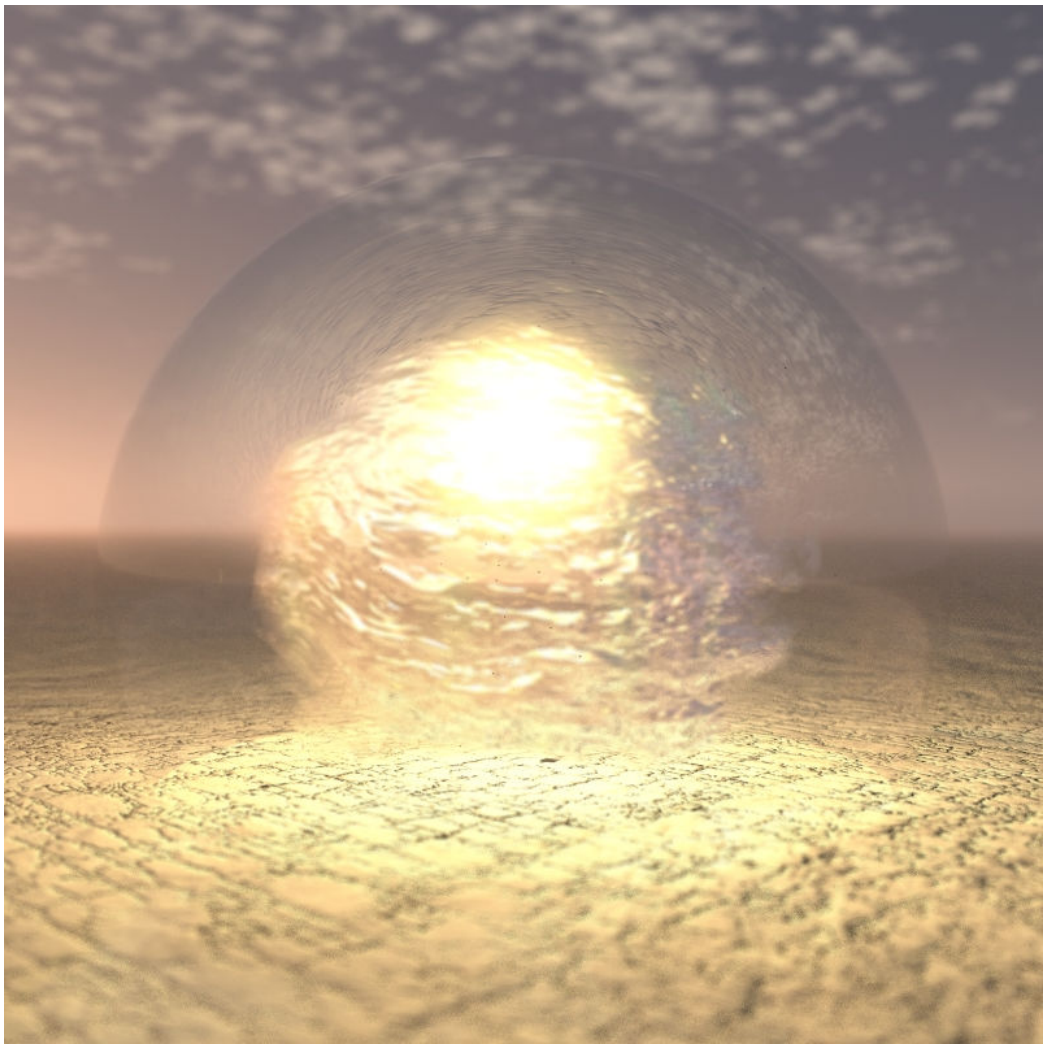
Firewall guide to unconventional weapons



Welcome to my humble armory. You can call me Jack. Sorry, cannot tell you where you are or even if this simspace corresponds to any particular real physical location. Operational security, you know. Maybe Firewall does have underground labyrinths in strategic locations filled with dangerous equipment for future use, maybe it doesn't. Believe in whatever helps you sleep at night.

Ok, let me drop some Sun Tzu on you first. The best thing is of course never to have to fight. Get the enemy to love you, want to help you, or at least ignore you. But if you have to fight, you fight to win. If you find yourself in a fair fight you have done something wrong.

What we deal with here is destruction. What is the essence of destruction? That is to prevent function of something – a weapon, a morph, a society. It can be surgical like activating the reset function of a synthmorph, or it can be entropic like riddling it with railgun bullets or blowing it up. The problem with surgical destruction is that it is complicated, so it often requires special tools and a lot of setup. You also need to know a lot about your enemy – always a good thing, but often hard to come by. Entropy on the other hand is easy, it is the natural tendency of the universe. Apply enough of it and it doesn't matter what you are fighting.

This is our collection of unconventional weaponry. We use it to dispense entropy where it does the most good. Some of it is stolen or "secured" blueprints; some of it is in-house development.

Strategic weapons

Let's start with the strategic section first. The best way of making an impression that can be measured in kilometres.

Antimatter bullets

Rare, deadly and very, very unpopular. Normally installed in special seeker rounds that can fly far enough to be safe to use, but a few railgun bullets have also been made. Generally regarded as completely insane to use, but a few TITAN-hunters I know swear by them: nothing survives ambiplasma, no matter how smart it is.

Unfortunately, antimatter ammo is quite unstable. A sufficiently serious hit on the weapon or ammo will set it off. While antimatter railgun bullets are built to handle extreme accelerations sometimes they fail when fired, blowing up the firer. Worse, some do not detonate when they should, leaving unexploded antimatter ordnance lying around or inside a body. Of course, sometimes you *want* that to happen, we have a design for it too.

The yield can be anything from a grenade to a nuke, depending on the design. Unlike a hydrogen bomb you cannot set the yield after making it. Tends to set off WMD detectors left and right, so these babies are hard to transport.

[Works as normal railgun bullets or seeker rounds (or even grenades). Critical failures have 1/3 chance of causing an immediate detonation, 1/3 chance of detonation failure and 1/3 chance of a normal critical failure. Damage starts at 3d10+10 and can be scaled up to a few kilotons. Cost: Expensive to Expensive +1. Requires special manufacture and couriering.]

Tantalum charge

This is a nuclear isomer bomb that produces an intense gamma ray burst. Leaves no lingering radioactivity, but plays merry hell with DNA, nanomachines and anything that disagrees with getting ionization and free radicals everywhere. It has an explosive power similar to TNT, since the gammas tend to bump the atoms around quite vigorously. One of the nice things about this device is that it takes a somewhat sophisticated detector to figure out that you are lugging around a block of tantalum 180m rather than just a block of vanilla tantalum.

