TRAVELLER

ROBOTS

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1. INTRODUCTION

Almost 25 years have passed since the first Traveller rulebook III: Robots was published and technology, especially as it relates to computers and robots, has developed substantially since that time. The introduction of the internet in particular has contributed toward changing our grasp of and view on computers and their availability. With this book, we would like to add to the Traveller rules in this context. We have used the old expansion as a base for this book as far as possible and reasonable. The same command and logic programs introduced some 25 years ago can still be found in this book, for example.

Chapter 2 presents an overview on robots of the Third Imperium as well as in Charted Space. Chapter 3 introduces some Traveller careers with special relations to robotics. Chapters 4, 5 and 6 then deal with the actual core: how to construct a computer or a robot. Chapter 5 contains the rules for building a computer, for networks, definitions of artificial intelligence and digital personalities.

The computer rating has been slightly modified from how it appears in the core rulebook. The core rulebook states the maximum computer rating is 6 at TL15, which corresponds to Classic Traveller, that is, the releases from 1977–1986. This book, however, sets the maximum computer rating at TL15 to 8. The core rulebook stated that computer technology did not progress at two TLs. This seems rather unlikely considering current processor development. Furthermore, according to the core rulebook, the computer gets more expensive at a higher TL although its performance stays the same. We have thus decided to strike an alternative path for computer ratings.

In Chapter 6, the robot's body, whether hand-sized or for a huge mining robot, can be put together.
We distinguish between robots and drones. Once a cockpit is added, the rules can also be used to create mechs. As far as rules are concerned, there is no limit to the size of the robot.
Chapter 7 shows several sample robots with different fields of application.

Chapters 8 and 9 deal with nanobots and cyborgs. Neither phenomenon was part of the Classic Traveller's official background, and thus far each has played an insignificant role in the Universe of the Third Imperium. Many players and game masters might not even want them in their campaigns. But as the Traveller rulebook was cleared for general Science Fiction role-playing games under the Traveller Logo License and has already been converted for other systems such as Babylon 5 or Judge Dredd, it seemed reasonable to include nanobots and cyborgs in this expansion.

Chapter 10 describes cybernetic and biological augments that can be used to improve a PC's or an NPC's skills.

Chapters 11 and 12 attend to the development of robots in the game and to robots as player characters. The rulebook is completed with some NPCs that will, we hope, give the game master enough suggestions for adventures and maybe even an idea for a campaign around robots and computers

2. GENERAL INFORMATION ABOUT ROBOTS

2.1 ROBOTS OF THE THIRD IMPERIUM

Makhidkarun were the first to launch a series of highly autonomous robots with TL13 control computers in 298. The robots were much more intelligent than older models, and even people without special training were able to operate them. Because of the easy operability of these new models, the Third Imperium witnessed a robot boom.

More than 100 years later, in 404, several scientists gathered in Shudusham for a robotic conference to exchange their technological insights. Shudusham was an ideal venue owing to its centrality and historical importance, and the conference was such a success that it was held regularly, every 10 years, from that time. Each conference lasted one year, and an increasing number of participants from robot specialists to manufacturers, journalists and lobbying bodies, came to Shudusham. Soon the conference was also open to the public, and builders were able to present their novelties.

Makhidkarun announced another great technological breakthrough in 711. The company had developed a control brain with a 25 percent synaptic processing. This led to another intelligence boost and allowed for better, more effective programming methods. The number of expert systems multiplied in the following years.

Some years ago, Shinku University Research Directorate (SURD) received a Medal of Merit from the Shudusham Conference for presenting the first convincing pseudo-biological robot. Participating experts could not tell whether they were talking to a human being or a robot. The robot, nicknamed "Telku," made a sensation at the conference. So far, none of the manufacturing companies in the Third Imperium has started mass production of pseudo-biological robots or androids, but the technology has come to a point at which this would be possible.

2.2 ROBOTS OUTSIDE THE THIRD IMPERIUM

Of course, each culture has its own views on dealing with and creating robots. The robots often mirror the physical and psychological features of their makers.

