```

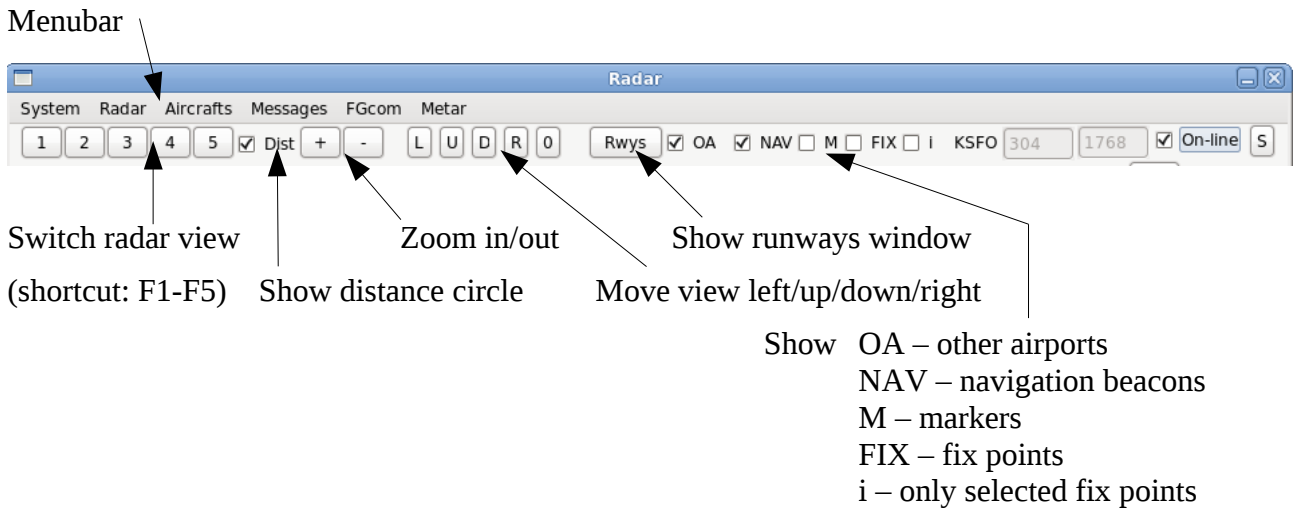
Note: „fgcom.flightgear.org.uk“ is FGCom communication server. This server name can be different.

## 4 Main window

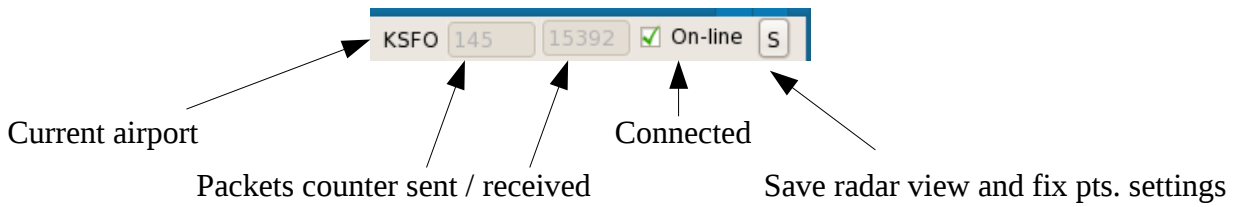
Next picture shows, how the main window looks. See detailed description of each part below.