Ok, this is puny compared to the others in the section. This is the man-portable version you would lug into the Den of Evil to cleanse it with fire. We have a big and expensive warheads that do the same thing on the national level. Yeah, this is likely what happened to Santiago.

[Explosive effects as a high explosive grenade, but in addition does 3d10+10 radiation damage to everything unshielded within line of sight. This damage is only instantly visible to nanomachines and sensitive systems; morphs develop radiation sickness from it over the next few hours. Cost: High. Requires exotic ingredient, tantalum 180m.]

Relativistic kinetic kill system

These are the Big Guns. The rocks. To be honest, I do not know if any have been built. But I would be surprised if somebody had not done it – there are a few too many paranoid groups out there with ample energy supplies and expansive strategic defence budgets.

Basically it just throws a heavy projectile at something *very* fast. So fast that the enemy will not be able to

react to it: when they see the blueshifted gammas from it they have milliseconds to react. Even if the enemy could break the missile they would still be hit by the fragments. And when it hits, it doesn't matter what it is made of since it has more kinetic energy than its own mass-energy. Making the warhead out of antimatter would just be icing the cake.

Of course, you need to point it at where the enemy will be when it hits. So this is great against somebody who doesn't move very unpredictably, like a habitat, a city or a big TITAN installation.

The big problem with RKKS is how to fire them. This particular model (courtesy of Omnicor) uses antimatter pulsed explosions: it is a series of stages that gets propelled forward when the previous stage explodes. Very visible, of course, but if you happen to have a small icy moon like, say Phoebe, Cordelia or Pasiphaë (not that I'm hinting at anything) the initial explosions would be pretty invisible and by the time the RKKS was obvious it would already be very fast. I know some Jovian think tank and the Quantum Defense Group (paranoid lunarians) have been looking at a really powerful railgun version, and there is a rumour the Titanians have found a clever way of launching projectiles using a long tube filled with deuterium that acts as a directional hydrogen bomb.

Remember, the main point of the weapon is that you have no time to react. This is for a surprise “let’s rid the world of you”-party.

[Cost: Expensive + 6. Requires approval from WMD proxy server.]

Planetary maser

Another absurd weapon that works in theory but nobody seems to have built. In a maser atoms that have been put in a high-energy state fall to a lower state when tickled with photons of the right frequency. If there are enough of them, and there is some sort of resonant cavity, you can get a cascade where a lot of energy gets released as coherent microwaves. The fun thing is that there are a lot of highly strung atoms around the universe. There are natural masers in star atmospheres, in molecular clouds, in comets, in the water plumes from Saturn's ice moons and in gas giant atmospheres. In particularly Jupiter has fine conditions for making lots of maser energy.

These masers are not very focused and directional. But suppose somebody arranged things so that magnetic fields produced a resonant cavity, fired a bunch of really big lasers to provide charged channels that would act as directional antennas and beamed microwaves at the right phase to make a self-focusing beam? You would get a *very big* maser delivering *a lot* – many terawatts - of energy.

To actually use it you would need to set up a set of control stations in close jovian orbit. Which likely will require some cooperation with the Jovian Republic.

[Cost: Expensive +5. Requires approval from WMD proxy server.]

Antimatter cluster bomb

While we are on the topic of redecorating geography on planetary scales, here is an old classic: the AMCB. Just like the antimatter warheads we all know and love, except that this one contains hundreds to thousands mini-warheads. They spread out, and detonate simultaneously across a big area or volume. Yep, this is what made the Big Shiny around Chicago-Milwaukee.

Why not use the AM in one big bomb? Because there is a limit on how much entropy you want to throw at a single place: making something a million or ten million degrees hot is not going to make much difference, all the atoms are going to turn to plasma. If your target is made of molecular matter it is not going to care much about the difference. But targets are often extended or you are uncertain of where they are. Hence the

cluster: lots of sufficiently big detonations, covering the area so no point is far from a fireball.

Oh, maybe you want to dissociate nuclei too? Then you need to get a few billion degrees to be sure (those pesky iron atoms are pretty tough to crack). Normal nukes only give you a few million degrees in the fireball and to be honest it is hard to get beyond that with antimatter warheads too. Inside the ambiplasma you can be pretty sure of some corrosion of nuclei, though. So if you think you need to cleanse a femtotech threat I would recommend just pouring antimatter on it.

Maybe I am a bit too fond of the stuff, but it is hard to beat.

[Cost: Expensive +3. Requires special manufacture and couriering. Requires approval from WMD proxy server.]

Personal defence section

OK, back to weapons you can actually carry and survive firing.

Special environment modifications

Not too exotic, but worth pointing out to surprisingly many agents: a weapon is intended to be used in one kind of environment, and outside the right environment it will malfunction. When bringing an indoors firearm into space you get vacuum welding of moving parts, lubricants evaporating, overheating and freezing. Many guns – not just railguns - short-circuit underwater. Ballistics is often off, especially in dense atmospheres like Titan. Beam weapons are really sensitive to the atmosphere; stunners can give you a very nasty surprise if you use them wrongly. On Mars your railgun attracts magnetic dust, and any electric charge will suck up abrasive Luna dust with amazing efficiency. Metals and many composites get brittle and easily shatter at outer system temperatures. And it is simply amazing how easily everything overheats in vacuum.

Usually this can be fixed by getting a weapon adapted to the environment. It is not always possible – stunners will not work in vacuum, end of discussion. These days you usually print out the right weapon for the right job, but sometimes you need to see an expert to. Weapons adapted to two environments at the same time exist, but tend to pay for it in bulk. We do have some truly exotic upgrades on file just in case – some of the theory people have had great fun calculating railguns for planets with conductive atmospheres or supercavitating seeker rounds for the bottom of the Europa ocean.

[Using a misadapted weapon has a -10 penalty (or more, as the case of beam weapons underwater), and will malfunction at MoF 30+.

Cost: for normal weapons and standard environment, adapted weapons cost as original weapon. Modifying a weapon to work in a nonstandard environment is a Moderate to High service, depending on how mismatched the two are.]

HERF beamer

Rather than just firing off an EMP blast in all directions, a beamer produces a focused beam of high-intensity microwaves . Less useful against nanoswarms, it is ideal for wrecking particular robots and equipment, and can be tuned to attack particular kinds of electronics. Just have it ramp frequency up and down to find the frequencies that set up nasty resonances or get in through small holes in the chassis. Remember that the beam can be reflected back from conductive surfaces.

It can also be used to heat food. Badly.

