Xplorer 6L

B-737 NG FTD/Full-Motion Flight Simulator

MOTION FOR SIMULATORS

COCKPITSONIC
THE SUPPLIER FOR SIMULATORS AND PARTS

A Partnership that defines a new class of Simulators.

From
High-End Enthusiast Flight Experience
to
Certified Professional Flight Training
FNPT II | AATD | FTD

Why a Motion System makes a difference

Motion matters. Regardless, if you offer a true Flight Experience to enthusiast, or if you offer professional Flight Training to Pilots in their initial training phase or to experienced pilots preparing for difficult or abnormal flight conditions and operations.

That's why *Xplorer 6L* is a unique Full-Flight Simulator that utilizes a most-modern 6 Degree-of-Freedom (DoF) Motion Platform from Motion For Simulators (MFS) as a consequent enabler and characteristics.

With *Xplorer 6L*, pilots learn their primary flight skills in a device that provides accurate motion feedback transition to the real aircraft in less time because they know what it "feels like" to fly. They are less anxious in the cockpit, have better touch on the controls, and know why you need right rudder in the climb.

Operating a Full-Motion Flight Simulator that is affordable, durable and that can be operated at lowest life-cycle cost will be of high interest to many flight schools around the globe. It will increase the level of achievable training quality and creates a significant competitive edge for a flight school.

Opening the Motion Experience for everyone

Xplorer 6L comes equipped with MFS' high-quality 6 DoF electrical motion platform. It's the top of the line product from MFS offering full control over pitch, roll, heave, sway, surge and yaw.

Xplorer 6L is powered by MFS's most-realistic customizable motion cueing algorithms. Those create a dynamic behavior simulation of all relevant aspects of the aircrafts flight envelope, including turbulences, take off force representation, effect of braking push, landing touchdown, but also vibration on the ground and washouts for movements like pitch, roll and sway.

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Motion for Simulators and Cockpitsonic

A Partnership, that defines a new class of Simulators.

In 2017, Belgian Motion Platform Specialist Motion for Simulators SPRL and German Flight Simulator manufacturer Cockpitsonic GmbH joined forces and initiated an intensive exchange about the future of high-quality, yet affordable Flight Simulators utilizing a Motion Platform as a unique and value-adding feature. As a result, the first version of Xplorer 6L B-737 NG was fully integrated in spring 2018, and successfully handed over into daily operation at a customer facility in Germany.

The simulator brings the proven Cockpitsonic B-737 NG FNPT II MCC training solution 'on board' of an electrical 6-DoF Full-Motion Platform, Dome Enclosure and Visual System provided by Motion For Simulators.

As an impressive and convincing result, Xplorer 6L B-737 NG proved to be the best-value-for-money flight simulator package available on the global market.

The partners vision is to provide Xplorer 6L B-737 NG as a truly innovative and disruptive cost-efficient professional training system, which can become configured and certified as an Full-Motion EASA FNPT II or Full-Motion FAA FTD Level 5, but will also attract the Enthusiast Flight Experience businesses.

About Cockpitsonic

Cockpitsonic was founded in the year 2000 and is dedicated to professional, but affordable high-quality Flight Simulation Solutions.

The aim of Cockpitsonic was and still is to make flight simulation available to a wide range of customers and demands. The quality of our products and the superior price-performance-ratio attracts the airline and training industry to use our products for professional training purposes. Nevertheless, Cockpitsonics' product range also offers solutions dedicated to the enthusiasts: affordable but sophisticated Flight Simulations for non-professional applications.

With an impressive experience and competence gained in almost 20 years of operation and with a team of 30 highly skilled and motivated engineers and technicians, Cockpitsonic is proud of the highest number of installed devices worldwide as well as the high customer satisfaction perceived.

All our Customers benefit from our complete In-House design and production capabilities and from our customer-centered services offerings.

About Motion for Simulators

Motion For Simulators (MFS) was founded in 1998 in partnership with Automotion. The team is composed of 26 talented individuals with complementary education and skills, including electro-mechatronic engineers and software engineers.

