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Global Peace Partners

747 & 757 Hospital Planes

A consortium has been pulled together to engineer, build, maintain and service the GPP 747 and 757 Hospital Aircraft.

The attached information provides a summary of the Partner's backgrounds, experience and preliminary plans for the aircraft build-outs. A separate Letter of Intent will provide the details for the project schedule and milestones.

The Key Partner companies involved in the aircraft build are:

Syncroness, Inc. Syncroness will act as the prime Engineering liaison on the program. The team at Syncroness will be run under the direction of Mark Henault and will be in charge of overall project planning, industrial design execution, schedule coordination and execution on the Engineering of the Aircraft. See Appendix C for a statement of capabilities and some sample projects performed by Syncroness. www.syncroness.com

Industrial Design Studio. The prime contact will be Prof. Werner Granseier. IDS will be heavily involved in the interior industrial design effort. IDS has extensive experience in the aerospace interior arena. IDS will also focus heavily, with Syncroness, on the development and execution of the ground life and third level sleeping quarters proposed in the aircraft. See Appendix D for sample work performed by IDS. www.ids-hamburg.com

Pacific Aerospace (PART). The prime contact for PART will be Dr. Stephan Hollmann. They will be responsible for acquiring the aircraft, installing the custom interior, maintenance and all flight support requirements. See Appendix E for a summary of capabilities. www.pacific aerospacegroup.com

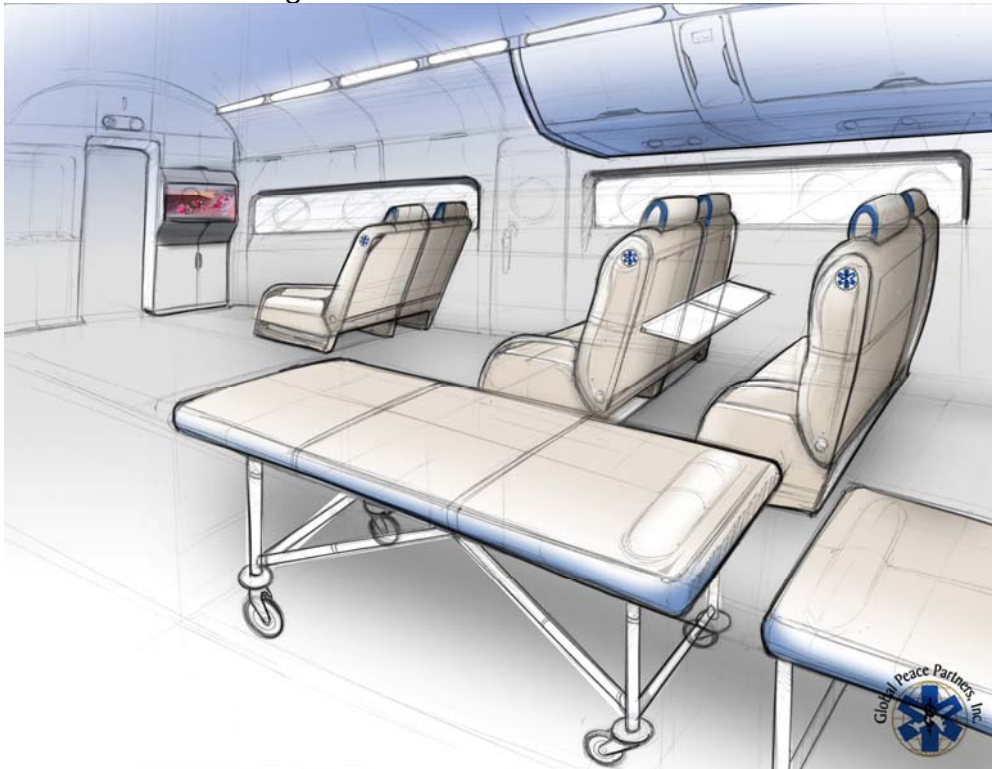
Air Cabin Engineering (ACE). The prime contact will be Markus Seitz. ACE will be the lead component "build" company and will construct the majority of the interior (wall panels, ceilings, seating, desks, sleeping quarters, galleys, etc.). They, in conjunction with Syncroness, will design and build the majority of the interior of the aircraft. See Appendix F for a summary of capabilities. www.aircabin.com

In order to build aircraft of this complexity many additional firms will be utilized in the Engineering, build and installation of key sub-systems. Some of the companies likely to be involved in these particular aircraft include: Raytheon Systems, Qualcomm, Luftansa Technik, Boeing, Siemens and GE Medical. The top level project management of the aircraft will be managed jointly by Mark Henault from Syncroness and Stephan Hollmann from PART – all other companies involved will be reporting to Mark and Stephan, providing a clear communication path for GPP.