[3d10 damage to electronics, swarmanoids, nanoswarms and anything else that is sensitive to EMP. Metal

armor and Faraday cages protect against the beamer. Cost: Moderate.]

Decoherence device

This is a very experimental device that produces something akin to an EMP pulse for qubits. The idea is to interfere with the ultra-sensitive qubtis through their shielding, making them decay. The gun produces a strong oscillating magnetic field tuned to affect electron or nuclear spins (the most common form of qubit storage). It also tends to wreck electronics and has an unfortunate tendency to mess with antimatter containment. But when it works it will decohere most qubits within a few meters, making quantum entanglement communications impossible or limited.

We have both a portable version and one-shot grenade version.

[When "fired" the device disrupts spins in the vicinity, reducing the number of usable qubits to half. It might cause damage to sensitive equipment and antimatter containment. Cost: Moderate.]

Magnetic disruptors

While we are still at the subject of magnetism. These devices mess up magnetic fields. That one is a resonator that finds one of the fundamental frequencies of the field, adjusts and sets up oscillations like a whistle. This one throws out a cloud of stiff superconducting loops, making holes in the field using the Meissner effect. And these ones are just ridiculously strong permanent magnets that are going to accelerate like rifle bullets towards the poles of a strong magnetic field. The bulkier design is the family fun pack that contains all of the specific ones: if you don't know exactly which disruptor would work best, just throw them all into the field and let physics sort things out.

Why would you use anything like this? Well, suppose you need to take out the magnetic shield of a coronal habitat or ship. Or a surya. No, I have no clue why you would ever want to kill a lovable space whale. But if you need, this is the right design.

[Disruptors can be made in different sizes. A portable version is enough to disrupt a surya's or sundiver's protective EM field, while a bigger 100 kg version can damage coronal habitat protections. Cost: Moderate.]

Ultrasound beamer

You can transmit damaging energy through intense ultrasound too. Obviously it needs a medium to transmit the sound waves, the denser the better. Especially in liquids it is pretty amazing since the pressure swings cause cavitation: microscopic steam bubbles that erupt and collapse, heating up their interior to 10,000 Kelvin. This plays merry hell with cells and nanomachines caught inside.

In 1 atmosphere air cavitation doesn't start before 190 dB. If you want to kill a biomorph you need to reach at least 180 dB anyway; below that intensity most of the energy just bounces around in the air rather than do damage inside the body. Long before that you will start impairing hearing and produce diffuse subjective effects such as dizziness and loss of balance. To be honest there are much better ways of killing people.

You know there are EMP-resistant nanoswarms? Sure there are. The reason most nanoswarms (not to mention swarmanoids!) go down when you EMP them is that they are covered with fragile antennas. But you can use ultrasound communications instead, and some designs – including some TITAN designs – use that instead. Can be a pretty deadly surprise if you rely on emping everything. But overload the area with ultrasound and these suckers crash. This is the real reason to use ultrasound weaponry.

In liquids ultrasound do a lot of damage, but the range isn't great. Most of the energy ends up in the cavitation. In a dense atmosphere like Titan's you also get some pretty good oomph.

[Requires exotic ranged weapon [ultrasound beamer] to use. AP: -5, DV 2d10, SA, ammo 50. EMP effect against ultrasound-communicating nanoswarms. In dense atmospheres (Venus, Titan, underwater) add +1d10 damage and halve range. Anything using ultrasound senses in the vicinity will be "blinded", and takes damage to the sensors if the beam is aimed at them. Cost: High.]

Electron beam disruptor

I love the smell of ozone in the morning! Here is the cranky uncle of the particle beam bolter. While the bolter is intended to hurt morphs and blow things up, this weapon is best at messing up small, intricate structures like nanomachines and processors. But it does hurt nasty people quite spectacularly too.

Basically it is a linear accelerator producing electrons with energies ranging from a 15 keV to 10 MeV. Soft kev electrons just penetrate the surface and produce localized free radicals and ionization: great for sterilizing surfaces coverd with bacteria or nanomachines. Hard MeV electrons are strong enough to produce dislocations in diamond. The electron penetrates the material, bumping atoms out of the way, causing secondary ionization and buckets of free radicals. This is very useful, because it tends to really break nanomachines and optical computers - diamond literally turns brown, plastics degrade and nanomachines melt. While I wouldn't use this to take out a hostile nanoswarm (EMP grenades reach those hard-to-reach places) this is good for really breaking stuff that needs breaking, like weird TITAN tech.

The beam is also temperamental. Strong magnetic fields bend it. Nearby beams repel, or twist each other – do not cross them. The beams also tend to shine a bit of X-rays, so be careful if you are sleeved in a biomorph. Most of the rays will hit the target but there is always some backscatter. At the hard end you can even get some short-half life radionucleides in some metals. The beam is stopped by a few millimetres of metal even at 10 MeV, but hard beams penetrate a few centimetres into the organic materials most stuff is made off these days. If there are conductors in the target they tend to attract the electrons, causing localized heating and damage.

Electron beams in air ionize air and produce ozone, plus they can both get blooming and self-focusing depending on local conditions. However, having a broad beam is usually what you want anyway. The range is much better in vacuum, of course.

One of the big problems is the voltage difference induced between the weapon (which is pouring pure electrons at the target, after all) and the surroundings. We are talking kiloAmperes here - a lot of electrocution potential. Normal particle bolters are built to avoid this by sending net neutral beams, but this is the real deal. The best solution is electrically conductive armor, or at least superconductive grounding cables to all extremities. Be really careful in microgravity, since it is easy to lose your footing and end up surrounded by insulating air or vaccuum while shooting: when you touch something afterwards you will get a nasty spark.

By the way, if you aim a hard beam into a cortical stack it tends to turn the stored ego into a vapor. Just so you know.

[Requires the Exotic ranged weapon skill [electron beam disruptor].

The weapon energy can be set manually, from 15 keV ("soft") to 10 MeV ("hard"). The width can be set to wide dispersal, producing a cone effect ([p.194]). Since it is a beam weapon it can do sweeping fire and concentrated fire [p.194] attacks.

"Soft beam" AP: +3, DV: 1d10, Firing mode SS, Ammo: 50
"Hard beam" AP: -4, DV 3d10, Firing mode SS, Ammo: 50

Morphs hit by the beam suffer shock effects [p. 204]. Critical successes hitting a morph will disable one

cybernetic implant or degrade function of a nanoimplant (choose randomly). The effect on electronics, swarmanoids and nanoswarms is similar to EMP weapons.