The mission and aim of Motion For Simulators is to develop, produce and support best-in-class and high-quality Motion Systems, Visual Solutions and individual solutions to customers in the automotive and flight simulation industry. Offering the best-value-for-money ratio and allowing motion systems to enter into applications and sector were motion would have been too expensive in past is a key motivation at Motion for Simulators.

Motion for Simulators provides a wide portfolio of motion products with various degree-of-freedom, payloads and sizes as well as visual solutions and fully enclosed cabins. Those products can be tailored into any customer-specific and individual solution. The experienced team of engineers and technicians listens, understands and designs exactly to the use-case and avoids expensive gold-plated solutions.

Motion for Simulators provides a modern and powerful software-package which each Motion System solution. An Ethernet connection to the motion controller gives you plug and play access to the MFS motion controller which communicates via CAN BUS with the servo drives. The high bandwidth of this standard communication channel ensures maximum performance of the motion platform servo drives giving you quick response time to get the best out of your system.

This allows simulating for a wide range of applications, from slow and soft movement to rough and very hard vibration.

In summary

The overall customer benefits can be described as

- A best-in-class 6-DoF Full-Flight-Simulator according to EASA FNPT II MCC
- Trainer friendly simulator, able to provide B-737 NG specific trainings
- Easy to operate solution
- Low maintenance costs
- Upgradable system
- Fast QTG Run
- In addition to the standard set of documentation, ensuring operational syllabus
- Ensuring educational syllabus for ATOs, suitable for EASA authorization

1. Introduction to Xplorer 6L

1.1. Xplorer 6L Device Applications and Certifications

The Xplorer 6L Full-Motion Flight Simulator offered for the B-737 NG is a scalable and modular Training System covering a wide range of applications and configurations.

With a primary focus on enabling high-quality and professional training that comes at the best-in-class value-for-money ratio, Xplorer 6L also sets a new standard for high-quality Flight Enthusiast Simulator experience.

The Xplorer 6L Full-Motion Training System can be configured to comply with the following standards and qualification levels:

Federal Aviation Administration (FAA)-Certification

The Xplorer 6L B-737 NG Full-Motion Flight Simulator can be ordered and delivered for training certifiable by the FAA as an Advanced Aviation Training Device (AATD) or as a Flight Training Device (FTD) Level 4, 5 and 6.

European Aviation Safety Agency (EASA)-Certification

The Xplorer 6L B-737 NG Full-Motion Flight Simulator can also be ordered and delivered for training as a device that can be certified as an EASA Basic Instrument Training Device (BITD) and EASA Flight Navigation Procedure Trainer Level 2 MCC (FNPT II MCC).

Training applications covered

- Jet Transition Training
- Jet Orientation Training
- Multi Crew Coordination Training (MCC)
- Procedural and SOPs training
- Crew Resource Management Training (CRM)
- Type Rating Preparation
- Systems Familiarization
- Instrument training including glass cockpit familiarization
- Emergency Response Procedures Training
- Threat and Error Management

Training Credits will be granted for up to 50% of initial and transition type rating and or MPL, MCC, jet orientation course and IFR.

1.2. Xplorer 6L Key Devices Features

The Xplorer 6L B-737 NG Full-Motion Flight Simulator is a full-replica flight-deck of the B-737 NG aircraft, capable of representing all aspects of the aircrafts operational envelope.

The B-737 flight deck sits on a powerful MFS 6 Degree-of-Freedom electrical motion platform, surrounded by a Full-Dome-Enclosure and enhanced by a powerful 3-channel Visual System that provides high-fidelity out-the-window view and scenery with a 200 x 40 field-of-view.

Optionally, Xplorer 6L can be provided with a Collimated Visual System and FAA Level D compliant Image Generators.

The type specific nature, combined with the accuracy of the hardware and software, allows for specific jet aircraft training to be conducted in the device using in most cases the factory Flight Crew Operating Manual for flight and ground training as well in most cases the actual checklists and Quick Reference Handbooks.