Select Interior Renderings/Sketches on the 757 and 747 Aircraft

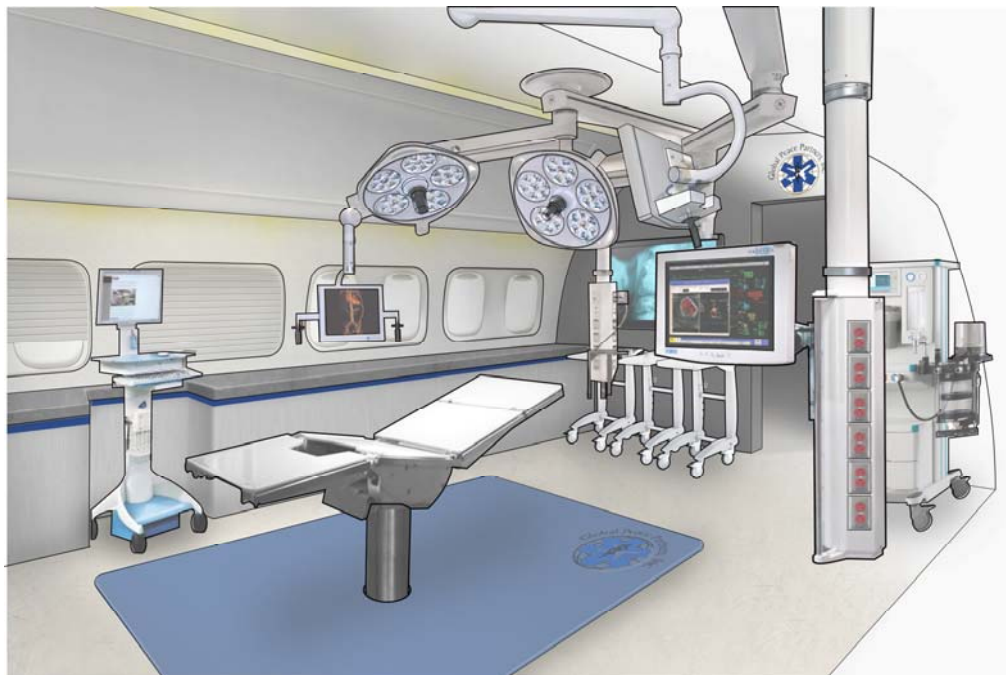
The following Industrial Design sketches and renderings are to convey interior design concepts that correlate to the LOPA (2 dimensional) aircraft layout drawings provided in Appendix A & B. These conceptual images of the 757 provide a visual for the entry/pre-op area, training area, O/R, as well as several other potential configurations such as a typical conference room, lounge, or seating area. The additional configurations could come into play as a retro-fit of the 757, now a support aircraft, once the 747 aircraft comes online.

The front cabin will contain 1-2 pre-op carts, seating for training and the nurses station and storage.

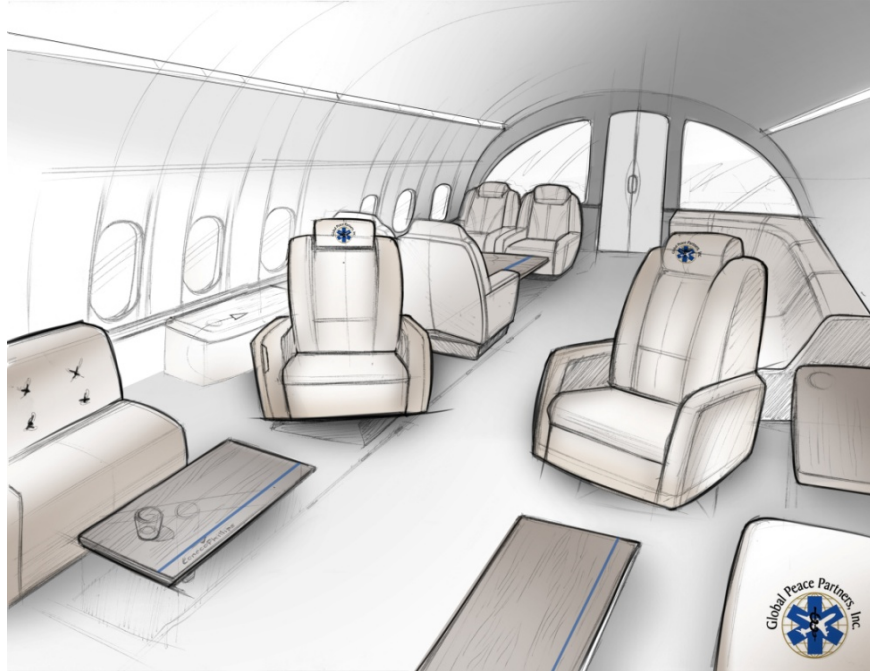




The 757 operating room will be compact, but will utilize ceiling mounted equipment and remote control equipment (stored in the cargo area) to allow maximal space utilization.