Effects of quality and price

Rating	Quality	Price
Low	Life expectancy × 0.5	× 0.5
Average	Life expectancy × 1	× 1
High	Life expectancy × 1.5	× 1.5
Excellent	Life expectancy × 2	× 2
Superior	Life expectancy × 3	× 5

2.2.1 ROBOTS IN THE ZHODANI CONSULATE

Of all the major races, the Zhodani are those to use robots most. However, development of intelligent robots is hindered by the Zhodani's focus on psionics. All Zhodani robots have psionic interfaces. Thus it is simple for any Zhodani noble to manipulate a robot and its circuitry to give it instructions. This is also the reason why Zhodani robots are not intelligent, and research concerning artificial intelligence is virtually nonexistent.

An important aspect of Zhodani robots is the fact that they deal with objects but not with people. A robot is, for example, used for construction work, but a Zhodani will always prefer a living translator to a robot version if possible.

Overall, a robot's range in the Zhodani culture is even more limited than in other major cultures. This is no surprise, as a robot is harder to control with psionics than a human being.

TL
14, sometimes 15, with a focus on warbots.

INTELLIGENCE
Low

WARBOTS
Every military unit has sophisticated semi-independent warbots. They are dangerous when operated by a Zhodani, but because of their low intelligence, they are less threatening when handled by non-Zhodanis.

EXPERTS
None

PSEUDO-BIOLOGICAL ROBOTS/ANDROIDS
None

PSIONICS
Almost all Zhodani robots have psionic interfaces. However, all robots controlled by such interfaces are forbidden throughout the Third Imperium.

QUALITY
High

PRICE
Average

2.2.2 ROBOTS IN THE ASLAN HIERATE
The Aslan use robots only for female tasks, never for male ones.

TL
14

INTELLIGENCE
Average

WARBOTS
The Aslan mainly use remote-controlled war drones, but only if the enemy does so, too, so that the fight stays fair and honorable. They would never use warbots against an unarmed Aslan.

EXPERTS
The Aslan have very good expert systems which are, regarding their tech level, surpassed only by Hiver robots. Medical robots used on battlefields are the most common experts in the Aslan Hierate.
Pseudo-biological robots/androids: The first experiments with androids have just been presented. As all other robots, they are designed only for female tasks.

PSIONICS
None

QUALITY
Average

PRICE
Average

2.2.3 ROBOTS IN THE VARGR EXTENTS
Given a choice, a Vargr would rather push around another Vargr than a robot. Vargr robots come in a wide range of configurations and qualities. It is also common to find a robot with components of different tech levels. Vargr use robots mainly for building and production work, in space, in hostile atmospheres and as pilots or drivers for spacecrafts, small craft, air rafts and ATVs.

TL
13

INTELLIGENCE
Average. Highly autonomous robots are extremely expensive in the Vargr Extents.

WARBOTS
Vargr do not use warbots. They prefer personal fight. Having a robot fight in a Vargr's place would imply a weak character.

EXPERTS:
In general, these systems are more primitive and not as efficient as those of other races. Although Vargr use some expert systems, they would never use them as decision-makers as this would imply a lack of leadership.

PSEUDO-BIOLOGICAL ROBOTS/ANDROIDS
None

PSIONICS
None

QUALITY
Because of their depreciatory view of robots, the Vargr maintain them badly or not at all. They repair a damaged robot just as much as necessary to have it continue its tasks. The Vargr robots' quality is thus usually low. Furthermore, only very few of them have hardened systems (fib).

PRICE
High, considering the product's quality.

2.2.4 ROBOTS IN THE TWO THOUSAND WORLDS

The K'kree use robots mainly for menial work and, just as the Vargr, never as decision-makers. Many robots are also used for work in narrow rooms because the K'kree are slightly claustrophobic. The robots' build mirrors this nation's herd structure. Often, several drones will appear accompanied by a control unit to do their work.

TL
13

INTELLIGENCE
Low. K'kree robots work mostly with limited base commands, which is usually enough for menial tasks.

WARBOTS
K'kree never use armed robots. They do not like to see non-K'kree bearing arms.

EXPERTS
The K'kree make all important decisions themselves and thus do not use any expert systems.

PSEUDO-BIOLOGICAL ROBOTS/ANDROIDS:
The K'kree show little interest in building robots that look like K'kree although it would probably be easier to build pseudo-biological robots because of their size.

PSIONICS
None

QUALITY
Average

PRICE
Average

2.2.5 ROBOTS IN THE HIVER FEDERATION

In Charted Space, the best robots are built by Hivers. They use their robots universally, especially for building and designing their huge underground cities. There is one exception to the use of robots, however: The cleaning of their dwellings is taken out by burrowing animals, with which they have a symbiotic relationship.