The On-Board Instructor Operator Station is ergonomically laid-out to ensure accessibility to the cockpit components and unobstructed observation of flight deck activity. The Instructor Operator Station software allows for an intuitive manipulation of aircraft systems and failures with customizable event triggers. The instructor can trigger an event immediately, after a predetermined interval of time, airspeed, altitude, or combination of the three.

Ground operations training can be executed in great detail as a result of highly accurate airport modeling. The airport scenery depicted very closely matches the actual airport being replicated, so close in fact, that actual airport diagrams can easily be used in training. Pilots

will find runways, taxiways, buildings, jet ways, de-ice pads, hangers, etc. correctly placed. Runway and taxiway signs as well as airport markings are also detailed and accurate.

With accurate airport modeling, dynamic jet ways, fuel trucks, support vehicles, pushback capability, aircraft traffic, and accurate airport signage and markings, rehearsal and familiarization training of a specific airport is possible, greatly increasing the transfer of learning to the real world.

With systems simulation and integration, all phases of ground and flight operations, including all normal, abnormal, and emergency scenarios can be trained in detail.

A highly detailed and accurate global database greatly enhances the mission capability of the device. The database includes a highly detailed scenery and terrain database that reflects the actual landscape, structures, and hazards of the real world. These features are ideal for familiarization with new airports and flight plans; departure, arrival, and approach procedures; and seasonal characteristics common to their operational settings.

2. Technical Description of Xplorer 6L

2.1. Xplorer 6L General Description

The Xplorer 6L B-737 NG Full-Motion Flight Simulator is a full-replica flight-deck of the B-737 NG aircraft, capable of representing all aspects of the operational envelope. The flight deck sits on a powerful MFS 6 Degree-of-Freedom electrical motion platform, surrounded by a Full-Dome-Enclosure and enhanced by a powerful 3-channel Visual System that provides high-fidelity out-the-window view and scenery with a 200 x 40 field-of-view.

All Flight Deck controls, panels, knobs, switches and other components found in the actual aircraft Flight Deck are replicated in size, look, feel and functionality in the Training Devices. In addition to aircraft hardware, the aircraft systems and avionics are simulated in great detail to ensure the ability to represent and train all phases of flight under normal, abnormal, and emergency conditions. Behind the Training Device' Flight Deck is an Instructor Operator Station with sufficient room for the instructor and an observer.

Inside the dome and in front of the replica flight deck is a curved projection screen that the synthetic world is projected on by three high definition projectors that are mounted above the device. The result is a highly accurate Flight Deck and large scale visual system that provides immersive training environment that puts pilots in an incredibly realistic simulated environment where they can learn jet flying skills that are nearly impossible to train using aircrafts. Optionally, a Collimated Display at FAA Level D Quality Level can be provided with Xplorer 6L.

2.2. Xplorer 6L B-737 NG Flight Deck Specification

The Xplorer 6L B-737 NG Full-Motion Flight Simulator contains the following:

- Replica B-737 panels, highly accurate in size and text placement with accurate switches and knobs
- Replica B-737 interior trim pieces, highly accurate in size and shape to give the cockpit a realistic look
- Replica B-737 dual-linked self-centering rudder pedals with toe brakes
- Replica B-737 thrust levers motorized complete with reverse levers, trim wheels, speed brake and TOGA switches
- Replica B-737 Flap levers complete with gates
- Replica B-737 tiller (CPT and FO), parking brake and alternate gear extension handle
- Replica B-737 Captain and Copilot seats capable of forward and backward mechanical adjustment
- Intercom system for communications between pilots, observer and instructor
- Headset with intercom

2.3. Xplorer 6L B-737 NG Simulation Specification

The main Simulation Features for the Xplorer 6L B-737 NG Full-Motion Flight Simulator are:

- Realistic B-737 dual Multi-Function Displays with multiple display formats, capable of displaying Flight plan route, navigation aids, range to altitude and airports
- Realistic B-737 dual Primary Flight Displays with pilot controlled V-speeds, MDA/ DH, and barometric pressure
- Realistic B-737 ECAM system to include primary and status pages with appropriate information displayed to include messages, engine gauges, flap & gear indications, engine vibration gauges, etc., as well as detailed system synoptic pages to include AC/DC electrical, environmental, hydraulic, anti-ice, doors, and Flight controls
- Realistic B-737 Dual Radio Tuning Units capable of tuning navigation and communication frequencies, ADF frequencies, and setting transponder codes
- Realistic B-737 FMS/MCDU with world wide database that allows pilots to: Create Flight plans incorporating DPs, STARS, IAPs, and jet airways. Manipulate Flight plans by creating new waypoints, deleting waypoints, extending intercept lines from waypoints, creating place bearing distance waypoints, creating waypoints +/- nm from existing waypoints. Input performance data such as temperatures for normal and takeoffs and input weights for cargo, fuel, and passengers
- Tune navigation, communication, ADF frequencies, and set transponder codes. Configure MFD display data
- Realistic B-737 Auto Flight Control System with lateral modes to track headings or navigation signals and vertical modes to track GS signals, climb/descend in IAS or VS modes to capture preselected altitudes incorporating a Flight director for both pilot and copilot
- Navigation Database with global updated navigation data including runways, SIDS, STARS and approaches
- Realistic B-737 Systems program to allow pilots to control APU and engine starts/shutdowns and control electrical, hydraulic, environmental, anti-ice and fuel systems with proper response to pilot inputs and tests
- Realistic B-737 Audio Integration System with warning and caution chimes, aural warnings, fire bells, over-speed cues, and tests

2.4. Xplorer 6L B-737 NG 6-DoF Motion Platform

The Xplorer 6L Full-Motion Flight Simulator is based on a powerful Motion For Simulators (MFS) 6-DoF electrical Motion System. This platform is ideally suited for the high demands of Full-Flight-Simulator applications and offers low procurement costs combined with lowest life-cycle and maintenance cost.

The key features of the Xplorer 6L Motion Platform are:

- CE Compliant
- Solid industrial quality
- Reliable components: Schneider electric servo motors, drives and motion controller
- Engineered by a team of highly skilled and experimented mechatronic engineers
- Operation 24/7 with no overheating issue
- Designed to run in a failsafe environment
- Silent operation
- Long life span
- Compact dimensions with minimum base height
- Customization service available (of the platform and upper platform Hardware selection to fit your exact needs (system tailored for your specific requirements at the right price)
- Micro vibrations elimination system
- Ultra-high standard update rate 4msec (250Hz) - & Up to 1msec if required (optional)
- Software communicates with the motor drives directly (no external sensors - no external encoders - no extra motion controller) - The lesser components in the chain, the more accurate the communication & the faster the response time.
- High-end industrial AC electrical servo technology
    - Servo control systems are best suited to high speed, high torque applications that involve dynamic load changes (Very high dynamics))
    - Servos are excellent in applications requiring speeds greater than 2,000 RPM and for high torque at high speeds or requiring high dynamic response
    - Overall better quality
    - Ultra-smooth operation
    - High resolution motor encoder (over 2 million positions per motor rotation)
    - Excellent position control and repeatability
    - Reactiveness
    - Very compact compared to asynchron solutions and hydraulic machines
    - Very balanced relation between nominal and peak power
    - Drivers may be installed next to each other.
    - Sincos absolute encoder in the motor >automatic motor recognition
    - Drive equipped with SIM card slot for eventual parameter upload / download
    - All connections on puller plugs
    - Absolute encoder > no homing required
    - Very extended tuning possible
    - Silent
    - do not need extra cooling and have a remarkable torque

- Helical Bevel gearbox
  - Cost friendly
  - High efficiency
  - Low backlash
  - Low maintenance
  - Sturdy
  - High power density
  - High efficiency
  - Overall space-saving installation thanks to the right angle output shaft
- Low power operation requirements - minimal operation cost due to low power requirements
- CAN Technology for communication between motion controller, drives and servo motors
- Fast Ethernet communication between controlling PC and motion controller
- No installation, driver, USB needed (Ethernet socket enough)
- Minimal maintenance / highly reduced cost compared to hydraulic machines and other electrical motors (visual checks, torque check…)
- Accurate motion control thanks to the geometry driven software
- Accurate Motion Base Software: The true inverse kinematics model is encoded in the motion control software to generate the right servo trajectories related to the desired platform motions. It therefore compensates any non-linearity included in the mechanical architecture.
- Platforms can be run in serial from one machine
- No hidden extra costs (maintenance, repair, operation)
- Reliable company, over 20 years in the business with world renown customers
- Easy repair/replacement
- Emergency stop button and safety features
- High quality powder coating paint

2.5. Xplorer 6L B-737 NG Dome Enclosure

The Xplorer 6L Full-Motion Flight Simulator comes with a full-dome-enclosure.