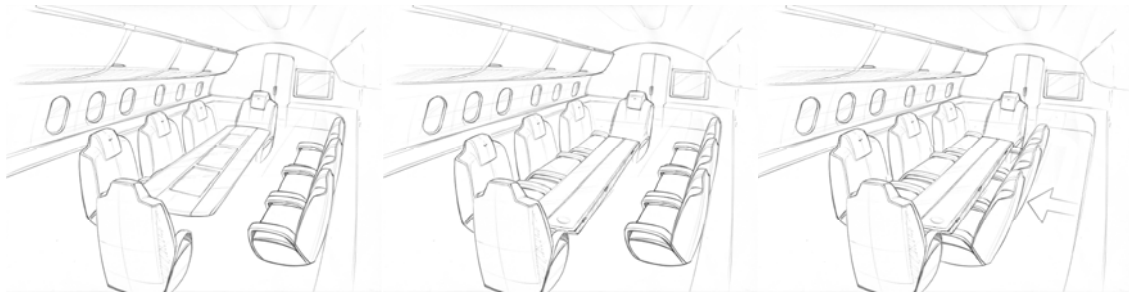


Once the 757 is retro-fitted, seating areas and/or conference rooms can be accommodated on-board. A few conceptual ideas would include:

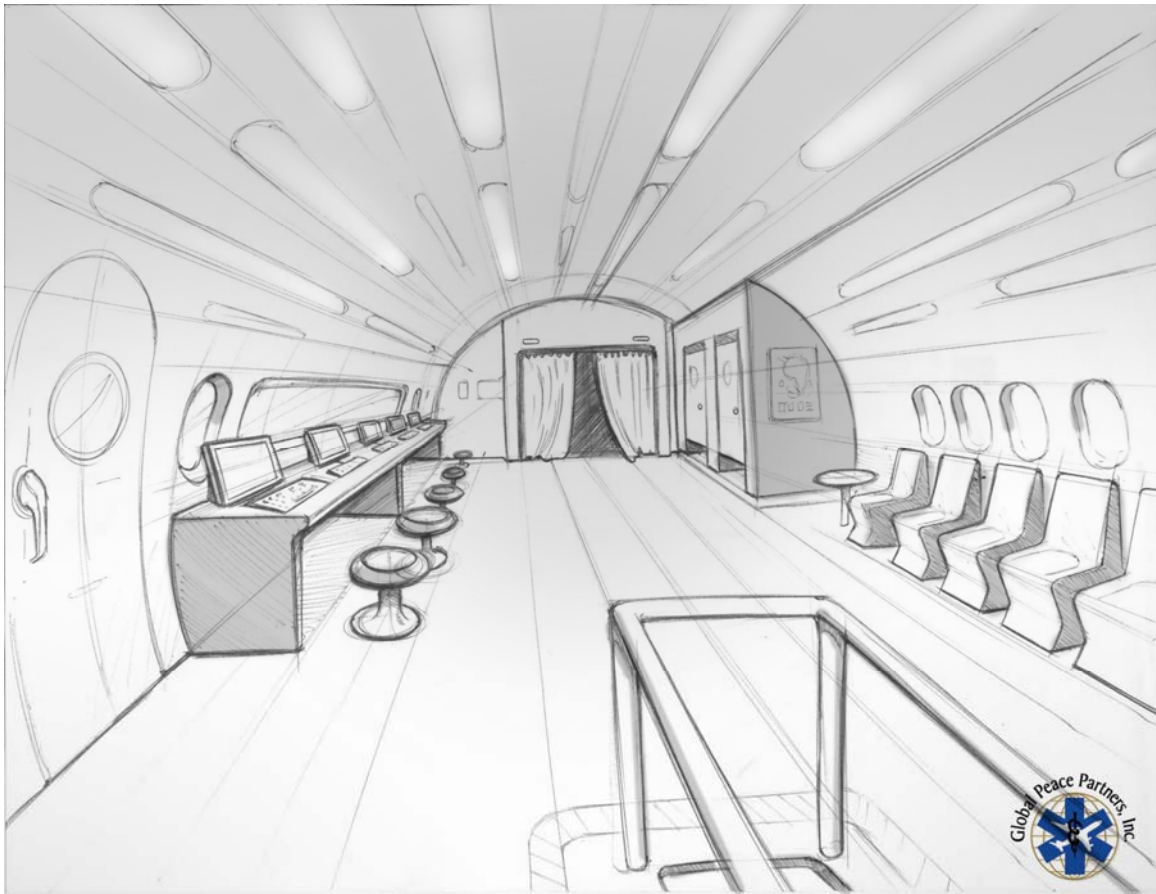


The conference table can also be configured with touch screens in the top surface to allow rapid communication/work to be performed and the table can be automated to allow for side leaves to raise/drop and the entire table surface to raise/lower to allow for easier passage through the plane when not being used and also to double as a more informal “coffee table” for gatherings/discussions.





The 747 main entrance will house a changing area, patient check-in/nurses station, elevator lift (optional), waiting area and 2 pre-op/Emergency cot areas. The left side wall will also be the main doorway into the front cabin rest rooms and the main conference/training room.



