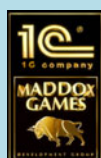# User Guide

IL-2 Sturmovik: 1946
v.4.12

Main Features

- AI changes.
- Widescreen UI (user interface)
- Wider field of vision for widescreen resolutions
- Mach drag
- Scoring system changes
- Open interface for sounds
- New visual effects

New Flyable Planes

- B5N2
- Hawk 75A-3
- Hawk 75A-4
- Ki-45 Kai Ko
- Ki-45 Kai Otsu
- Ki-45 Kai Hei
- Ki-45 Kai Tei
- SB 2M-100A

New AI Planes

- Beaufort I
- Beaufort I late
- Beaufort II
- Do 217 M-1
- Wellington III
- Mohawk IV

New ground units

- German submarine VIIB
- German submarine IXB

Other small Changes & Improvements

- New weapon loadouts for US planes
- P-38J cockpit repainted
- Added Misc settings UI
- New textures for several buildings
- Russian tanks with multiple turrets (T-28 & T-35) can shoot with each gun independently. The same is the case for Russian AT bunker (DOT103)
- New landing gear failures
- Adjustable reticle brightness
- Added new key for opening & closing bomb bay doors
- Added new option in tracks selection UI for disabling icons in track playback
- Added new joystick axis for mixture
- Added Air Force selection to FMB aircraft window
- Added yellow & blue runway lights
- Adjusted the white navigation light so it doesn't get bigger than the red & green when viewed from far away
- Added a new view key that cycles through only stationary cameras
- Changed radio station icons so that they are rendered in minimap & briefing if the army color is neutral or matches player's army
- Changed HUD log so that bomb sight, ToKG & nav. beacons related info is always printed even if NoHudLog=1
- User BMP skins enabled for stationary planes
- Added full screen map with adjustable transparency level
- Added red night light for maps when plane is flown at night and cockpit lights are on

- Changed old padlock difficulty option into two separate padlock options. Padlock air & padlock ground
- Bombsight added to D3A1 Val
- Added conf.ini option NoMissionInfoHud=1 under [game]. This will hide the "Mission completed" and similar messaged from HUD
- Added conf.ini option NoKillInfoHud=1 under [game]. This will hide the "Enemy/friendly xxx destroyed" messages from HUD
- Added conf.ini option SaveTrk=0 under [game]. This will disable automatic in-flight data storing for TRK tracks and reduce memory consumption. TRK cannot be saved after the mission
- Enabled ship padlocking
- Fixed spawn points problem on Midway sea base
- Fixed R-5 stationary plane ski orientation
- Fixed R-5 ground attack bug with certain weapons
- Adjusted IL-2 controls damage & toughness
- Fixed Fulmar's landing gear shock absorber movement
- Fixed IL-4 artificial horizon instrument movement
- Adjusted FM length parameters of Bf 109s F to K to 8.94 meters (F-2 to G-6) and 9.02 meters (G-6 Late to K-4), respectively
- Fixed bug that caused speed bar settings to reset back to default instead of using saved value
- Flight model changes for P-36 series, P-40 series, SB-2 series, B5N, Me-163
- Tweaked burning engine damage model. Single engined planes are not going to explode completely and multi engined planes like P-38 are no longer immune to engine fires
- Fixed Ki-43 I & II smoothing bug in external 3D model
- Fixed Ki-43 II wing tip hook position
- Added radiator animation to He-111 series
- Fixed bug in stationary plane spawning & DF mission that could spawn player to wrong position
- Fixed I-16 Zveno texture bug
- Fixed M2A1 105mm howitzer wrong pivot point
- Plus other small fixes

AI changes

- **Improved land avoidance**

  AI ability to avoid land ahead improved significantly, up to the point where fighting inside the canyons is possible. You can quickly check the new behavior in the provided demo mission (Missions/412_Demo_Missions/MountainFight.mis).

- **AI detects when AAA is shooting at it**

  When AAA is shooting at the AI controlled planes that's detected by AI and in some situations AI will change its behavior. In case of flying from Waypoint to Waypoint they will make small changes in course.
  During ground attacks AI will take shots from longer distance and try to deploy all of the rockets as fast as possible to minimize the time on defended targets. They will not go to the climb right after the attack either, they will first extend in low level flight first and reposition for a new attack when they gain some separation from the target.