With a moving payload whose weight is directly supported by the actuators, the same design guidelines as the one used in aeronautics apply: light but performant.

It is therefore not surprising that similar technologies are involved. The enclosure is based on a sturdy aluminum structure that keeps it light and rigid, yet cost-effective. A mix of extruded metal sections, laser cut and machined parts combined using welded, riveted and bolted assemblies takes the best from each technique to ensure functionality, ease of transport and installation.

The volume is closed using high quality composite panels that provide the appealing aesthetic touch of a white mid-gloss finishing surface.

As a result, the motion compliant enclosure prevents undesired vibrations and offers a rigid structure to support peripherals such as the visual bridge and screen.

2.6. Xplorer 6L B-737 NG Visual System

The Xplorer 6L Full-Motion Flight Simulator can be equipped with two different options for the visual system solution. While the basic solution is a 3 channel Full-HD curved-screen projection inside the dome, the other option available provides a collimated display with D-projectors, image generators and databases at a quality level suitable for FAA Level-D simulations.

The standard and mostly fully sufficient visual system provided with the Xplorer 6L B-737 NG consists of

- 200 degree horizontal and 40 degrees vertical, curved, movie-quality projector screen and frame
- Three overhead projectors to create the high definition (HD) visual environment that simulates frontal and side window visual effects
- 5760 x 1080 pixels (6.2 million pixels)
- Eye Point Adjustment through IOS station
- Warping and Edge Blending
- Structure for projector support

2.7. Xplorer 6L B-737 NG Synthetic World Representation

Xplorer 6L B-737 NG can be equipped with two options for the Synthetic World Representation. The standard solution with Xplorer 6L is Lockheed Martin's Prepar3D simulation/visual engine.

This features:

- Detailed and accurate representations of a global database including detailed runways, taxiways, terminal buildings, gates, and ground equipment. Dynamic 3-D immersion realism that includes buildings, landmarks, navigational aids, and accurate geographical landscapes
- AutoGen technology that provides geo-typical object and texture coverage over the whole surface of the earth
- Landscapes with moving vehicles, birds and animals
- Allows to create dynamic training scenarios
- Dynamic weather with complete control over winds, barometric pressure, cloud layers, precipitation from light rain or snow to heavy rain or snow and thunderstorms

As an alternative, Xplorer 6L B-737 NG will come with Presagis® Synthetic Environment software solutions. Those will include feature like True Airport representation and most-detailed and highest fidelity Out-the-Window scenery.

2.8. Xplorer 6L B-737 NG Instructor Operator Station

Xplorer 6L offers an ergonomic and intuitive On-Board Instructor Operator Station (IOS).

The Instructor Operator Station on board of Xplorer 6L provides the following components and functionalities:

- Instructor Station Control Panel with intuitive GUI
- Instructor station enclosure with Instructor desk, two 20" Flat panel touch monitors, intuitive and ergonomic layout and functionality (optional)
- Software capable of
    - Easily repositioning the aircraft to a variety of ground and Flight positions instantly
    - Adjusting the time to include dawn, day, dusk, night
    - Adjusting the weather such as: winds, cloud cover, visibility, rain and snow
- Loading saved scenarios to include: aircraft position, aircraft configuration and weather parameters
- Simulating a variety of failures to include, but not limited to: engine failures, APU failures, Cargo failures, hot/hung starts and gear malfunctions, electrical failures as well as minor system faults

- Displaying a moving map that shows aircraft position, surrounding airports, and navigational aids

As an option, Xplorer 6L can also offer an additional external IOS Station. This station acts as an efficient instructor console, allowing data and mission review as well as observation and instructor intervention via 2 large Touch-Screen Monitors.

