

IFF/Beacons: Ships can squawk a beacon or IFF, and in human civilized space it's required. The beacon is actually a publicly identifiable signature (akin to a TLS certificate). As it is just another piece of hardware, ships can possess multiple beacons; choosing which ever one they want to suit the needs of the situation.

Sensors: Ships usually have a variety of sensors that will be detailed in a separate handout. The main set of sensors are: RADAR, LIDAR (same principle as RADAR, but with laser light), Ultra-violet cameras, Infrared cameras to detect heat sources, standard visible light cameras, and telescopes.

Airlocks: These come in three size flavors: bot sized airlocks (small), standard humanoid sized airlocks, and cargo airlocks. Cargo airlocks tend to have non-standard sizes for various reasons.

Life Support: Generally consists of heating or heat distribution, O₂ production, CO₂ scrubbing, water management and usually gravity.

- Heat can be an issue if the ship's systems don't generate enough on it's own to support comfortable temperatures. All ships have heaters in this scenario.

- O₂ production/CO₂ scrubbing/Water management: This is dependent on the type of ship. Some ships are "green" which is to say that they rely on algae and other organic micro-organisms to perform this work. These ships require less overall maintenance on this subsystem, but more frequent checks. Other ships will use mechanical systems to handle these tasks, requiring less frequent checks, but more overall maintenance. Some ships will simply dump their sewage tanks overboard and make a point to take on additional water at their next stop.

- Gravity is usually standard on ships created in the last 150 years. Gravity works via "grav-plates" that are actually the deck plates of a ship.

Engines: These main engines provide a ship with enough propulsive power to move between planets in a given system, change the ship's delta-v with relation to another system, or engage in combat. Engines are usually fusion based, and are usually very sensitive to damage to their drive cones. Ships can obtain a speed that is an appreciable fraction of the speed of light, however they can never obtain a truly relativistic speed. The faster a ship goes, the more it risks damage from other cosmic particles or micrometeorites. Hardfields, listed below, can mitigate this some.

FTL Engines: This system warps local space time around the ship to propel it faster than the speed of light. FTL drives come in pairs and they

absolutely must be calibrated correctly or the ship will be destroyed when it attempts to use them. These systems consume a lot of power.

Inertial Dampeners: These systems mitigate or remove the difficulties with higher grade engines, allowing ships to achieve velocities that previously were unimaginable. Located towards the bow of the ship, these systems can cancel out the inertia caused by the force of the ship's engines. If the engines AND dampeners can support the speed, the passengers won't feel any movement. Some of the best and highest quality inertial dampeners can be found on military craft, as they routinely travel at speeds in excess of 500 gravities of acceleration. Without this system, a ship is limited to the amount of acceleration (measured in gravities) that its passengers can handle.

Hardfields: These specialized fields are projected to one side of a ship in a two dimensional square or rectangle. Hardfields block all physical or energy based attacks and the risk of overheating the hardfield generators. Some ships do not have them at all, and others only have them facing the front of the ship to protect it during STL travel.

Power Sources: Generally these are fusion reactors: These use He3 to create and sustain a fusion reaction which in turn is used to power the ship. A specialized channel from the reaction is typically routed to the ships engines. Reactors are typically located at the rear of the ship near the engines. Reactors come in different variants based on their classes. There are some cutting edge instances of zero point energy or vacuum energy "reactors", however these are generally found only in the military sphere.

Computers: From providing navigation data and controlling the movements of the ship to playing movies and songs, computers are central to the operation of a ship. Typically installed as one unit, though higher quality ships may have redundancies, a single unit or cluster handles all aspects of the ship.

Docking Thrusters/Maneuvering Thrusters: Generally just simple gas thrusters that provide small movement capability for ships to perform fine grained movements in space. Military ships or other ships that engage in combat on a regular basis may have a cold gas version of this to hide the thermal bloom from opponent's sensors.

Communications: This system usually comprises two different receive/transmit mechanisms. The first is broadcast RF communications. The second is point to point laser based comms. Broadcast RF is very noisy

and isn't used by ships that are attempting to maintain stealth. Laser comms are significantly more stealthy, but have a lower effective range. The higher the STL speed, the less likely laser comms are able to maintain a solid lock. The communications system, in concert with the computer system, is responsible for broadcasting the ship's identifier.

Weapons: Every ship that flies in space carries weapons. The vast majority of these ships carry simple anti-collision lasers that can vaporize small objects in their path. The remaining ships engage in combat and carry stronger lasers, mass drivers (railguns, etc), missiles, and plasma weapons.

Planetary Drives: Ships that are small enough to handle the structural stress of a planet landing will have anti-gravity propulsion that allows them to push against the force of gravity for an orbital body. This is typically effective to around 5000 meters above the surface of a planet, though this altitude will be lower on higher gravity bodies and higher on lower gravity bodies. The primary purpose of this system is to allow the ship to be high enough above the surface of the planet so that it can activate its main drives, the fusion engines. Premature activation of the fusion drives, too close to the surface of an inhabited planet, is considered a capital offense (akin to a WMD detonation) on all civilized systems.