- **Shooting model changes**

  AI shooting ability changed to make it more human-like.

- **AI taxiing waypoints for take off**

  Mission builder can insert taxiing waypoints for AI planes so that AI planes will taxi from initial spawn point to the take off point. This feature works best with the stationary plane spawn point (see 4.11 patch guide). View the provided demo mission to see an example how the taxiing is used (Missions/412_Demo_Missions/AITaxiing.mis).

Taxiing AI planes will present a new problem for mission building & playing. Player's aircraft might spawn inside hangar for example and player might not know which runway he should use for take off. There is a possibility that AI will taxi to a certain runway and player tries to take off using the same runway as AI planes but opposite direction. Obviously not a good thing if planes meet at the middle. By pressing a new control key "Toggle Taxiing Guide Line" player can see the taxiing path that the mission builder has created for player's flight.

Widescreen UI

User interface (UI) is tweaked so that wide screen resolutions are supported. All available resolution supported by your system can be selected from Video Modes Setup dialog. UI is also optimized for "narrow screen" resolutions (wide screen monitor rotated 90 deg).

Widescreen FoV changes

Widescreen FoV (Field of Vision) is implemented so that old FoV controls are still used. We just didn't want to add several new control keys for wider FoVs. When wide screen FoV feature is enabled, the wider FoV is automatically calculated based on screen resolution aspect ratio. This puts all online players on same line and nobody can use extremely wide FoV on normal monitor that would normally be used on three monitor setup. This would give unrealistically wide "fish-eye" view.

Notice that the FoV is also adjustable while looking through the bombsights.

Wide screen FoV is enabled by adding conf.ini option WideScreenFoV=1 under [window] segment or by turning the switch in Video Modes Setup dialog.

Bomb bay doors

Planes that have bomb bay doors that require manual opening must be opened before bombs can be released. Some planes have small spring loaded doors that cannot be opened manually. These are opened by the weight of the bombs as they are dropped.

Note: You must map a new key to "Open/Close Bomb Bay Doors" control in order to use bomb bays.

Landing gear damages

Landing gear damage has been improved so that now there are several new gear damage

possibilities. Gears can get stuck or go down but fail to lock properly, gear actuator might be damaged so that gear needs to be lowered manually, brakes can be disabled, gear struts can be weakened so that they break more easily when landing, etc. Landing gears are also divided into their own individual entities instead of moving as one single entity. This means that landing gear lights in cockpit now shows correct state for individual gears instead of going red/green all at the same time. So when landing make sure to check lights that you have three greens. Note that if gear gets stuck or fails to lock down properly, a sharp positive G maneuver might fix the problem.

Mach drag

Air resistance rises dramatically when a velocity of an object approaches speed of sound. This was not modeled in previous versions of game, now every plane has own set of coefficients which define high mach behaviour.

Generally speaking you can expect drag increase around 0.7M in high speed straight dive in average mid to late war plane, rising slowly at first, but still doubling total drag of aircraft within 0.1M. This threshold, however, is lowered noticeably when a lot of lift is generated by wings – drag may rise even below 0.5M when pulling a lot of Gs in thin air at high altitude.

Only drag is modeled, other effect like pitching moment change or lower maximum lift are not implemented.

Score system changes

Score registering is changed so that aerial kill is awarded based on inflicted damage instead of giving the kill to pilot who was the last one to shoot the target. Kill can be shared between two pilots if another pilot inflicted enough damage to the target aircraft. In this case both pilots are awarded half a point. Shared kills can be enabled or disabled from difficulty menu. Difficulty menu also contains switch to enable/disable historical shared kills. For example when enabled, Luftwaffe pilots do not have shared kills while USAF pilots do have.

Bombing scoring is changed so that if player commands "bombs away" for AI bombers (4.11 patch feature), player will get score from all the targets that AI bombers destroy.

In addition there are new kill markings for different air forces. If AF didn't use any special type of kill markings, a simple white bar is used instead.

Open interface for sounds

Sound interface is opened so that player can make the game load custom sounds samples that are used instead of the built in sound samples. For online games, server host can choose to disable this feature which forces all players to load stock sounds.

Note: Spatial sound volume maximum value is limited internally so nobody can create "sonar cheat" online by using very large spatial volume.

Putting following entry to conf.ini under [game] block will show debug messages in console about the samples & presets that the game is trying to load.