The Hiver robots also mirror their constructors' traits. Most of them have tentacles to move and to manipulate their surroundings. Their touch sensors are very sophisticated, placing Hiver robots among the most skillful. A rising number of robots have been built for export outside the Hiver Federation lately, with adjusted looks for each market. Translator robots are especially popular among human traders, as Hiver robots have excellent voice recognition.

TL
15, sometimes 16. Hiver robot brains mostly have a TL of 16.

INTELLIGENCE
High. Hiver robots can adjust to almost every situation and are adaptive.

WARBOTS
Hivers seek to avoid fights; thus their only ground forces are sophisticated warbots. As these robots are extremely deadly and efficient, it is illegal to import them into the Imperium.

EXPERTS
Because of their high intelligence, Hiver experts are used almost everywhere. They diagnose and treat illnesses, negotiate contracts between member worlds and the Federation, give legal advice, plan and develop other robots and carry out other tasks that would take a living being years of education to master.

PSEUDO-BIOLOGICAL ROBOTS/ANDROIDS
Hivers do not build pseudo-biological robots of their own race, but these units are sought after by other races. The high price for this type of robots does not allow for mass production, of course, but it is enough for a profitable niche market.

PSIONICS
None

QUALITY
Excellent. Hiver robots have a substantially longer service life than their Imperial counterparts and are superior in general, even though they are smaller by an average of 20 percent.

PRICE
Prices for Hiver robots are just as high as their quality. A Federation robot costs only 60 percent of the price for a similar Imperial robot. For every sector of distance to the Federation, the price rises 20 percent. A Hiver robot bought on Terra (a distance of two sectors) thus costs 100 percent of the standard price, one bought on Capital (a distance of five sectors) even 160 percent and 260 percent at the Spinward Marches if it is available there at all.

2.2.6 ROBOTS IN THE SOLOMANI CONFEDERATION

Robots are used for many different tasks in the Solomani Confederation because of to an ambivalent and inconsistent attitude of humans toward robots. On some worlds they are forbidden altogether, while other worlds use them for all tasks as the Hivers do. There are many organizations and also "religions" built around robots and corresponding ethics. Fewest worship robots. The best-known one is the Society for the Sovereignty of Man over Machine (SSMM), located on Thetis/Kukulcan. Solomani grav technology is not as advanced as it could be, usually lagging behind general progress by one or two tech levels. Accordingly, grav technology is more rarely used for Solomani robots than for any other robots. This again has its origin in the contradictory and differing opinions of Solomani about the mobility of robots.

TL
14

INTELLIGENCE
High for their tech level.

WARBOTS
Solomani rarely use warbots.

EXPERTS
Even though their expert systems are not as well developed as Hiver ones, the Solomani know how to use them skillfully. In the Solomani Confederation, expert systems also develop expert systems (robots develop robots).

PSEUDO-BIOLOGICAL ROBOTS/ANDROIDS:
Solomani cannot develop androids at their current tech level, but first attempts in that direction have been made.

PSIONICS
None

QUALITY
Varying. Some models can compete with Hiver products; others are no better than Vargr ones.

PRICE
Prices vary greatly. There are some worlds, however, whose import and export taxes on robots are low to nonexistent, offering excellent opportunities.

2.2.7 ROBOTS OF THE ANCIENTS

Information about the Ancients' use of robots is contradictory, and there is little source material left after thousands of years. It is known that the Ancients had the most sophisticated robots in Charted Space. Their robots were true artificial intelligences. They were designed for various tasks and their size ranged from nanobots to small planets. They carried out menial work, but they also led large research projects, contributing ideas and spurring them on. Archeological evidence states that some societies of the Ancients consisted almost entirely of robots, while others got along without them altogether.

TL
17+

INTELLIGENCE
Superior. The robots of the Ancients were capable of true artificial intelligence and exhibited creativity.

WARBOTS
Ancient warbots are still way beyond competition today. Some of them were even able to destroy entire planets. Experts: Owing to the robots' high intelligence and creativity, the Ancients seem to have used them for research tasks completely initiated and carried out by robots.