If the wielder is not grounded, he will pick up charge. Next time he touches something grounded he will take 1d10 points of electric damage for every 5 shots fired (in air, a spontaneous arc will occur once 3d10 is reached).

Cost: High.]

Nanoweapons

Nanoweapons are great for sneakiness, since most beings do not perceive or function on the nanoscale. Hard to defend against something you can't see, or that changes the matter you are built from.

Most weapons in this section of the arsenal are typical nanoswarms – disassemblers, saboteurs, injectors, scouts, guardians and so on. I leave the details to the nanomilitary people; much of nanowarfare is more like aggressive immunology than real fighting. Very deadly, very important but often dependent on knowing subtle details about the enemy.

In vivo guardians

This is unfortunately false advertising. These nasties do not guard you, rather they try to kill all nanomachines inside you they can find. You can try to pre-program them not to kill nanophages or implants but usually they tend to get into brawls with almost everything that looks artificial. It can be a lifesaver if you got some nasty nanoweapon inside but it is often more about preventing that nanoweapon from using you as a staging ground than keeping you healthy and happy.

In ideal circumstances you have a sample of the nasties you want to attack, put it into this nanoanalyser unit and let the unit program the guardians. If you are on the mesh you can even get some expert support from a proxy team if you are really popular – some of the bughunters love it when you give them the latest WMD to ponder. You also know the full list of implants and nanosymbionts of the body and add their surface markers to the "do not kill" list. In the *truly* best of all possible worlds you do all this before even meeting the enemy nanite, so you can insert the guardians into your own body before engaging. In practice you inject, spray or shoot the recipient with the guardians, and then shout 'sorry!' from a safe distance as their blood begins to boil.

These guardians are really stupid, but that is actually good: earlier, smarter versions tended to be hacked by a certain AI virus.

[Like other guardian swarms, the in vivo guardians do 1d10/2 damage on other nanoswarms each action turn. They also do an equal amount of damage to the host body. The process will continue until all "enemy" devices have been defeated or the total durability (50) of the guardians are gone. For each friendly device that has been market "do not kill", roll a Programming [Nanotechnology] test to see if it was successfully protected. Note that nanophages will try to defeat the guardians. Cost: High.]

Fuel air explosive nanoswarm

Thermobaric explosives can produce magnificently destructive explosions: long blast overpressure that really breaks fragile things like morphs, and they do amazing damage in confined environments. They are unfortunately also somewhat temperamental, since you need to disperse the fuel evenly and get it to ignite simultaneously everywhere (often you get just a subsonic conflagration). I guess it is no surprise that nanotechnology allows you do improve them.

This dust is essentially a kind of respirocytes: sapphire spheres containing hydrocarbon fuel under very high pressure. If you spread it around it will disperse in the air (you can tell it to adhere loosely to surfaces or spread out, or just trust it to get everywhere in a low-gravity environment). When triggered the spheres simply open a hole and shoot off like microscopic balloons, leaving a trail of fuel a meter long. A few milliseconds later they all ignite simultaneously.

This particular batch is merely the "hand grenade" version. Real military forces have rough equivalents as battlefield weapons (or had, given that most battlefields these days have a notable lack of oxygen). One trick you can use this dust for is to set up ambushes. Just pouring fuel into the air tends to set of chemical alarms, but the dust is harder to detect. When your enemy is in the area, tell the swarm to detonate.

It should be noted that *most* well built habitats will not be ruptured by internal use of these explosives *most* of the time. The overpressure this swarm gives is a few megapascal, and bulkheads and walls are usually designed to handle more than a megapascal – if you want to *deliberately* breach a habitat, use a high explosive. But this kind of explosion tends to make joints break, jerk fullerene cables, crash life support systems, open fissures in beehive asteroids and shatter diamondoid windows. On smaller habitats the destruction can be very unpredictable and it is usually a good idea to get away soon. Besides, if you detonate one of these you have definitely outstayed your welcome.

[The nanoswarm works like a thermobaric grenade, having AP -10, doing 3d10+5 DV and is resisted by E armor. It will completely fill 1,000 cubic meters of space with maximal strength damage, but can be spread out further doing 1 point less for every extra 1,000 cubic meters up to a 6,000 cubic meter volume where it merely does 3d10 damage. Damage is uniform within the volume, decreasing by -1 per meter outside. Cost: High.]

Breathstealer swarm

Kind of the opposite of the thermobaric nanoswarm and respirocytes. Basically it is a nanoswarm that sequesters oxygen: the nanospheres just pump in oxygen from the air until they are full. In a closed environment this can remove all oxygen surprisingly fast, and it is even more efficient if you manage to get it into somebody's spacesuit. Of course, you can use it to put out fires too, although the oxygen-loaded spheres themselves become a bit flammable.

71 grams of asphyxiation swarm can remove all oxygen from 100 cubic meters of air in about six seconds. A one kilogram batch can keep 1,400 cubic meters oxygen free. Typically the swarm can keep absorbing oxygen for about 15 minutes until they are full.

Incidentally, a full breathstealer nanoswarm is a pretty potent oxidizer if you collect it into powder form and mix with something flammable. Just saying.

[Anybody inside the affected area will be subject to asphyxiation [p. 194]. If the swarm gets into the lungs it will also steal blood oxygen, making the time between the DUR tests 10 seconds and the damage rate 30 points per minute. Cost: High.]

Cannon in a can

Here is a cannon in a can. It is a nanohive making a protean swarm that converts regolith – found on any airless moon, asteroid and Zen garden in the solar system - into a solar powered phased array laser. Just let it loose and it will start converting everything into these black hexagons. Connect it to a tacnet and you have the equivalent to a ship offensive or defensive laser emplacement. The range depends on how large the field is (typically the swarm converts 100 square meters of surface per day, until it runs out of steam after about ten days). The initial 100 meters gets you an effective range of about 90,000 km and the full growth has a

light-second range. Beyond that targeting is useless anyway.

Energy is supplied by solar energy, and that is the main limiter: you get about 500 W in Earth orbit per square meter and each can store about 1kWh (so it will be fully charged after about two hours in sunlight). A typical firing releases about half of that, giving a nice 18 MJ pulse at gigawatt intensities. But it also depletes the batteries so that you will only get off two shots from the emplacement. Normally that is enough – this is a surprise weapon, not a permanent artillery battery.

[Cost: High.]

Inimicus inimici mei amicus meus est

You did get the non-disclosure geas programming, right? This little vial contains the nastiest weapon in the entire collection. That grey dust on the bottom is exsurgent virus spores from the lunar surface. Inert as long as you keep it in vacuum, darkness and this really solid vial, but doomsday incarnate if you open it.