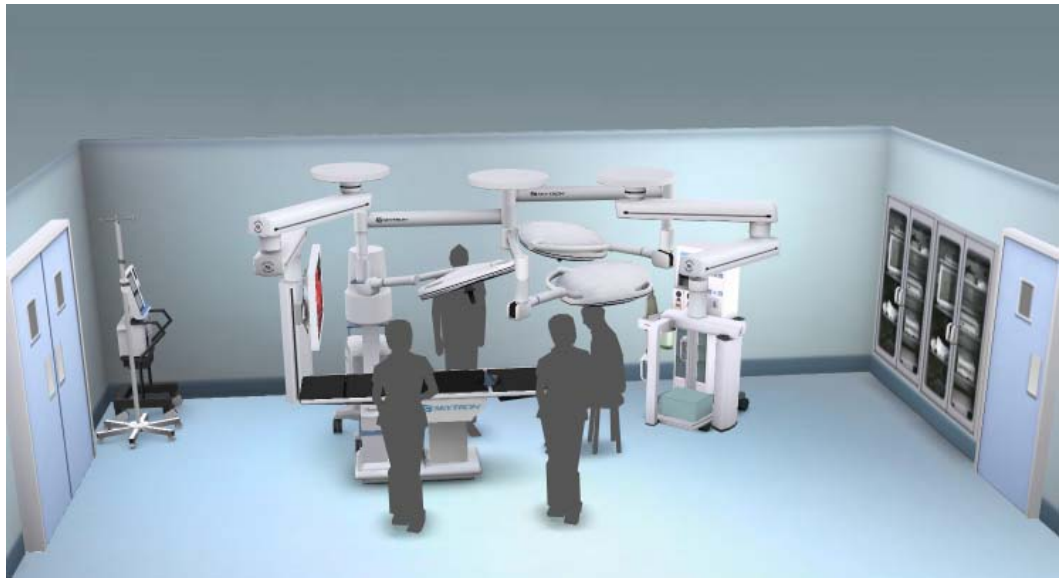
New Technologies for Inclusion on 747 and 757 Flying Hospitals

Having both aircraft available opens the door for new technologies to be investigated and subsequently implemented onboard. The goal of these 2 programs are to create the most user friendly flying hospital setting possible for use in emerging countries for Surgeon & EMT training, catastrophe response and other worldwide humanitarian missions. In order to allow Global Peace Partners to begin making a difference in the world as quickly as possible the planned phased delivery of aircraft are as follows:

1. Hospital 757 (see Appendix A for the current layout). This aircraft will take a Boeing 757 and outfit it with a single operating room, pre- and post-op support and the ability to airlift out severely injured patients. The operating room will be wired such that up to 6 Surgeons can watch and listen to what is transpiring during the surgery to learn new techniques. The plan will be configurable with a few of the available configurations identified in the appendix. Should the need to fly out severely wounded patients be increased, the modular layout could support several more Patient Transport Units (PTU's) instead of the pre-op area. This change can be made in between missions as this aircraft is readily configurable. The plane, as envisioned, would be ready to fly within 15 months of program launch. The operating room is currently 11' x 17' in size. Much of the equipment for the operating room will be stored in the cargo area of the aircraft and will be remotely run via touch screens. The patient warming and anesthesia functions will be built into the operating table to conserve floor space. Other equipment and lighting will be ceiling mounted. It will be a "tight" operating space, but the size is limited by the 757 cabin area.
 - a. The 757 will NOT be designed to operate without local ground support. It will be capable of flying in, carrying the volunteers to the operating location, but will need ground power and air handling to operate. It will also require cargo/passenger handling equipment to enable boarding of patients (unless they can walk up/be carried up the air stair).
 - b. The 757 is not designed to operate for more than 1-2 weeks at a time, at a single location, as that is the maximum time volunteer crews can be expected to volunteer their time. The 757 could remain on-site for longer periods with adequate ground support and using commercial flights to change out crews, if needed.
 - c. Emergency evacuation of injured. In the initial 757 configuration the aircraft is intended to be used primarily for local surgical training missions due to the limited size of the operating room. However the 757 will also be outfitted with a Patient Transport Units (PTU's) and Incubator (NICU) which will enable the aircraft to airlift out severely ill patients. When the 757 is retro-fitted (747 online) then the aircraft can be configured to hold up to 12 PTU's/Incubators if one of the primary missions is critical care evacuations.