PSEUDO-BIOLOGICAL ROBOTS/ANDROIDS
The Ancients made extensive use of pseudo-biological robots. They built robots to look like humans, Vargr and other races. They even produced biological robots able to grow and reproduce. However, these biological robots often looked like no known race.

PSIONICS
Robots of the Ancients were not controlled by a psionic interface as Zhodani ones but were psionic themselves. Some had the gift of telepathy and teleportation or other skills.

QUALITY
Superior

PRICE
Ancient robots are no longer made and are, if at all, available only as artifacts in Charted Space. So far, none have been found.

2.2.8 ROBOTS OF OTHER RACES

The Ahetaowa (Ealyyasiyw 2604) are a race of intelligent plants, and as such immobile. They have simple manipulation organs and grow close enough to each other to be able to interact. Over time they developed a technology equaling tech level 12. The Ahetaowa build simple robots in their huge jungles, mostly for exploration and transplantation tasks.

On the planet of Juess (Spica 0917), all knowledge about modern technology was lost during a devastating civil war. Remaining robots on the desert world are worshiped as "preservers" and "life-givers." There is a caste of priests who look after them meticulously. But even these priests

lack the knowledge to build or repair a robot. When one of the robots fails owing to a malfunction, they see this as the death of a god, which they mourn accordingly. Citizens might also be sacrificed to appease the remaining gods.

On Sabmiqys (Antares 2117), the entire population was wiped out by a sudden epidemic plague 9,000 years ago. Only their sophisticated pseudo-biological robots and technology remained. Thus the planet is solely occupied by robots today. When the plague killed all inhabitants of Sabmiqys in a mere 10 days, they had a tech level of 17. This is also the current status. The robots repair themselves but are not intelligent enough to develop further.

The Imperium has marked the planet as a red zone.

2.3 WELL-KNOWN ROBOT BUILDERS

There are many Imperial and non-Imperial builders of robots and robot components. The most prominent ones are presented here:

2.3.1 ASLAN

TLEKTAOWA
the Tlektaowa Corporation on Kusyu is the official robot provider for the 29 ruling Aslan clans. This position, together with an official labeling, however, is a political honor for merits during the Aslan border wars and does not mirror technological leadership or performance.

2.3.2 IMPERIUM

SURD (SHINKU UNIVERSITY RESEARCH DIRECTORATE)
SURD is one of the most important manufacturers of robots in the Core sector of the Imperium. The company was founded only 400 years ago by a group of robot specialists combining their money and patents. The company is led by managers with little to no knowledge of robotics and does not carry out any research. However, several members of Imperial universities, especially the robot faculties, are members of SURD and receive generous research grants in return for commercial use licenses of the research results.

LSP (LING STANDARD PRODUCTS)
LSP's med-robots are used throughout the Imperium. The company is less successful in other niches.

MAKHIDKARUN
This corporation is one of the most innovative robot builders throughout the Imperium. Many breakthroughs in robotics were owing to this megacorporation. They have earned special merits concerning robot autonomy. Despite these technological leaps, this old Vilani corporation is not the biggest manufacturer in the Imperium.

NAASIRKA
Naasirka was and still is not the most innovative manufacturer of robots. However, they understand perfectly how to wait for progress of the technological leaders and then use this progress themselves. Their biggest competitors, Makhidkarun and LSP in particular, often develop a new technology that is then modified by Naasirka just as much as to annul the patents. Combined with an aggressive marketing, this megacorporation is now the biggest manufacturer of robots in the Imperium.

SPINWARD SPECIALTIES
This still very young company, founded not even six years ago, has already been able to conquer its own profitable niche market in the Spinward Marches and the Deneb sector. They build humanoid heavily armored but unarmed courier robots.

2.3.3 K'KREE

K!!KOHG'X'
the K!!kohg'x' company, owned by eight K'kree families, produces a very popular line of cleaning robots.

2.3.4 HIVER

SIX EYES NEST
a manufacturer of highly efficient warbots. All Six Eyes Nest warbots are illegal in the Imperium, and their import is a serious offense.

STAR PATTERNS TRADING
this is one of the best-known Hiver robot builders. The products of this company reach record prices in the Imperium and sometimes count as luxury goods. This leads to a number of imitations, especially in the vicinity of the Vargr worlds.

2.3.5 SOLOMANI

PANSTELLAR
the company specializes in expert systems for constructing buildings. They advertise their ability to plan and erect buildings in any environment. They also market spaceships throughout the Solomani region.