Why would anyone ever want to use something like this? Well, the virus has a strong affinity for seed AGIs for some reason. If you find yourself up against a would-be TITAN this is a credible threat.

[Cost: Expensive. Requires approval from WMD proxy server.]

Intelligence and AI weapons

Military intelligence in its pure form. That is to say, not much.

Guerilla AI

So, you have a situation. You are badly outgunned and outnumbered. But you do have high-level access to local mesh systems and some attack software. Then you can use this AI, putting copies into every available device. It can control nearly any kind of interfaced device, turning it into a potential weapon or sensor. You just specify who or what to attack (or vice versa, who or what to not attack) and they will try to impede and hurt them. Cleaning bots will charge, spraying cleaning fluid. Smart walls will flicker and scream. Furniture might amble across the toes of enemies. Guerilla AI "grunts" are not particularly smart, but they are expendable. Most instances will at most be annoying but they do deny the enemy the use of a lot of nearby equipment and cause plenty of distraction.

If you have some minds to spare you can let them run a tacnet with the guerilla grunts. That will make them much more effective, as well as give you a nice information source.

[Guerilla AIs work like a Khaos AI [p. 332] with Fray 40 instead of a particular weapon skill. They suborn device/bot/vehicle AIs, gaining their Interests [Device] specs skill. An environment where most smart objects have been taken over by guerilla AIs will be a distracting environment for most tasks, giving a –20 modifier. Larger objects, bots and vehicles should be treated as (clumsy) enemies. If somebody coordinates the guerilla, give it +10 on its attacks. Cost: Expensive.]

AI Exploit

While it is hard to crack the sanity of an AGI or transhuman (we are flexible in our thinking and not very consistent) simple AIs are more fragile. It takes a surprisingly mild stimulus to confuse or crash some of them. Not quite "This sentence is false" or "calculate all digits of pi", but essentially a basilisk hack against certain common AI modules. You would be surprised and shocked at how many pieces of modern AIs are repeated everywhere – successful cortical pattern recognition and categorization algorithms, the TDlambdaPrime motivation driver, language modules and common sense databases. When launched the

Exploit simply flashes lots of patterns at the target, trying to set off one of the weaknesses. It is rumoured that there exist versions that can do sensory reprogramming or even YGBM hacks, but the piece we have in this collection merely disrupts function.

[The AI must make a (COG + INT + SAV)x2 test. If it fails, the AI is vulnerable to the exploit and takes 1d10 mental stress and one of the effects on page 365 of the core book. AGIs are usually immune to the exploit. Groups aware of this kind of exploit (typically AI, military and security companies) can make shielded AIs with varying bonuses on the test (typically +20). Cost: Expensive. Requires approval from WMD proxy server.]

Toxonomicon

Did you know that Skinaesthetia's P45 series of pods are all extremely sensitive to ancient organochloride pesticides such as chlordane after they have eaten fish? Did you know that if a protein has an alanine-alanine-selenocysteine-isoleucine end-chain the toxin filter from ABA Medical treats it as a debug message and ignores it completely? Did you know that cadmium chloride completely breaks the molecular sorters of the version 4.8 ETN guardian nanite? Or that enough mitomycin C would cause Meathab to develop malignant cancer and likely die within a few weeks? I'm sure you didn't know those tidbits. After all, who can keep up with all weird chemicals, morphs, medichines and filters people come up with? Toxonomicon tries to do it.

Toxonomicon is a database of poisons, bioagents and similar stuff that are effective against specific systems. If you know that your target is sleeved in a Skinthetic Glitterdämmerung v2.3 morph with Osiris Medical N9 medichines you can ask it if there are anything that might work on it (2,3,7,8-tetrachlorodibenzo-p-dioxin, apparently). The more you know about the target the better the chances are that Toxonomicon has some exploit. The problem is that manufacturers update medichines all the time, so what worked against version 2.2 might be useless in version 2.3. Especially if somebody important dies from it.

The people developing Toxonomicon constantly scour the mesh for exploits, bug reports and data. They probably do some experiments too, and likely trade info with other poison hackers (remember, we are not the only ones with something like Toxonomicon). If you are a Firewall member in good standing you can ask the database for tips, but there is also an understanding that you better report back as much as possible about how it worked. Remember that every time you use a trick from it there is a good chance people will update defenses against it.

[A firewall member can use Networking Firewall to get access to Toxonomicon (counts as a Minor favor). If the member has some information such as the morph type or brand of nanobot it will give +10 on rolls to find something to poison it. If the information is specific such as version number of the medichines or a genetic sequence is available, Toxonomicon can give up to +30 bonus. For a Moderate favor the Toxonomicon "librarians" can design something directly for the field agent (assume they have a skill of 80 in designing poisons); this usually takes a few hours.

Normally toxin filters gives nearly total immunity to poisons, but they are not perfect. An Academics: Toxicology test with –50 is required to poison them normally, but with the help of Toxonomicon (or something similar) it merely becomes a tough –20.]

Exploitonomicon

This is Toxonomicon's hyper sibling. It lists tricks to get past infosec, how to exploit or sabotage particular devices, where the weak points of particular habitats are and so on. It works the same as Toxonomicon: you input what you want to hack and it lists various tricks that ought to work.

Unfortunately software is evolving all the time. When an exploit becomes known it is used furiously for a brief while until the patches against it start raining a few minutes to hours later. New versions of everything pop up each day, often with radically different weaknesses. Yesterday Tochrome Inc solar panel arrays could be hacked to shut off habitat power with a simple mesh command, but today they are secure – except that now they will repeat mesh commands back to their apparent source, which means you can use them as a routing trick when you want to hack something else. For today, at least.

Exploitonomicon is a lot more random than Toxonomicon: it cannot cover everything, and information becomes obsolete faster. But if you know what you want to penetrate it is still useful, especially since it can tell you what will definitely not work. And you can use it on your own equipment to patch it against enemies.

[Like Toxonomicon, Firewall agents can request access with a Networking Firewall test. Checking exploits for a piece of equipment will be a Minor favor and give between +10 and +30 on Infosec tasks against it, depending on how specific data are available. It can also be used to patch up equipment, giving a one-time bonus to Infosec to prevent hacking attacks. Firewall-aligned hackers can also design exploits if needed.

Unlike Toxonomicon exploitonomicon hacks become obsolete very quickly. For each day it is a 50% chance that the exploit is detected and patched (although the patch may not reach remote, poor or isolationist habitats, of course).]