[game]
DebugSounds=1

To enable custom sounds, two new folders have to be created in the games main directory (where the il2fb.exe is located):

.../my_presets
.../my_samples

Presets

Presets (*.prs file) have to be placed in the folder called "my_presets".
Aircraft engine presets have a special logic for searching presets. First game tries to load preset with the engine sub-model name. If this is not found, game will try to load a preset with engine family name. And if this it not found either, game will try to load a default preset for that engine.

For example if we start the game with DebugSounds=1 and start QMB mission with Bf-109G-2, we can see from the console that the engine preset search order is as follows:

1. my_presets/sounds/motor.DB605A.prs
2. my_presets/sounds/motor.DB-600_Series.prs
3. my_presets/sounds/motor.db605.prs

Finally if non of these presets are found from my_presets folder, game will use the stock preset that it always found.

Samples

Samples (*.wav files) have to be placed in the folder called "my_samples".

Misc Settings UI

This new UI contains many old settings that previously were configurable only by editing conf.ini file manually. Also it includes many new settings. Misc Settings menu can be accessed also while flying, so changing the settings "on the fly" is convenient.

General

- *Play Radio Chatter*
  When this option is enabled, AI planes talk on radio.

- *Show Paratroopers in External Views*
  When enabled, external camera views include also bailed out paratroopers.

- *Enable Morse Chat Messages*
  This switch is related to undocumented "easter egg" feature in 4.10 patch. By typing a chat message online so that the message starts with "Morse:" will cause the message to be sent as Morse code beeps instead of text. This switch can be used to disable this feature in case some players decide to start chatting in Morse and you don't want to hear the annoying beeping noises.

- *Show Small Waypoint Labels*
  When enabled, the map shows waypoint labels with small font instead of large.

- *Enable TRK recording*
  When enabled, data for TRK tracks is saved normally. When disabled, data is not saved and player doesn't have option to save TRK after the mission. All the TRK data is kept in memory during mission so disabling this option will save some memory specially on long missions. This option doesn't affect NTRK recording.

- *Screenshot Type*
  This rotary switch selects the image format of saved screenshots. JPEG, TGA or both.

- *Fullscreen Map Transparency*
  This slider sets the transparency level of the full screen map. In order to use the new full screen map, you need to assign a new key to this in controls menu.

HUD

- *Show Subtitles*
  When enabled, all the audible radio chatter will have also localized subtitles at the top side of the screen.

- *Show HUD Log*
  When enabled, all logged events that player makes such as throttle, mixture, prop pitch, gear, etc. manipulations are shown at right side of the screen.

- *Show Mission Info HUD*
  When enabled, mission related messages like "Mission completed" are shown at the center of the screen.

- *Show Kill Info HUD*
  When enabled, kill related messages like "Enemy/friendly xxx destroyed" are shown at the right side of the screen.

- *Show Morse as Text*
  When enabled, all Morse code beeps are also shown as text on screen. Server host can disable this online.

- *Show Track Recording indicator*
  When enabled, a small track recording indicator is shown at right bottom side of the screen when recording is enabled. This is useful for players that like to record NTRKs using the quick save key.

Online Stats

Dog fight host can use these options to manipulate what fields are shown in the online statistics table (shown with key 'S' by default).

- *Disable Statistics*
  When enabled, all online statistics are disabled (not visible)

- *Show Pilot Number*
  When enabled, online stats shows pilot's number.

- *Show Pilot Name*
  When enabled, online stats shows pilot's name.

- *Show Pilot Score*
  When enabled, online stats shows pilot's score.

- *Show Pilot Army*
  When enabled, online stats shows pilot's army.

- *Show Aircraft Designation*
  When enabled, online stats shows pilot's aircraft designation.

- *Show Aircraft Type*
  When enabled, online stats shows pilot's aircraft type.

- *Show Team Score*
  When enabled, online stats shows team score. This is combined score of all pilots in the team. It includes all scores even from pilots that have already quit playing the mission.

- *Cumulative Team Score*
  When enabled, the team score is not zeroed between missions.

Server

- *Allow Custom Sounds Online*
  When enabled, online clients are allowed to use any custom sounds. When disabled, stock sounds are used online.

- *Allow Morse as Text Online*
  When enabled, online clients are allowed to use Morse as text feature online.

