Technology

USEA possesses some unique pieces of technology.Most have been acquired indirectly from the Protectors and are not fully understood. Reverse engineering them is likely to produce a plethora of spin-offs of great use.

Nanosuits

A few emps are equipped with nanosuits. Tremendously versatile, these suits consist of nanomachines that can change color, shape and properties as well as repair damage to the suit. Apparently controlled by the quantum powers of the emp, only emps can successfully get them to act on their behalf.

Production of nanosuits is somewhat cumbersome. It requires using their repair abilities to grow more suit than needed through a process of automated damage and raw material supply (jokingly called "stonewashing" by the engineers overseeing the process).

There is some concern about the nanosuits hidden programming. Emp operatives have discovered unsettling things suggesting that the suits can actually be remotely controlled and may actually contain even more powerful technology than they appear to have – and it could be mastered by outside forces,

Superspace Gates

Superspace gates are semi-permanent openings between parallel worlds. Their exact mode of operation remains obscure, but physicists involved believe they actually causes a very localized worldline convergence along a three-dimensional hypersurface thanks to a toroidal Einstein-Bose condensate along the "doorframe" acting as a fake naked singularity.

Physically the gate looks like a circular opening (jokingly called stargate by most technicians). The "doorframe" is a very compact particle accelerator/ion trap where the "super-EBC" is held suspended. It is in turn surrounded by at least a roomful of heavy support machinery: cryogenic cooling, control lasers, optronics and controlling computers.

Setting up a gate requires a homing beacon to lock onto. The homing beacon device is placed in the target world and the gate activated with the same settings. Activating the gate first requires a cooling down of the system and creation of the super-EBC, a process that normally takes four hours. Once the gate is "cool and clear" it can be opened with a few computer commands. Closing

the gate can also be done instantly, leaving the super-EBC slightly unstable for a few minutes until it restabilizes and the gate can be opened again.

The opening appears as a flat disk hanging in the air on the other side. The circular edge is fuzzy with diffraction effects and sharp as a knife (the gate machinery covers the inner side, making it safe to step through, but on the far side of the gate the outer edge is open to the air and slightly risky). The opening appears in the same location as the gate machinery in the parallel world and cannot be moved.

Gates have been found to be very sensitive to active quantum powers in the vicinity. They cannot be opened to or from a point where there is significant quantum activity since it disturbs their stability. Once open the gate can handle emps passing by, but do not take kindly to being subjected by strong quantum effects. They also cannot be opened to reference frames moving at different speed.

Emp Inderdiction Technology

Although still on the experimental stage several ways of limiting emps have been found.

The most effective is aerosolised stem cells. As emps inhale the stem cells they naturally attune to the emp and if the emp uses regeneration powers they will also regnerate – into instant lung cancer. The way of getting rid of it is a thourough wash of the lungs, or cutting out a lung, allowing it to regenerate, and then cutting out the other one (plus careful washing of the throat, skin and nasal passage).

Some emps have effects on randomness, making it possible to detect them from afar by measuring deviations in random number generators. It is inexact, but can detect a few of them.

There have been serious discussions whether to equip USEA emps with active RFID tags enabling tracking of them. Most analysts agree that it would just send the wrong signal: the problem is rouge emps, not the USEA ones (conveniently ignoring some recent scandals).

The only way of keeping an emp safely imprisoned appears to be keeping them sedated. Supermetabolism might metabolize most drugs, but certain extreme surgical curare derivatives and artificial breathing appear suitable for keeping emps physically subdued. The approach used by the Invader interrogators, using a heart catheter to send electric shocks into the heart muscle, has been judged inhumane.

From animal experiments it is known that the empowering neural network can be destroyed, but it takes surgery that usually leaves the subject blind or brain damaged. There are experiments with transcranial magnetic stimulation that suggest that they can temporarily (a few minutes) disrupt brain activity in such a way that emp powers get disrupted. It is just that the TMS coil has to be placed close on the back of the head and fired that makes it a bit impractical. And the process likely only works on emps empowered with Carpark – Syuit speakers are safe, although a stimulation of the language centers in the (usually left) temporal lobe temporarily disrupts their power.

Empowerment

> Computer science only indicates the retrospective omnipotence of our technologies.
> -- Jean Baudrillard

The empowerment process is the cornerstone of USEA and surrounded by rigorous security. At present nearly all empowerment is done at a lab in Quantico, although there are plans to move some of it to another location.

The "Carpark Method" is based on placing subjects with certain genotypes in week-long sessions of virtual reality while placed in MRI cameras. Nutrients and memory enhancer drugs are infused and waste drained away. Computers generate imagery that causes responses in the brain, and the system learns how to adjust brain activity to set up suitable patterns. It has been described as "most boring acid trip ever". By training the brains repeatedly particular neural networks can be created through Hebbian learning. At the end of the week about 20% of the subjects develop some kind of enhanced powers.

The basic procedure has been discovered by the media, although USEA has never confirmed the allegations that it uses VR and MRI. It is the exact programming training the brains that is the real secret. Access to the supercomputer running the Carpark software is restricted to a handful of people.

A certain genotype – EGCG – has to be present for the process to work reliably. EGCG occurs in about 10% of all humans. USEA has no shortage of applicants: it is deluged with applications from every lunatic – and multiple Ph.D. Athlete – for empowerment. It has mostly adopted a headhunter strategy: find good people, interview them, if good enough hire them, test whether they have the EGCG variation, and if it all looks good empower them after a few months of employment. If they can't be empowered it is fine anyway, since they are useful anyway.

Afterwards the exhausted candidate is given a nights rest and then sent to Toyland – the internal name for the empowerment validation lab. Here researchers try to trigger and measure the emergent powers. Working in Toyland is risky, since many emps do not know what powers they have and how to limit them. More than one researcher (and emp) have been wounded by uncontrolled strength, forcefields or explosive powers. The Toyland building in Quantico has been damaged many times, and the current plan is to make the testing equipment mobile and move it from disposable building to disposable building on the testing grounds.

There is no way of predicting what powers people develop. Sometimes the powers reflect some subconscious sense of self or dreams, other times they make very little sense. The standard assumption is that they are random, based on whatever brain activations happened to come along.

There is anecdotal evidence that older people become stronger emps. Some of the most powerful emps – and with the most problematic powers – were fairly old when empowered, while many younger emps seem to have tamer powers. But there is too little data to decide yet, and several experts doubt there is any link.

Exactly how the empowerment process works deep down is unknown. The theory team believes it is based on emergent macroscopic quantum phenomena like the quantum powers the emps display. This explains the surprisingly high probability of success: theoretical calculations suggest that the chance of getting the neural network training right and linked in an useful way to the subconscious is exceedingly small. The majority of emps should be insane, have chaotic powers or just detonate. But as the quantum powers emerge there is a selection effect: worlds where they fail in a chaotic manner get absorbed by the ordered worlds where they function well, adding to their probability. Emps (or rather the computer-MRI-emp system) bootstrap themselves from quantum noise.

Old Technology Is Still Lethal If Used Properly!

Arrowhead found on Eglin AFB FL; USAF Photo by Sarah McCaffrey

Whether You Are Protecting Lives or Sensitive Information, Never Discount the Threat from Even "Old" Technology. Practice Good OPSEC!