Bioweapons

Of course we have a whole section of bioweapons, but to be honest most of them are pretty uninteresting. Mostly bacteria, viruses, fungi, prions or contagious cancers that kill or impair people in yucky ways. Or bisarre hacks like this one, which makes lizards grow inside your body until they dig themselves out through the skin (that was a "gift" to one of our agents from someone at Carnival of the Goat – never kiss something with more genders than you have, I always say).

Here is a very typical habitat/ship-killer bioweapon (took out *La Florentina* last year):

Killer mold

This is a modified *Aspergillus niger* mold. Loves to grow in damp, dark places like behind the panels of old space stations. This one happens to be particularly expansive since it can break down some adamantane structures for nutrients, giving it an edge over other molds when growing in today's nanite-dirty environment. But it can also produce spores crammed with a potent neurotoxin – but only when it has been exposed to the toxin or a particular unusual trigger chemical in the environment. Just contaminate a habitat with the mold spores (say by a contaminated cargo), wait a few weeks until it establishes itself and then have someone insert the trigger chemical (for example by hacking a maker or the arrival of an object with the chemical in the surface finish). Nearby mold starts to make toxins, triggering the rest of it. Within hours the habitat is filled with neurotoxin and people will be dropping like flies. Incidentally, the mold loves that kind of decaying environment...

[The neurotoxin blocks inhibitory neurotransmission, causing cramps and seizures. Eventually death by respiratory failure occurs. Note that the mechanism is completely different from Nervex and other cholinestrase-inhibitor nerve agents – taking atropine causes atropine poisoning. The difference is noticeable to someone succeeding in a Medicine test. The rules for poisoning are otherwise like the ones for Nervex on p. 324. Cost: Expensive. Requires approval from WMD proxy server.]

Produce section

Ah, nothing like explosive tomatoes! Actually, making explosive plant material is slightly involved. Normal biochemistry is lousy at making things like octanitrocubane or even oldfashioned TNT, let alone concentrate

it enough to make a good explosive.

On the other hand, plants are great at making poisons and drugs. If you insert the right genes you will get literal killer tomatoes bursting with vitamins and botulinum toxin. These vectors are nanodevices that insert specific genes: drip them onto a growing plant, add to the hydroponic liquid or inject them. After a week the plant will be fully converted and loaded, and the only way of noticing anything is by tasting it or sequencing the genome. We have a whole bunch of poisons, from classics like cyanide and curare to designer toxins like BTX-squared and DA-conotoxins to manipulators like Oxytocin-A and Flight.

[Cost: Expensive. Requires approval from WMD proxy server.]

Assassin peanut

This is a little beauty, the assassin peanut. Invented by the Sons of Briareos for a bit of poetic justice against a former peanut magnate from Wuhan. You might not be allergic to peanuts, but if you eat this one you will *become* seriously allergic. The next time you eat peanuts, you will get anaphylactic shock. Works really well in environments where people are unused to allergies – it will take them a while to figure it out. Of course, the real trick is to fool the local medichines into misreacting too.

[Effects as Trigger [p. 324] once the victim has eaten the initiator peanut. Cost: Expensive.]

Poisons

Again, far too many to mention. Consult Toxonomicon if you have a specific target in mind.

Crybaby

An aerosol neuroagent triggering emotional vulnerability, feelings of grief and depression. Most victims start out feeling sad, and then tend to come up with some emotional trauma they start to bawl about. As crowd disabler it works quite fine, since it is hard to behave aggressively while deeply depressed. Unfortunately it tends to cause permanent effects among some people, making its use controversial.

It has also been tried as an interrogation tool, but the effects are variable - sometimes the target will want nothing more than confess their crimes to a sympathetic ear, sometimes they will go on endlessly about lost family members of no importance or just quietly sob in a corner.

[Type: Chem. Application: Inh. Onset time: 2 minutes. Duration: 4 hours. Normally no addiction. Temporarily gives 2d10 SV, with traumas corresponding to states like avoidance, fixation, indecisiveness, grief or catatonia. At the end of the duration all but one of the SV points disappear and the traumas clear up. In vulnerable people (where more than 4 traumas are triggered) disorders such as depression appear and do not end when the drug effects end, they have become self-sustaining.]

Chemical Arrest

A behavioural control nanodrug that forces the target to obey whoever is indicated as a lawful officer (usually by a complementary pheromone signal) and go to a suitable arrest location for processing.

This kind of behavioural control drug is being developed by various Consortium companies to improve social cohesion. Milder forms that just promote good behaviour have proven somewhat tricky to achieve (both because good behaviour is hard to define, and because the psychological side effects are pretty severe), but getting people to want to walk over to the police station is on the right level of complexity to be worthwhile at least for some police actions. Criminals are doing their best to develop their own applications for the drug, and I am pretty sure you can see Firewall applications too.

[Nanodrug. Application: Inh, inj, D, O, duration: 8 hours. No addiction. Temporarily produces the effects of behavioural control: blocking disobeying police orders (requiring WILx3 Test to do, suffering -20 modifier to actions against orders), encouraging going to arrest (WILx3 Test to avoid). Unless the person is entirely OK with being behaviourally controlled they will take 1d10 SV from the experience. Cost: High]

Proust-in-a-can

This drug triggers a mnemonic fugue: the victim experiences extremely vivid past memories (usually something related to the situation just before being exposed to the drug or a random childhood memory).

[Nanodrug. Application: Inh. Duration: 2 hours. Addition modifier: -10. Mental addiction. When exposed the character must make a WILx3 test. If it succeeds they will be able to act, but will have constant flashbacks giving -20 distraction. If it fails by more than 30 the character will behave as if in a fugue state (p. 213). Otherwise the character will be suspended in the memory and act accordingly, adapting behaviour slightly to the real environment (if reliving a playground quarrel they might still regard the real-world enemy as the big bully, but will try to fight him with child methods). Cost: High]

Hidden weapons

The best hidden weapons are everyday objects – everything and everyone is weapon. Look around you. I bet that within an arms' reach you have at least three objects you could kill or hurt someone with. They are legal, nobody notices them and nobody expects them to be dangerous.

Still, sometimes it is nice to go the spime way.

Smart fan

Ah, the war fan, the coolest oriental secret weapon ever! Just an ordinary paper or silk fan but with sharp and hard ribs. You just daintily fan yourself, blush a bit and WHAM! impale your enemy. The downside is of course that it wrecks the paper in the fan, but in many situations it is enough to get one surprise attack to win the battle. Especially if you poison it with something nasty that gets injected by the ribs. The original war fans were made of metal, but we can do better thanks to light diamondoid polymers. They can also be made self-repairing and self-cleaning by using smart matter in the "silk". This also allows them to be used as signalling devices, cameras and laser guides. Yes, the chance of this kind of weapon ever being the right choice (and that you remember to pack it) is very small. But the coolness is enormous.