As a further option, the external Xplorer 6L IOS Station can also be configured to act as a smart and efficient Briefing and Debriefing-Station.

2.9. Xplorer 6L B-737 NG Digital Sound Environment

The Xplorer 6L B-737 NG Full-Motion Flight Simulator provides a Digital Sound Environment with the following key features:

- Stereo Sound Package includes realistic HD engine and environmental sound effects:
- Cockpit alerts and warnings including radio altimeter call-outs, configuration warnings TCAS alerts and EGPWS warnings
- ATC Program and Live ATC Chatter
- Surround speakers and rack-mounted mixers and amplifiers

2.10. Xplorer 6L B-737 NG Intercom System

The Cockpitsonic Intercom System provides three place intercom capacities with volume and squelch control, Line in capability and Line out capability.

2.11. Xplorer 6L B-737 NG Computer Hardware

The Xplorer 6L B-737 NG Training Device offered will provide an industrial server computer cabinet, locking rear door, and metal sides. The cabinet will include

- One Visual System Computer
  - Windows 10 Professional (64 Bit)
  - Intel Core I7 Quad-Core processor or higher, 3 GHz
  - 64 GB Computer Memory
  - 8 GB Graphics Processors
  - 30 GB SSD Hard Drive
  - Multiple Graphics-Cards
- Two Simulation System Computers with
  - Windows 10 Professional (64 Bit)
  - Intel Core I7 processor
  - 8 GB memory
  - SSD Hard drive
- One IOS, Briefing and Debriefing Computer

2.12. Xplorer 6L B-737 NG Simulation Software

Xplorer 6L B-737 NG utilizes the advanced Simulation Software Solutions from Pro-Sim-AR, in combination with Lockheed Martin's Prepar3D simulation/visual engine.

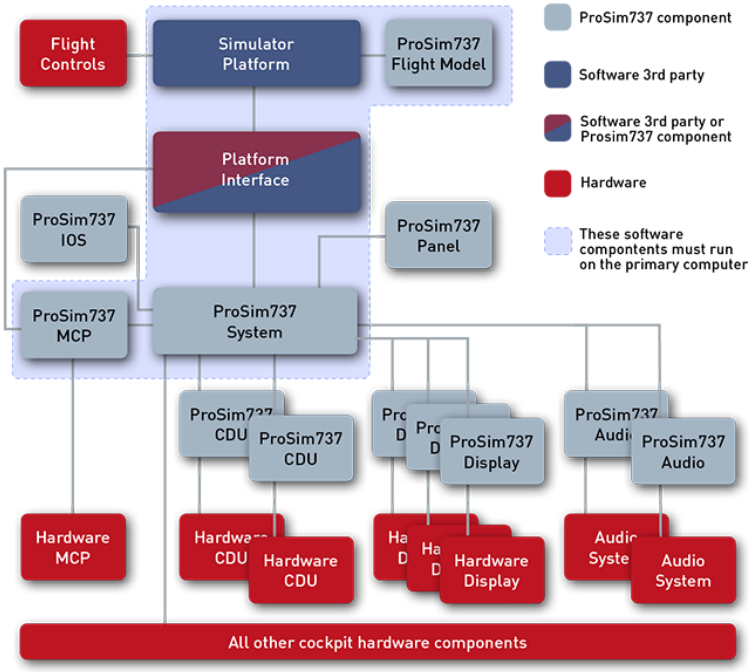
ProSim-AR was formed to offer improved software as the need to revise existing solutions within the flight simulation scene was identified. Established in 2011, we have advanced in business with an experienced team, technological developments, increased productivity and efficiency. Our customer relationship is based on trust and confidence that forms brand loyalty. More features are constantly added to our software, with new quality standards and products. ProSim-AR has achieved a high growth rate and is acknowledged as a market leader within flight simulation.

The following section of our proposal summarizes original Pro-Sim AR vendor information.