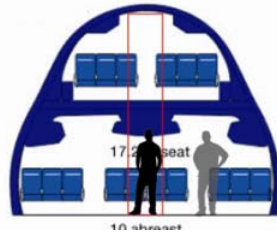
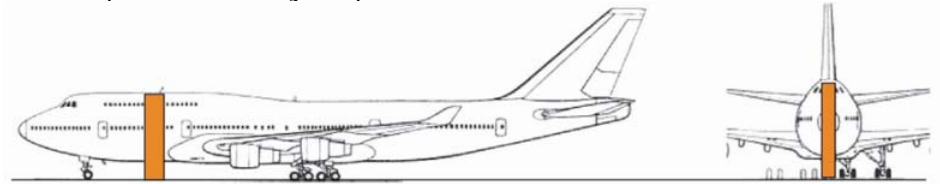
2. Hospital 747. This aircraft will take a Boeing 747 and outfit it with a much more substantial hospital configuration. It is planned to have:
 - a. 3 operating rooms (16' x 25', ~400 sq. ft.). These rooms will be designed to accommodate a C-arm x-ray machine in the room along with ceiling mounted equipment, lights and video screens.





- b. Large pre- and post-op areas on the main level, with up to 10 patients in the post-op area (2 bays will function as an ICU).
- c. Large conference room in the front of the aircraft. To facilitate training, all 3 operating rooms will be wired and have video feeds to allow large training classes onboard.
- d. Ability for patients to enter via main deck or ramp to cargo area. The cargo area will be connected to the main deck via a hospital bed sized lift to allow patients to be transported up to check-in/pre-op directly and/or O/R equipment to be transported between levels.
 - i. Optional ground lift system to provide transport to all 3 decks directly from the ground. This would allow the plane to operate without any gate support and would keep the plane secure (no ramps/stairs to allow entry into plane – access would be controlled via lift only, if desired). This would add approximately \$30M-\$35M to the plane development and certification cost. The lift for the 747 would be designed to be large enough to lift a gurney and attendant to any level in the aircraft, and it would be located near door #2 in the center of the plane, similar to the layouts shown in the Appendices. A rough location on the 747 is shown below, as is an example of a personal lift system that is being developed for the 747-8

series. Note however that the lift for the 747-8 series is smaller than required and only stops on the main deck.



- e. The cargo level will house a full galley/kitchen where all meals will be prepared. Refrigerated storage will allow high quality fresh food to be stored and prepared for patients and volunteers. 2-3 days worth of food can be stored onboard the 747 and replenished by the 757 support aircraft 2-3 times weekly (or regular ground support can do this, when available).
- f. The 3rd floor will be extended the full length of the plane. In the rear the head clearance will only be 65 inches, but will provide ample room to install sleeping quarters for staff and crew. This would involve substantial re-working of that area of the aircraft and would be an additional \$20M-\$30M cost. This option would allow all crew/personnel to sleep onboard alleviating the need for ground based accommodations. We can also include small private rooms with this configuration for privacy and noise reduction for volunteers. The

image below shows a conceptual layout of the upper deck area. Note that the hospital plane would likely utilize more of the smaller sleeping rooms shown in the aft of the plane, enabling the whole crew/volunteers to sleep onboard simultaneously and have 2 bath/shower rooms. This would be accommodated by eliminating the galley in the center section. If this option is not included, providing sleeping quarters on the aircraft is not possible as the main floor is completely utilized for the hospital.



- g. Integration of a cell tower into the rear vertical stabilizer of the 747. This would allow the 747 to become an instant cell communication hub in a disaster zone. Phones for relief agencies, etc. could be given access to use the aircraft bandwidth for emergency communications in the case that ground based systems are non functional. A total system similar to TIOS from Luftansa Technik will be implemented to allow satellite communications, cell tower, internet and entertainment systems to all be integrated into the rear stabilizer. The plane will still need STC from FAA, currently certified for Boeing Business Jets.



- h. Power/Remote load capability. In order to power the aircraft while grounded it is planned that:
- i. The aircraft will have a lift installed in the aft cargo area.
 - ii. The aircraft will carry a generator that can be lowered to the ground and connect to the airplane systems to provide power and air handling as the on-board APU is not designed for long term operation.
 - iii. The generator will tie into the 747 fuel supply and the 757 re-supply plane will be outfitted with a pump to re-fuel the wing storage tanks on the 747.

This aircraft, as envisioned, would be ready to fly in approximately 36-42 months from program launch. The main reason for the longer delivery time is the substantial amount of equipment that needs to get flight certified by the FAA. Options are being investigated to keep the bulk of the medical equipment in the cargo area of the aircraft, capitalizing on remote operation

in the O/R with custom software, thereby reducing the amount of equipment that needs flight certification. Until the exact equipment lists are finalized (partially determined by partners, donations, etc.) we will not be able to finalize the communications plan and control strategy to enable this.