[Requires the exotic melee weapons skill tessenjutsu. AP –2, damage 1d10 + 2 + (SOM/10). Note that it can be used to parry or block, handling up to 8 points of damage.

The fan contains poison or nanomachines that are injected if it does damage to the target. The smart paper or silk repairs itself within a minute. Typically it contains software to produce nice patterns, hidden communications software, a camera and microphone, and optionally an IR laser sight (a targeting display on the user's side allows selecting a target for indirect fire). Cost: Low.]

Smart card

This is the crazy descendant of the shuriken, a ninja business card. Another item in the category "looks cool but is hell to use". It is a small, flat card that can fairly easily and unobtrusively be carried in a pocket or hidden inside the lining of something. Take it out, throw it and let its monofiliament edges cut the target. Except that to be really effective it needs some heft, and that is hard to do with a plain card. So whoever came up with it added ion engines. When thrown it accelerates towards the target, keeping balance through spin but angling the trajectory to hit. If it misses it will try to boomerang back to the thrower, who neatly

catches it. At least that is the advertising version. The real version is usually that it misses the target and either embeds itself in a wall, or comes back and the thrower cuts himself when trying to catch it.

I know a Tong that uses these as a gimmick. They use them as thrown passkeys and signatures.

[Requires the use of Exotic melee weapon [smart card/shuriken] or thrown weapons [smart card]. AP -2, DV 1d10+(SOM/10). A miss means that the card will have 50% chance of avoiding hitting a wall (modify depending on environment) and returning to the thower the next round. The thrower rolls again for catching it (this is an action). If the catch fails critically it will hit. A miss means 50% chance again of getting stuck in a nearby wall and 50% chance of a second return attempt. Repeat until it hits something. The card can optionally be made explosive or poisonous. Cost: Low.]

Shock clothing

Like shock gloves, but built into smart clothing. Normally hard to use (-20 to hit) but sometimes more discreet than a shock glove. Shock clothing is automatically insulated and prevents shock damage from eelware and shock gloves.

[Damage: 1d10 + shock (p. 204). Cost: Moderate. The clothing has energy for 20 uses.]

Thermokinetic discharge

Smartclothes feature that builds on shock clothing. The clothes can focus energy resources to cause a local small explosion with very high brisance, suitable for breaking windows, locks and walls. Lousy against biomorphs, but very satisfying against annoying bots and synthmorphs. Make sure you keep your hands away.

[AP: -10, Damage: 3d10 against hard objects. Does a mere 1d10 damage against soft targets. This uses up 10 charges. Cost: Moderate.]

Wigner blocks

Sometimes you need to burn or blow up things but unhelpful security checkpoints frown on carrying explosives. Personally I like thermite (just rust and aluminium), but the Wigner effect allows you to charge up apparently innocuous objects. This was first observed in graphite moderator rods in fission reactors: the neutrons kick atoms into new, high energy positions in the molecular lattice. If you heat the graphite to 250 degrees it will anneal and release the energy – a decent 2.7 kJ/g. You still get more from burning it, but not quite this vigorous flash.

Thanks to the wonders of computational chemistry it is possible to Wigner effect charge some other substances. In particular you can prime steel to be ready to ignite into a nasty metal fire (assuming you got an oxidising atmosphere). When triggered the metal often splinters and starts to burn something fiercely.

[Wigner materials do 1d10 extra damage when activated, but the real utility is that even normally hard to ignite materials will start burning. A metal fire does damage like liquid thermite. Cost: Moderate. Requires special manufacture and couriering.]

Final payback farcaster

Sometimes it is not enough to just get the hell out of Dodge, but to burn the place to the ground too. A normal emergency farcaster uses a picogram of AM to power itself and blow up your head. If you put in a nanogram of AM you get a pretty serious bomb instead. The containment needs to be tweaked a bit so the

emissions look the same as a normal emergency farcaster. This is usually enough to convince customs officers that you are OK (few want to poke into this kind of device), especially since it is easy to fake device IDs to make it look like one of those old and slightly leaky Graham-Sevilla Inc farcasters.

[The explosive force of the farcaster is 215 kg TNT, about the strength of a small bunker buster bomb. Cost: Expensive +1. Requires special manufacture.]

Fat man bomb

I mentioned earlier that it is hard to make explosive living tissue. But you can use a suitably reprogrammed healing vat replace your adipose tissue with a special biocompatible, fat-like explosive. It looks natural, it is hard to detect unless the person scanning you is very suspicious, and it goes boom whenever you like it. Tends to ruin your morph and your stack - if it survives - tends to fly off to god knows where. Perfect for the flabby suicide bomber.

[The explosive power depends on morph size and obesity. A fit or small morph has explosive power 4d10+10, a normal morph 5d10+10 and a large or obese morph 7d10+20. The owner takes five times the normal damage. Wearing hard body armour or clothing intended to act as shrapnel gives AP -4 and kinetic rather than energy damage. This kind of bomb gives a +40 tests to conceal it. Can be equipped with tamperproofing that detonates it if someone tries to remove it. Cost: High]

Yipping Doom Semivolitional Biogrenades

Some people at Locus are truly warped. This is a life support box containing four very cute, very annoying chihuahua puppies that act as grenades. When activated they are shown their target, given a smell or guided using a laser guidance system. The explosive force is as a normal grenade, with options including plasmaburst, HEAP, overload, frag and thermobaric. Don't you just want to cuddle with them?

[The grenade has stats like a smart dog, although INT is just 5 while SAV is 15, and instead of intimidation it can look cute - a successful cute skill use makes the victim feel nice towards the grenade, preventing attacks or even getting an unsuspecting victim pick it up. The small size gives -20 to hit it. Cost: High]

Sabotage gremlins

Oh we got piles of gremlins. From old-fashioned annoy-ants to sabotage swarms to networked disassembly wreckerbots. To be honest we do not have the time to go through them all. The basic rule is the same: if you know what you want to hurt, you can hurt things a lot more than using brute force. But brute force is pretty handy too: even a well-defended installation cannot handle a cubic meter of hyperactive wirecutter crabs getting into the engineering spaces.

Defence

As you might have guessed I am of the "the best defence is a good offence" school. But sometimes it makes sense to hunker down a bit. Morphs are expensive, and resleeving loses you tactical momentum.