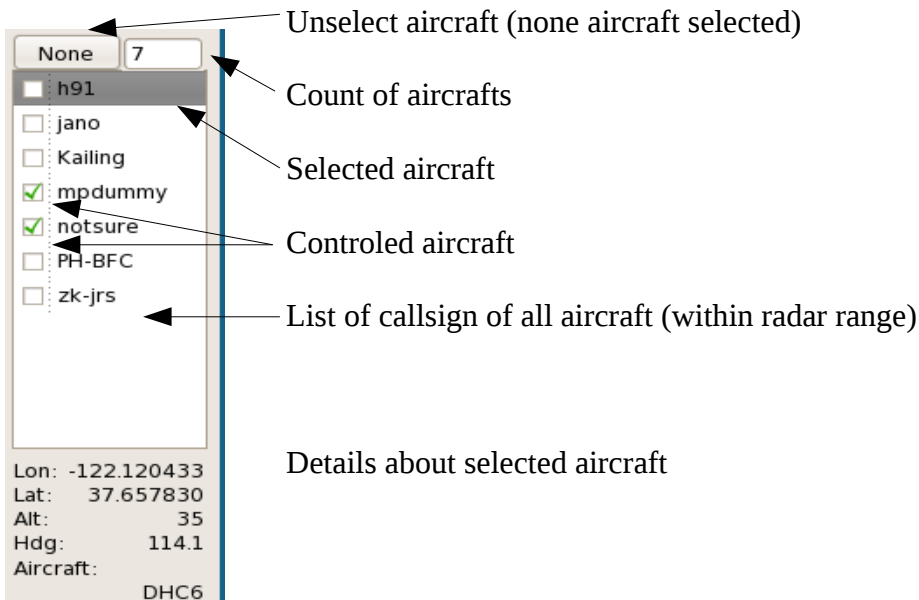
## 4.1 Menu



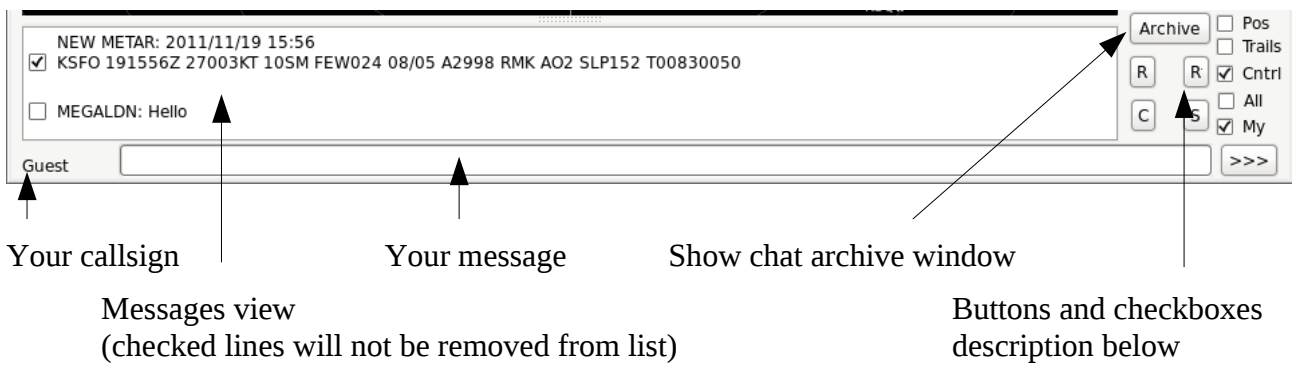
## 4.2 Connection



## 4.3 Pilots list



## 4.4 Chat



Buttons:

R – Repeat last chat message of all aircrafts

Rf – Refresh automatic text messages from file

C – Clear check flag from all messages in messages view (Shortcut: F10)

S – Set check flag to all messages in message view (shortcut: F9)

Pos – Show position cross over selected aircraft (useful when looking where it is)

Trails – Show trails behind aircrafts

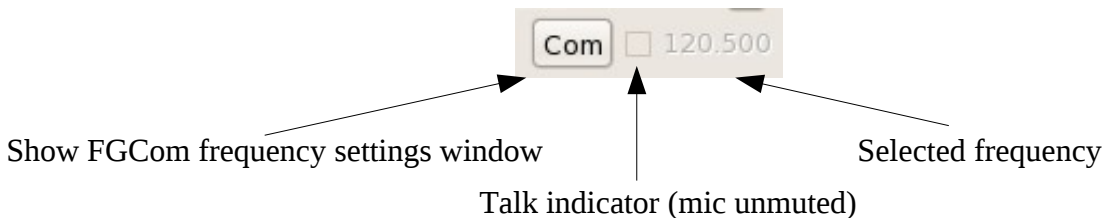
Cntrl – Keep chat messages of controled aircrafts in chat view (check them)

All – Keep chat messages of all aircrafts in chat view (check them)

My – Show my chat messages in chat view

>>> – Send my message (shortcut: Enter)

## 4.5 FGCom



## 5 Functions description

### 5.1 Radar view settings

You can have up to 5 predefined radar views. Each view can have different zoom and different visible items. When you start the application, these views are centered with tower position and have different zoom level.