3. Retro-fit on 757. Once the 747 hospital is airborne, it is envisioned that the 747 will spend upwards of 2 months on the ground during each mission. To enable this type of mission we will then retro-fit the 757 to function as a support aircraft. The main changes will include:
 - a. Removal of O/R and conversion of the aircraft to carry up to 24 passengers and additional supplies. This allows the aircraft to fly in new Surgeons and Nurses during the extended operation of the 747, along with large quantities of supplies (medicine, gowns, sheets, etc.). The final logistical configuration on this 757 will be determined by the partnerships setup by GPP over the next few years. It is envisioned that much of the ground support in disaster areas (fuel, water, supplies) can be supplied by the military, as they will likely be running these types of missions, thereby allowing the 757 to focus more heavily on emergency medivac, crew support and O/R re-supply. The exact configuration of the aircraft will be finalized mid-way thru the 747 development. We have worked to keep the layout of the forward and aft areas of the aircraft similar to other custom 757's, such that modules could be interchanged (and the development cost shared) across more planes, minimizing the cost of the retro-fit. Examples of potential retro-fit configurations are shown in Appendix B. Note that several of the seats, sleeping areas and/or storage cabinets could also be converted to PTU locations if evacuation missions are deemed more critical.
 - b. Much of the O/R equipment will likely be transferred to the 747's 3rd O/R during the transition.
 - c. Possible addition of more PTU's if emergency evacuation becomes a higher priority for the aircraft in this function.
 - d. Addition of storage tanks to enable the 757 to carry water and fuel to the 747 for remote operations – or modifications to the cargo bay to accept rapid load/unload of O/R supplies. The exact payload configuration will depend on "a" above.

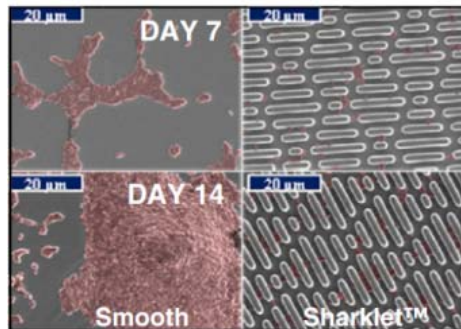
This conversion is expected to be completed within 3-6 months of the 747 becoming airborne, depending on the final configuration of the aircraft.

Operating Room Technology Integration Plans

The O/R for these aircraft, due to the smaller available footprint onboard an airplane (200-400 sq. ft. versus up to 900 sq. ft. in a traditional hospital setting), requires an integration of the controls and functions that are normally contained on multiple support carts to existing support equipment in the O/R and/or to allow the equipment to be stored in the cargo hold and controlled remotely. It is also planned to utilize many new sterilization techniques and materials, minimizing cleanup/reset times along with floor space requirements for the support equipment. All of the technology

described below exists, but the implementation onboard an aircraft, and the higher degree of automation/remote control desired will push the technology from its current state. We are highly confident that these technologies can be successfully integrated into the 747, and we will work to put as many into the 757 as possible. Every one of these “newer” technologies will also have a more traditional “backup” solution run in parallel in case we run into insurmountable issues with either the technology or FAA flight certification. We envision working heavily with Surgeons, Nurses, EMT’s and other health care equipment manufacturers and organizations to ensure that the aircraft have the most optimal layout and functionality in the O/R’s that is possible in the aircraft setting.

1. Sterilization of walls and equipment in the O/R.
 - a. Low dosage U/V lighting and wall, floor and ceiling panels constructed with Titanium Dioxide allow for constant biological kills on the surface. This greatly reduces the number of biological contaminants present in the O/R before, during and after a surgery. Surface panels with this technology are available from Aristech Acrylics, Mannington Flooring, and others.
 - b. “Sharklet” surfaces is a new technology that can be adhered to just about any surface in the O/R. The physical geometrical features on the surface (similar to shark skin) greatly inhibit the ability for biological agents to survive on the surfaces. This material/finish can be applied to all high-touch surfaces to reduce bacteria by over 80% (www.sharklet.com).

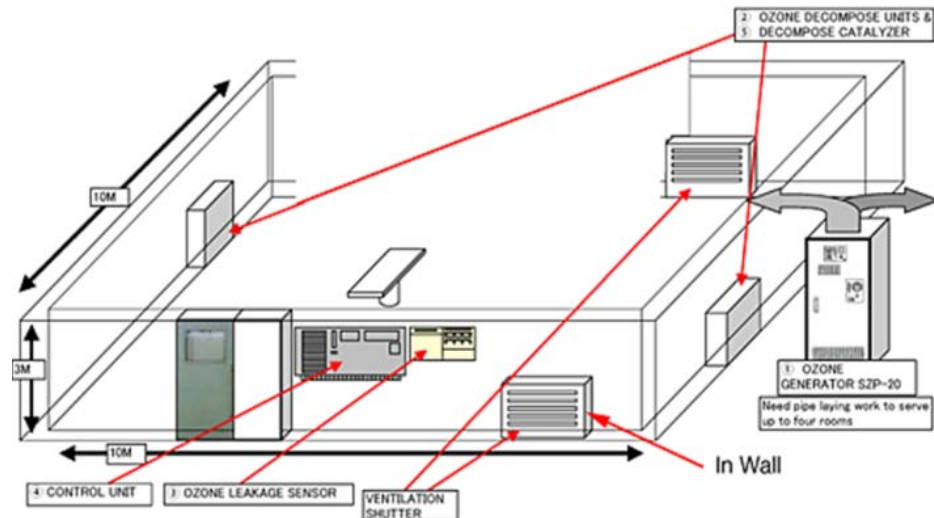


Sharklet™ is effective at inhibiting a Staph a. bacterial biofilm for 21 days versus a smooth surface on which a biofilm begins on Day 7.