2.12.1. Simulation-Software Description

The ProSim737 Suite consists of individual modules of which ProSim737 System is the central component. The ProSim B-737 NG System modules interact with your Simulator Platform software (Lockheed Martin Prepar3D®) therefore run on the primary computer. Distribution of all other modules is possible across multiple computers within your simulator configuration. To improve performance the suite architecture provides flexibility with regard to system load balancing, the number of monitor outputs, cockpit and environmental audio separation.

ProSim B-737 NG Suite architecture:



ProSim B-737 NG Suite modules brief summary

ProSim737 System: Manages the simulation of aircraft systems, acts as a central network hub for all ProSim737 Suite modules, interfaces with your hardware components, configured by graphical interfaces and features a webserver for the Instructor Operating Station (IOS).

ProSim737 MCP: Contains the auto flight systems and allows connection to the Mode Control Panel (MCP) in your cockpit or to display a graphical representation without hardware.

ProSim737 Display: Generates all graphical elements such as Primary Flight Display (PFD) and Navigation Display (ND) on the Main Instrument Panels (MIP) Display Units (DU).

ProSim737 CDU: The Control Display Unit (CDU) controls the Flight Management System (FMS). This module provides possible connection of the CDU in your cockpit or to display a graphical representation without hardware.

ProSim737 Panel: Creates a graphical representation of the different panels within the cockpit, can be used to check the state of switches / indicators and displays the panels also without hardware.

ProSim737 Audio: Provides genuine cockpit sounds independent from the environmental sound. Default sounds can be customized and new sound events can be added.

ProSim737 Flight Model: – Provides realistic aircraft behavior and a visual model with customizable livery.

ProSim737 IOS: – The Instructor Operating Station gives the controllability of the simulator by use of a web interface.

2.13. Xplorer 6L B-737 NG Malfunction Systems and Characteristics

The failures are implemented by truly degrading the affected component, with all the side effects:

- All failures can be triggered manually or preprogrammed
- All failures can be reset in flight without further consequences
- All failures have their ECAM procedures rigorously implemented
- Scenarios with armed failures can be saved to speed up the training
- More than one failure can be combined (level 1 or level 2), with their ECAM priority implemented
- All electrical buses are modelled (so, by example an electrical failure may lead to the loss of panel backlight on the appropriate panels)
- All hydraulically failures have their feedback to the flight model, enabling the instruction of the degraded modes

2.14. Xplorer 6L B-737 NG Delivery and Integration

Xplorer 6L B-737 NG will be delivered, installed and integrated at facilities named by the customer.

Early in the project already, Cockpitsonic and Motion For Simulators will consult with the customer on the necessary Infrastructure Requirements. Those are documented in the Cockpitsonic Infrastructure Specification. It remains in customer's responsibility to ensure that the agreed-upon infrastructure requirements are fulfilled.

The installation and final integration of the two devices will be done by experienced Cockpitsonic and Motion For Simulators staff. Customer shall support with appropriate technical support staff on site as well by providing tools and forklift if required.

A local electrician will also be required as well as local technicians to drill the anchoring holes in the floor if required.

If a special insurance or caution is required to allow the installation and integration tasks to be performed, customer should acquire such insurance prior to our staff arrival onsite (eg. caution for building damages…).

Once the integration is finished, the partners will perform extensive subsystem and system functional and operational testing's. The test results will be documented and handed-over to the customer.

2.15. Xplorer 6L B-737 NG System Acceptance Test

Once Cockpitsonic and Motion For Simulators have finalized all internal system testing's, the customer may nominate a competent test person. This individual will get an initial briefing about the device status and features and is allowed to do a series of integrated test flights and other functional checks.

To support this process, a validated 'Integrated Testing Guide' for the Xplorer 6L B-737 NG will be provided.

2.16. Xplorer 6L B-737 NG Instructor Training

Xplorer 6L Instructor training includes all steps

- how to start and shutdown the simulator
- how operate the Instructor Operator Station, aircraft normal and non-normal SOPs including familiarization of aircraft systems (if required)
- how to maintain the trainer.