You can save your current settings by pressing „S“ button in right top corner. Settings are saved into file named according to selected airport (for example KSFO.txt for San Francisco International). This allows you to have predefined radar settings for every airport you want. If you select this airport next time, settings are automatically loaded.

Switching between radar view is made by pressing buttons „1“ - „5“ in top left corner or by pressing shortcut keys F1 – F5.

By pressing buttons „+“ and „-“ you can change zoom for currently selected radar view. By pressing buttons „L“, „R“, „U“, „D“ you can move visible area left/right/up/down.

Check boxes „Dist“ (distance circles), „OA“ (other airports), „NAV“ (navigatin beacons), „FIX“ (fix points) and „i“ (only interesting fix points) are used to select items, which will be displayed in radar view.

### 5.2 Radar view

In this area are displayed aircrafts, other selected items and selected airport diagram.

Aircrafts are displayed as small circle on aircraft position with line showing aircraft's heading. Each aircraft has also it's description – callsign and altitude.

Aircrafts are shown in different colors:

Orange – „normal“ aircraft

Yellow – controled aircraft

Red – selected aircraft

Blue – aircraft with disabled chat messages

Mouse function:

Left button – select aircraft

Right button – put aircraft callsign in message text box

Center button – mark/unmark fix point as interesting fix point

What does „interesting fix point“ means? Every airport has some fix points for it's STAR and SID procedures. You can mark those points and hide all other fix points which are useless for controlling on selected airport.

### 5.3 Pilots list

List of callsigns of aircrafts in radar range (multiplayer range).

By checking box on aircraft line you mark aircraft as controled. By selecting aircraft row you select aircraft (drawn in red color). Double click will copy callsign to your message text box.

On right mouse click is displayed context menu:

Repeat message – repeats last chat message sent by this aircraft

Disable/Enable chat – enables or disables receiving chat messages from this aircraft

## 5.4 Chat

Multiplayer chat messages written by pilots are displayed in messages view. The newest message is on top. Messages are automatically removed after 7 seconds. Marked (checked) messages are never removed. You must uncheck such message first. Depending on „Keep“ and „All“ check boxes, incoming messages can be marked automatically.

You can mark all messages by pressing „S“ button or F9 key, unmark all messages by pressing „C“ button or F10 key. This function is useful when the discussion is very hectic and you need more time to answer all requests.

When you press right mouse button over a message line, the speaker's callsign from the message is copied to your message text box.

For quick cursor move to message text box you can use following shortcuts:

` (back apostrophe) – move cursor to message text box

~ (tilde or shift+back apostrophe) – clear message text and move cursor to message text box

For easier entering long texts you can use fill-in function. In file „atcshortcuts.txt“ (format description is below) you can have predefined texts and short forms. For example „cla“ for „cleared to land“. You write only „cla“, then you press TAB key and „cla“ is replaced with full form. You can have predefined text with „~“ (tilde) character. It is used when you need insert some text into predefined message (for example runway number). Let's have sentence „You are number ~, turn heading ~, report final.“ with short form „num“. You write „num“ and press TAB key. Full form is filled into message text box. Then you press HOME key and cursor is moved to first tilde. You enter required number and press HOME key again. Cursor is moved to second tilde, you enter heading.

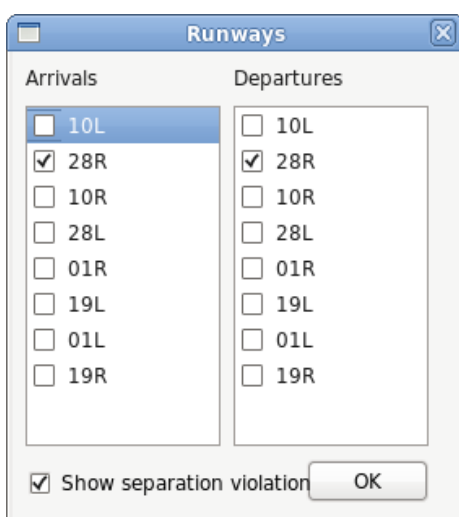
You send chat message by pressing „>>>“ button or by pressing „Enter“ key. Due to FGFS multiplayer protocol limitation you are able to send only one message in about 6 seconds. Within this time is sending of message blocked and text box is red. You can write (prepare) next message, but you can't send it before time limit run out.