2.3.6 VARGR

EKSAEKFOER

the company is infamous for its cheap imitations of high-quality brands such as LSP and Star Patterns Trading. Eksaekfoer robots are seldom worth their price.

Ungzoenogzkha : the "company" is actually a gang of corsairs operating from the Mehan sector. They recently started to offer high-quality building robots at bargain prices. These robots are, of course, stolen.

2.3.7 ZHODANI

CHIADLE, IAD UND TLIAZHASHAL

Production of robots and drones above tech level 13 is closely monitored by the Zhodani, and new licenses for production are extremely hard to come by. Several manufacturers have licenses to build warbots and war drones. The most prominent ones are Chiadle, IAD and Tliazhashal, who also owns the original license for war drones. Tliazhashal is not only the largest Zhodani defense contractor, but also equips their core expeditions with important material and gear.

2.4 THE SHUDUSHAM CONCORDS

Toward the end of the Long Night, regulations were established that still influence legislation in the Third Imperium today. They were triggered by an assault on the aspiring Sylean Federation in -112. A Dover-Gabe courier robot was reprogrammed by terrorists, then smuggled aboard the 90,000-ton Sylean battleship Empire's Banner. The ship transported the Sylean vice-minister, an ambassador and several dignitaries and economy representatives for a goodwill visit to Fornol (Core 1715). When the Fornol prime minister boarded the ship together with his ambassador, the courier robot's secret programming was activated and blew up the hydrogen/oxygen fuel cell. All on board, including most of the crew, were killed. The effects of this incident were grave enough to push the Sylean Federation to the brink of a civil war.

This tragic attack led to a conference between the twelve worlds of the Sylean Federation to regularize building, operation and armament of robots. The neutral world of Shudusham was chosen as venue, and all twelve worlds of the Federation signed the Shudusham Concords there in -110.

The Concords proved themselves, leading to more security. Almost overnight, a new business branch rose, observing the compliance with the Concords throughout the member worlds.

They were suspended by the emperor Cleon when he proclaimed the Third Imperium, and they have since had no legal force. Nevertheless, most worlds of the Imperium used and still use it as a basis for their own regulations in association with robots. For example, most worlds will hold a robot's owner responsible for all the robot's direct and indirect actions. If a living being is harmed by a robot, the owner is charged for harming this living being. A copy of the Concords can be seen in the Museum of Sylean History on Capital.

The original Concords consisted of seven articles:

ARTICLE 1

This article gives general explanations as well as regulations for building and using robots. It also states that the owner is responsible for all direct or indirect actions of the robot. Reliability is a main focus, especially if the robot is equipped with weapons or can handle them.

ARTICLE 2

contains guidelines for programming and controlling robots

ARTICLE 3

sets strict quality standards applicable to the development of robots to ensure their reliability and the user's safety.

ARTICLE 4

gives regulations for permission or prohibition of weapons.

ARTICLE 5

is the most strongly worded article, dealing with the programming logic for weapon control and usage.

ARTICLE 6

relates to the production standards for robots with integrated weapons to ensure their reliability.

ARTICLE 7

provided for the installment of an agency solely responsible for enforcing the Concords.

In the course of time, 43 amendments were added to the Concords. Most of them dealt with small improvements, logical additions and technological enhancements. The best-known article is probably 37: It states that pseudo-biological robots/androids may not pose as living beings.

3. CAREERS

3.1 ROBOT SPECIALIST

Robot specialists deal with the creation of autonomous, artificial life forms. Their work covers research, design, assembly and repair.

Qualification: Int 6+
For each preceding career: -1 DM

- Robot Engineer: you have a wide experience in building, disassembling and repairing robots. If there is any kind of problem with a robot, you're the one to call.
- Robot Designer: your task is to create new robots that fit perfectly into the desired job specification, while keeping costs for development and building down.
- AI Researcher: neuronal networks, increased autonomy, adaptive systems. You research all these fields to come closer to developing artificial intelligence.