Personal point defence system

If spacecraft and fighters can defend themselves against incoming missiles, why can't you? PPD systems try to do it.

First, a PPD cannot protect you against energy weapons or kinetic weapons like railgun bullets. Some may try to release chaff against an incoming beam, but this is unlikely to help much. Some even have an

aggressive defence mode that strikes back against the attacker, but it still won't save you from a good shot. PPDs try to detonate incoming attacks when they are far away. There has been attempts at pushing kinetic attacks to the side so they miss, but it is very hard to do. It is equivalent to hitting the incoming bullet with another bullet at comparable speed, from the side. Why not vaporise bullets with a laser? Because usually the best that can be achieved is that a molten glob of metal strikes you at supersonic speed.

A PPD is essentially a souped-up micromissile gauntlet (or handbag, rucksack or pet, depending on style) with a targeting AI with an itchy trigger thinker linked to the best sensors you can get – at least you need radar, t-wave or lidar, and you want them to be 360 degrees. But to really work you need a lot of parallax: tacneted sensor drones around you or a bodyguard nanoswarm are practically a must. When the system sees something that fits its program (moves at a sufficiently high velocity towards you, thermal emissions like a micromissile) it will launch an interceptor that tries to slam into it. If you are lucky it is distant enough that you avoid damage. If you are *really* lucky you also avoid doing too much collateral damage, but this is unlikely – this kind of system tends to kill bystanders, which is why it is rare. My advice is to stand well away from a celeb with a PPD.

Incidentally, PPD systems are usually *hardwired* not to be able to target transhumans directly. Keeps liability down and prevents enemy hackers from turning your system against yourself. Any hacker worth their salt will of course figure out another way.

[The PPD system AI has Perception 60 and Seeker Weapons 60. Hitting a micromissile in flight has a modifier of –50 (-30 for very small target, -20 for fast moving target). The AI will get +10 for each drone with relevant sensors, +10 for a bodyguard nanoswarm or other distributed sensor network, +10 if the defended person has suitable sensors. These modifiers are cumulative up to neutralizing the –50 modifier.

In order to detect an attack it needs to succeed with a Perception test where it gets the bonus from the sensors. Also roll whenever something unusual happens in the environment that might be mistaken for an attack (railgun shots, missiles attacking other targets, an exotic insect): on a critical failure the PPD AI fires.

The micromissiles are usually frag, HEAP or plasmaburst. If the defence succeeds the attacking missile may or may not detonate together with the defence missile. It is possible to instruct the AI to fire multiple shots (up to 4 simultaneously) to increase success chances. Some systems also allow automated defence: any shots against you the AI detects will be traced back and hit with a micromissile. Smoke/chaff missiles can be included, which will try to form a protective cordon in front of the user that blocks sight, IR and laser.

A handbag array or a defence pet has 8 micromissiles. Cost: High (designer defence pets Expensive).]

Bodyguard nanoswarm

The ultimate high-tech defense for the celeb on the go, a nanoswarm following you around and keeping you from harm. Basically it is a guardian swarm mixed with some scouting microbots (mainly documenting everything around you for your oh-so-fascinating lifelog) and an injector swarm with some suitable nonlethal toxin (sleep drugs are popular). It is controlled by a small AI in a bracelet hive linked to your muse. When the Muse thinks someone should be excluded from your amazing presence the swarm turns visible and buzzes threateningly; beyond that it will tranqulize your admirer. Of course, people with this kind of defense have problems being in the same room as each other since their bodyguards tend to eat each other.

I know at least one hyperelite who have added a sabotage swarm to the bodyguard, interfering with cameras and bugs. On the other hand, others are more interested in adding their trademark scents or cleaning functions.

[Acts as a guardian, scout and injector nanoswarm. Cost: Expensive.]

Inert cover

This is a thick hemispherical cover made of the most inert low-energy substances we can find – aluminia, quartz, helium etc. It is tough for nanomachines to digest, most corrosives just slide off and it is darn good as insulating armour. It consists of a random layering of dielectric and conductive layers, making it reflective but nonresonant – it will reflect most electromagnetic frequencies extremely well. This is the kind of shield you want to lie under when strange shit really hits the fan. If you are bringing any of the really heavy weapons to the battle, this might be worth packing too.

[Armor rating 30/30. The armour acts as if it had fireproofing, refractive glazing, shock proof, a lotus coating, EMP protection, and thermal dampening. It is too heavy to move in. Cost: Low.]

Snotsuit

A very unappealing lifesaver. It was inspired by how mucous membranes catch particles, and unfortunately it looks it. It is a nanohazard suit that exudes a thick, sticky goop that clogs up nanite actuators something fiercely. The goop is chemically very inert, trouncing most disassembler swarms and carrying them away. The downside is of course that you are a wandering glueball and nearly anything will stick annoyingly to you before dripping off. Still, it beats being disassembled.

[As Standard Vacsuit (7/7), but with Immunogenic system, Self Healing, Nanodetector, Fabber for goop. Beside the inherent protections against nanomachines they also have to deal with the goop. Any attacks or interactions will reduce the DUR of the swarm with 1d10 per turn. All physical actions are at –10 while in the sticky suit, and fine manipulation might be reduced by –20 or more. Cost: Moderate.]

Getting stuff

I am certain that next time you are going off on some exciting adventure fighting TITANs, the Illuminati or sentient lobsters you will want some of the items in this arsenal. So how do you get them, and what do they cost?

The good news is that you can "buy" them with i-rep. In fact, you cannot buy the interesting ones with credits – money trails are often far too traceable. Just contact us in the equipment ad hoc and ask nicely.

Some of the devices here (essentially all the fun ones) requires approval from the WMD proxy server. Send in a request via the Eye and explain why you need to use something so exceedingly dangerous. Try to be concise. The point of this procedure is simply that this kind of device is something Firewall normally tries to fight – we shouldn't be spreading it around.

Other devices requires special manufacture or exotic ingredients. They have to be put together by experts, use antimatter, weird isotopes etc. Usually you need to rope in some experts for a Moderate service to get it done. Such devices usually requires couriering from wherever they are made to you – and that can be a pretty expensive service too, if it needs to evade the authorities ("No sir, I had no clue that paperweight contains 8 grams of antimatter when I packed it!") or get from one planet to another.

Expensive: 10,000-100,000 credits
expensive +1: 100,000-1,000,000 credits
expensive +2: 1,000,000-10,000,000 credits
expensive +3: 10,000,000-100,000,000 credits
expensive +4: 100,000,000-1,000,000,000 credits