- c. Waterless surgical scrub. There are several products available (ex. Triseptin) that provide excellent scrub capabilities without requiring large amounts of water. If the 747 can incorporate this technology it would enable having a single “scrub” room for the surgeons to do a top-level cleaning prior to each operation and then apply the waterless scrub just prior to putting on gowns and gloves in the O/R. This may allow us to increase the usable room available in each O/R by centralizing to a single scrub station. The current aircraft layout shows a scrub for each O/R, but they utilize very valuable floor space.

<http://www.healthpoint.com/sites/default/files/media/TRISEPTIN/TriseptinWaterlessTechBulletin.pdf>

- d. Ozone flood. The doors, cabinets and ventilation systems are designed to hermetically seal (or the plane can be evacuated for 4 hours once per week) to allow an all-component sterilization via a ceiling mounted ozone generator and in-wall ozone converters to remove the ozone once the sterilization is complete. This ensures the cleanest possible O/R setting (note the dimensions in the picture below are not accurate for the aircraft).

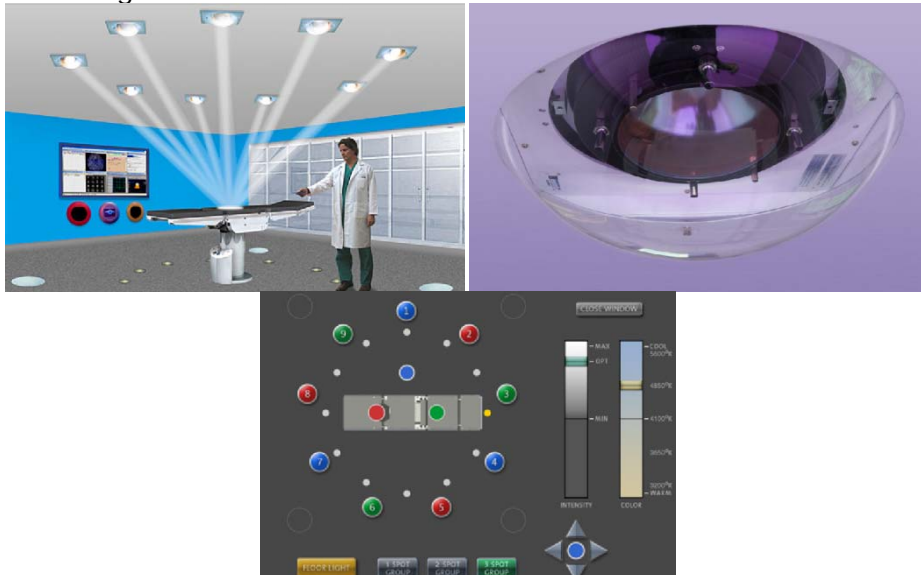


2. O/R Table.

- a. Integration of heating and anesthesia functions into O/R table. The base of the O/R table will be designed to integrate the patient heating requirements as well as having the controls and storage for the anesthesia equipment. This will reduce the equipment space requirements within the O/R setting. The tabletop is constructed with a radiolucent TiO₂ surface to allow sterilization with low level UV. The padding on the table is made of a composite material that allows for both heating of the patient and real time temperature feedback for the anesthesiologists. (Skytron/Mizhuo manufacturers).
- b. Wiring, Vacuum and Gas Hoses are integrated into the architecture to minimize tracking over the operating room floor and ceiling. In the image below most of the hoses and vacuum rise thru the main pedestal on the table and the smaller "pod" houses the power, wiring and network connections.



- Lighting/Camera/Sound. We are looking into traditional fixed ceiling mounted lighting with new aiming technologies; along with arm mounted lights for ease in focus/aiming. The “fixed” ceiling lights are planned to be cool, high-intensity directed 100-watt/100,000 lux metal halide lights that are recessed into the ceiling. The lights would be computer controlled and coordinated to operate like stage lighting in the theater. Remote control of the lights will be via the touch screen monitors in the room and/or pre-programmed positions. The O/R would also have a ceiling and boom mounted camera and microphone/speakers for use in training so the surgical team can answer questions and provide information to those observing in the conference room. These systems are available from multiple vendors, including DKK/Toto/City Theatrical, and would look like the following:

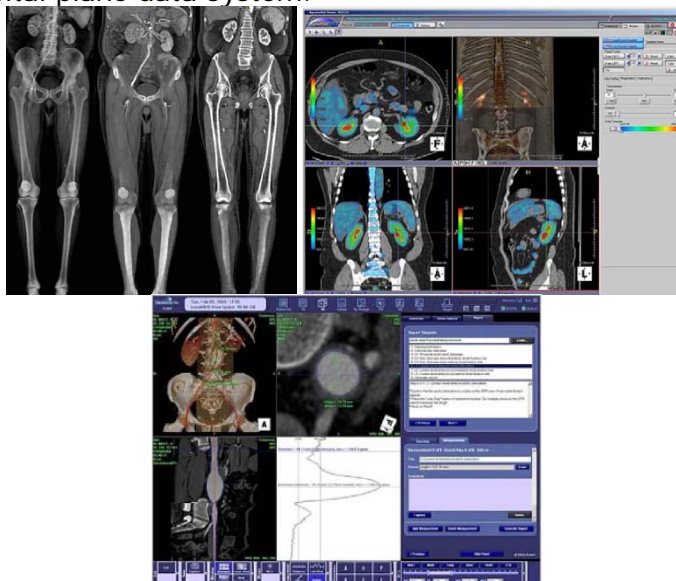


With the smaller O/R environment, ceiling mounted lighting can prove beneficial for, reducing the clutter associated with several ceiling mounted arms in the room.

- Mobile C-arm X-ray. The 757 is planned to have a single C-arm X-ray machine on-board and the 747 will have either 1 or 2 of these devices. They will be stored in the O/R setting in a recessed area when not in use. The C-arm is being planned due to the dramatic reduction in lead shielding requirements, reduced exposure levels of all Surgeons/Nurses and the ability to provide real time x-ray data for various procedures. The weight,

size and power requirements for MRI and/or CT Scan equipment will exceed the floor loading limits and other design constraints on the aircraft. The equipment can be stored in the cargo area when not in use to provide more floor space in the operating room.

5. Patient data management/display in O/R. When a patient comes thru the door, custom software will:
 - a. Allow digital fingerprinting, pictures and additional information to be stored for each patient.
 - b. RFID/Barcode bands will then be printed and attached to each patient.
 - c. All further patient interaction is envisioned by scanning the RFID/Barcode band and then all data collected/entered will be tied to this patients electronic record. The data stored will include patient personal info, doctor's notes, lab results, x-ray imaging, etc. When the patient is discharged from the aircraft hospital, electronic files and/or hard copies can be provided for continued evaluations.
 - d. In the O/R environment all pertinent patient records can be opened up for review during surgery. Radiologic data can be presented on demand as rendered 3D representations when coupled with a rotational C-arm X-ray machine. TeraRecon and Global Care Quest have to base tools to enable this, which will be incorporated into the hospital plane data system.



- e. Software will also be integrated into the O/R environment that will allow control of all equipment and information management can be manipulated via either the main surgical display or a separate wireless hand held tablet. This interface is capable of accepting all electrical equipment inputs (operating table, overhead lighting, ultrasound, etc.), even if they are not in the initial configuration. All initial equipment utilized in the O/R's will be fully integrated into the software system and for full control of future devices, the architecture will be left "open" to allow tie-ins.
6. Equipment. Much of the O/R equipment will be stowed in the cargo hold of the 747 during flight. This will greatly reduce the flight certification

process. Once the plane arrives on site the goal is to have the O/R's operational in less than 2-4 hours. To enable this, all equipment that can be "carted" will be, allowing rapid transfer using the elevator from the cargo bay to the main deck. All devices will be setup for quick connection in the O/R and each O/R will be wired for all equipment allowing rapid re-configuration and interchangeability. There may be some limits as the plane will not likely carry three of every surgical instrument. Finalization of the equipment list will occur early in the process.

NOTES:

- 1. Due to floor loading limitations, lead shielding requirements (weight) and power requirements the 757 and 747 hospital planes are NOT planning to carry MRI or CT Scan equipment onboard. The aircraft will just have C-arm X-ray equipment and the O/R tables shall be locally shielded.*
- 2. Many of the images in this document were copied from the various vendor sites to provide visuals for the technologies and equipment planned. These images are shown as a basis to provide information for the reader and can't be re-used without permission. Several of the vendor sites where the images were copied from include: Optimus, Skytron, Luftansa Tecknick, and Boeing.*

**APPENDIX A – 757 Hospital Plane Layout and Examples of
Retro-Fit Options Sharing Common Parts with Other Custom 757's.**

Layout 1 – GPP Hospital 757 Configuration

Layout 2 – Optional interior configuration 1 for 757 Retro-fit

Layout 3 – Optional interior configuration 2 for 757 Retro-fit

APPENDIX B – 747 Hospital Configuration Plan View

APPENDIX C – Synchroness Capabilities Statement

APPENDIX D – Industrial Design Studio Sample Portfolio

APPENDIX E – Pacific Aerospace Capabilities Statement

APPENDIX F – Air Cabin Engineering Capabilities Statement