6DoF

- *Head Movement Sensitivity sliders*
  These sliders control the 6DoF head movement sensitivity. Player should adjust these mainly when using mouse, keyboard or joystick axis to control head 6DoF head movement. When using TrackIR or similar device, it is recommended to make main adjustment from the external application and fine tune sensitivity with these sliders.

User Interface

- *User Interface Color*
  This rotary switch selects the user interface color.

- *User Interface Detail*
  This rotary switch selects the user interface detail.

- *Background Image*
  This rotary switch selects the main user interface background image. Option "rnd" will randomly select the background when game is started.

Cockpit guide

B5N2

1. Type 97 torpedo sight
2. Manifold pressure
3. Airspeed indicator
4. Turn and bank indicator
5. Climb rate indicator
6. Radio direction finder
7. Oil pressure gauge
8. Tachiometer
9. Altimeter
10. Compass
11. Gyro Compass
12. Artificial horizon
13. Inclinometer
14. Oil temperature gauge
15. Cylinder head temperature gauge

16. Exhaust gaz analyzer
17. Fuel quantity gauge (inboard tanks)
18. Fuel quantity gauge (outboard tanks)
19. Landing gear position indicator
20. Flaps position indicator
21. Vacuum pressure gauge
22. Hydraulic pressure gauge
23. hydraulic pressure gauge
24. Volt-Ampermeter

25. Airspeed indicator
26. Exterior air temperature
27. Compass
28. Altimeter
29. Clock

Hawk 75

1. Ammunition counter for left nose gun
2. Ammunition counter for right nose gun
3. Airspeed indicator
4. Turn and bank indicator
5. Climbrate indicator
6. Fuel warning lamp
7. Altimeter
8. Gyro Compass
9. Carburator temperature gauge
10. Suction gauge
11. Rear fuel tank indicator
12. Gear and flaps indicator
13. Oil temperature, oil pressure and fuel pressure indicator
14. Compass
15. Manifold pressure gauge
16. Clock
17. Tachometer (RPM)
18. Cylinder head temperature indicator
19. Main fuel tank indicator

Ki-45

1. Engines synchronizer
2. Air speed indicator
3. Turn and bank indicator
4. Climb rate indicator
5. Fuel pressure gauge (dual)
6. Manifold pressure (left engine)
7. Manifold pressure (right engine)
8. Directional compass
9. Altimeter
10. Oil pressure gauge (dual)
11. Tachiometer (dual)
12. Artificial horizon

13. Clock
14. Oil temperature (left engine)
15. Oil temperature (right engine)
16. Landing gear position indicator
17. Cylinder head temperature
18. Exhaust gaz analyser (dual)
19. Fuel quantity gauge

20. airspeed indicator
21. clock
22. altimeter

SB 2M-100A

Pilot
1. Airspeed indicator
2. Turn and bank indicator
3. Variometer
4. The device connection with the navigator
5. Altimeter
6. Tachometers (a - left engine b - right engine)
7. Boost   (a - left engine b - right engine)
8. Gear indicator
9. Fuel pressure gauge (a - left engine b - right engine)
10. Water temperature gauge   (a - left engine b - right engine)
11. Indicators of fuel tanks (a - 1, b - 2, c - 3, d - 4)
12. Oil temperature gauge   (a - left engine b - right engine)
13. Oil pressure gauge (a - left engine b - right engine)
14. Electric board
15. Giropolukompas
16. Roll and slip indicator
17. ACHO clock
18. Voltmeter
19. Manometer
20. Magneto (a - left engine b - right engine)
21. Main power switch
22. Longitudinal inclinometer
23. Artificial horizon AG-2
24. Rudder trim
25. Lever gear actuation
26. Leverage radiators   (a - left engine b - right engine)
27. Aileron trim
28. Elevator trimmer
29. Throttle levers radiators   (a - left engine b - right engine)
30. Altitude mixture control levers   (a - left engine b - right engine)
31. Flaps lever
32. Fire kran levers   (a - left engine b - right engine)
33. Lever pitch
34. Compass K-5
35. Air regulator kpa-1

Navigator
36. Airspeed indicator
37. Altimeter
38. Fresh air temperature gauge
39. Air regulator kpa-3
40. ACHKHO clock
41. Bomb bay door lever
42. Compass AN-4