Next limitation is message length. Message must be shorter than 127 characters. If you get over this limit, text box is orange. You must shorten your message prior to send.

After pressing „Archive“ button is chat history window displayed. You can copy texts from this window or read whole communication history.

## 5.5 Runways in use

By pressing „Rwys“ button you activate Runways dialog.



In this dialog you can settle runway function. Select runways used for departures and for arrivals. In radar view will be shown elongation of runways for easier navigation departing and arriving aircrafts.

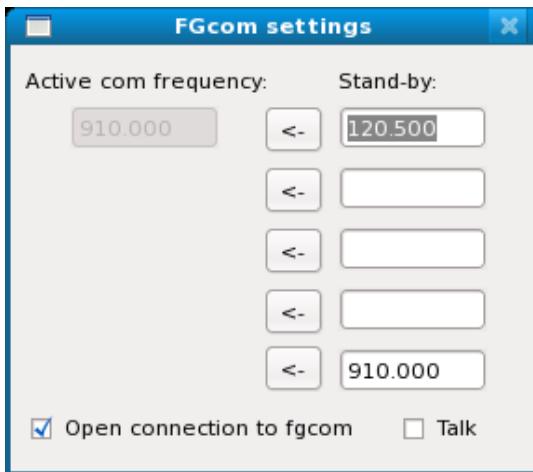
Arrivals are cyan line, departures magenta line.

You can activate aircraft separation check. If separation rules are broken, aircrafts with low separation are shown connected with white line.



## 5.6 FGCom

„Com“ button will show FGcom settings dialog.



Here you can see active (selected) communication frequency and you can enter up to 5 stand-by frequencies. By pressing „<-“ button you select required one.

910.000 is special „echo“ communication channel. You can use it to test your fgcom and audio settings. What you say is with about 1 second delay played back to you. No one else will hear you.

Check „Open connection to fgcom“ box for establishing connection between this application and fgcom.

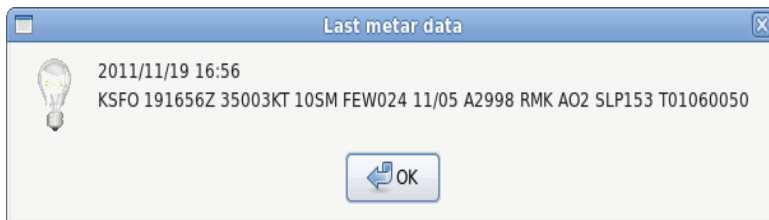
Check „Talk“ check box for unmute your microphone.

When main window is activated, use „+“ key on numeric keypad as „push to talk“ button. Current state and selected frequency are displayed near „Com“ button.

## 5.7 Weather info

In menu „Metar“ you can set on/off automatic weather information downloading, and/or download these information manually. When metar info changes, you are notified by message in chat window.

You can see current metar info as raw data or translated into text:



Metar data can be used for generating metar info and atis information message (under menu Messages->Compose ATIS message).

## 6 Shortcuts key summary

F1	Radar view 1
F2	Radar view 2
F3	Radar view 3
F4	Radar view 4
F5	Radar view 5
F6	About dialog
F9	Mark all chat messages
F10	Unmark all chat messages
~	Move cursor to message text box and clear it's content
`	Move cursor to message text box witout clearing it's content
TAB	Replace last word in message in short form with full form
HOME	Find tilde in message for filling variable text
Enter	Send message
numpad +	Fgcom talk (unmute microphone)

## 7 atcshortcuts file format

File with short and full forms of messages. It is text file named „atcshortcuts.txt“. In this file are pairs in form „short“=“long“.

For example (quotation marks are mandatory):

```
“stb“=“stand by“  
“cla“=“cleared to land“  
“rwy“=“runway“
```

### 7.1 Predefined abbreviations

atism	Insert atis metar info message
atisi	Insert atis information message
metarf	Insert simple metar data message
metarw	Insert simple metar wind information

**Your notes:**

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