2.17. Xplorer 6L B-737 NG Maintenance Services

Cockpitsonic and Motion For Simulators prides themselves on providing first class customer service and support. We have incorporated several unique features into our device design to increase reliability and minimize down time. Support of software is accomplished via the internet.

The vast majority of cockpit hardware components installed on the devices are modular plug and play, requiring no more than a blade screwdriver to remove and re-install.

This modular plug and play design of hardware components in most cases completely eliminates the need for a technician from Cockpitsonic to be on site to service the unit. If a component fails or malfunctions, the component can simply be removed, shipped to Cockpitsonic, serviced, returned, and then be re-installed. Because Cockpitsonic directly manufactures the vast majority of components ourselves, service turnaround time on components is typically no more than 72 hours as there are no outside vendors to procure parts from.

Due to high voltage components used in motion platform of Motion For Simulators, customer should not try to perform maintenance or repair on its own. Even if the occurrence of a fault is unlikely considering the industrial quality of the components being used and the tests conducted, in the case, of a fault, MFS will assist the customer designated technician via remote online support.

Should a fault in one component be identified, MFS will ship a new element typically within 72 hours after reception of the fault part if this one can be removed and replaced by customers. Otherwise, MFS will send a qualified technician on site within a week.

2.17.1. Short-Term Maintenance Service

For the initial operating phase of the two Training Devices, which is defined to be a 3 Month period after the end of successful hand-over to customer, Cockpitsonic and Motion For Simulators offer a professional Hot-Line Services Support.

It includes the guaranteed access of the customer's technical staff to a competent and experienced services technician of Motion For Simulators and Cockpitsonic. Our technicians can be reached via mobile phone (including WhatsApp and Skype) or email and will insure immediate response. Depending on the nature of a reported problem or the question raised, he may be able to help immediately, or will initiate the necessary next steps. In any case, fastest response and help will be provided.

2.17.2. Long-Term Maintenance Service

The Cockpitsonic and Motions For Simulators proposal for the Xplorer 6L includes a Long-Term-Maintenance Service for the first year of operation. This covers a 1-Day inspection of a Cockpitsonic and/or Motion For Simulators Maintenance Technician at customers' facility or facilities once a year.

Regular status monitoring and health inspection will be done by the designated Cockpitsonic or Motion For Simulators Maintenance Technician via an Internet-based-Web-Access.

Cockpitsonic will check the status and development of the installed third-party Software-Licenses' and recommend to the customer the necessary Software-/License-Upgrades. A Software-Update at the end of the first year of operation is included in this proposal.

An extension of the Long-Term-Maintenance Service for one or multiple additional years can be order at Cockpitsonic and Motion For Simulators separately.

2.18. Xplorer 6L B-737 NG Warranty

The Xplorer 6L Full-Motion Flight Simulator for B-737 NG is guaranteed to be free from manufacturers defects to the original Purchaser for the duration of 24 months from the date of Purchasers execution of the Acceptance Test. Cockpitsonic and Motion For Simulators will repair or replace any parts that are deemed defective in material or workmanship or both.

Labor and parts will be provided without charge during the entire warranty period; however, the Purchaser will be responsible for all of Cockpitsonic travel costs (airfare, car rental, hotel and per diem) incurred to service and repair the Device. After expiration of the warranty period, the Purchaser will be responsible for all labor and/or replacement part charges.

If, in the sole judgment of Cockpitsonic and Motion For Simulators, the device is deemed to be irreparable, Cockpitsonic they will replace the Device. The purchaser will be responsible for all travel and shipping expenses incurred to replace the device.

This Limited Warranty will not apply if, in the sole judgement of Cockpitsonic and Motion For Simulators, the Device damage occurred because of accident, misuse, abuse, unauthorized parts/service/repair, improper or unreasonable use, neglect, theft, vandalism, casualty, or other cause not within the control of Cockpitsonic and Motion For Simulators. Similarly, this Limited Warranty is void if the device has been modified or altered in any way, including alteration or removal of serial numbers.

General Terms of conditions of Motion For Simulators and Cockpitsonic furthermore apply for anything not listed here and can be freely obtained or consulted on our respective websites.