Rear gunner
43. Altimeter
44. ACHO clock

Note: To open rear gunners canopy and raise the gun from its secured position, you'll just need to move the gun upward and hold it for 1 second. The same way, but holding the gun down in its secured position, will close the canopy.
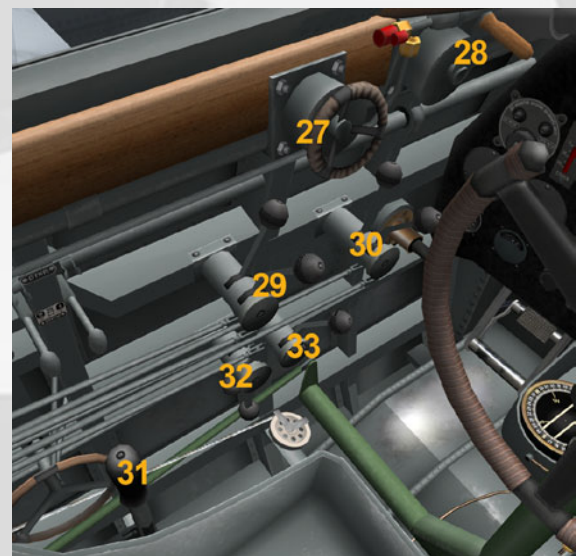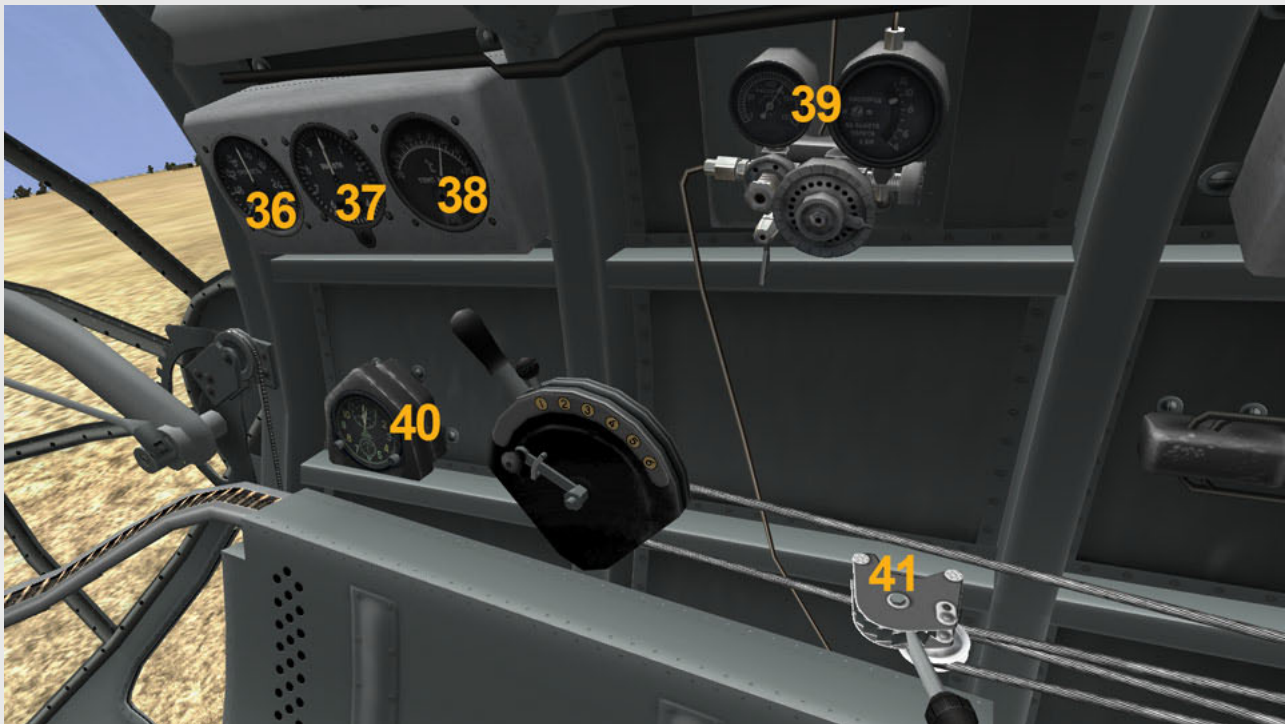
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