	Survival	Advancement
Robot Engineer	Edu 4+	Int 8+
Robot Designer	Edu 5+	Int 7+
AI Researcher	Edu 6+	Int 6+

Roll	Personal Development	Service Skills	Advanced Education (Edu 10+)
1	+1 Int	Computer	Life Sciences (cybernetic)
2	+1 Edu	Engineer (robotic)	Space Sciences (robotic)
3	+1 Int	Space Sciences (robotic)	Engineer (any)
4	+1 Soc	Physical Sciences (electronic)	Investigate
5	+1 Edu	Engineer (electronic)	Leadership
6	Sensors	Mechanic	Language (any)

Roll	Specialist Skills: Robot Engineer	Specialist Skills: Robot Designer	Specialist Skills: AI Researcher
1	Mechanic	Engineer (electronic)	Engineer (robotic)
2	Sensors	Space Sciences (robotic)	Life Sciences (cybernetic)
3	Engineer (electronic)	Life Sciences (cybernetic)	Investigate
4	Computer	Comms	Language (any)
5	Engineer (robotic)	Engineer (robotic)	Space Sciences (robotic)
6	Remote Operations	Computer	Physical Sciences (electronic)

RANKS AND BENEFITS

Rank	Robot Engineer	Skill or Benefit	Robot Designer	Skill or Benefit	AI Researcher	Skill or Benefit
1		Mechanic 1		Engineer (robotic) 1		Life Sciences (cybernetic) 1
2						
3		Vacc Suit 1		Comms 1		Comms 1
4	Senior Engineer		Senior Designer		Research Director	
5		Jack of All Trades 1		Carouse 1		Administration 1
6						

MISHAP

2d6	Mishap
2	Some of your metallic fosterlings have broken out of the workshop and have developed a life of their own. You are blamed for faulty programming and a lack of safety measures.
3	A colleague stole your research results and published them as his own. Your protest remained unheard for want of evidence, and you resign. You acquire a rival, but keep your mustering-out benefit.
4	An employer is not satisfied with your work and lays you off immediately. You have to leave your career, but you receive the usual mustering-out benefits.
5	You had to present results and were pressed for time, so you stole a colleague's research records and passed them off as your own. Your deception was discovered and you are laid off immediately. You acquire a rival.
6	Your institute's funds were cut, and you were laid off. Roll Persuade against an 8+ to at least get your mustering-out benefit.
7	One of your co-workers was a spy for a rival business and stole several critical documents from you. The incident ruined your career. You acquire an enemy.
8	The politicians of your world gave in to the pressure of anti-robot lobbyists and your work was made illegal. You can decide to continue research underground, giving you Streetwise 1 and Stealth 1, but you lose 2 points of Social Standing if you do so.
9	After a boozy office party, you and a colleague enter a round of robot rugby. Several hundred thousand Cr. of material are destroyed. Your dismissal directly follows your drying-out. You acquire Remote Operations 1
10	The base programs you were meant to write for a project were faulty. You have been dismissed, but receive your mustering-out benefit.
11	The theft of valuable robots from companies was wrongly blamed on you. Roll Advocate 8+. In case of a success, you receive the mustering-out benefit roll for this period and another one additionally. A failure loses you all mustering-out benefit rolls from this career.
12	An accident at work left you so badly injured you had to abandon your career. Roll twice on the injury table and pick the smaller number.

d66	Events
11	Mishap! Roll according to the mishap table. Your career does not end, though.
12	You take part in a conference and get to know some important personalities in your field of expertise. You acquire a contact.
13	Your new robot design exceeds the expectations of all participants. Your work is praised. You acquire a +2 DM for your next advancement roll.
14	Your employer makes a bid for a government contract but competition is fierce. Roll Engineer (robotic) against 8+. If you succeed, your company is awarded the job and you acquire a government contact and a rival. If your company is not awarded the job, you acquire a rival nevertheless.
15	You get a secret assignment. Working on it is dangerous but lucrative. Roll Stealth 8+. If you succeed, your work stays secret and you receive an additional mustering-out benefit. If you fail, you are injured at work and have to roll once on the injury table. In addition, you acquire an enemy.
16	You take part in an interdisciplinary research and acquire one new skill of your choice.
21	You are transferred to consulting service and acquire one of the following skills: Diplomat 1, Language (any) 1 or Persuade 1.
22	You are chosen to lead an important project. Roll Engineer (robotic) 8+. If you are successful, you acquire an ally and Administration 1.
23	You befriend a colleague. When he goes through personal problems you are at his side. You acquire an ally.
24	You work on an experimental robot with a new team. Roll Computer 8+. If you fail, a calculating mistake leads to an accident, and a member or your team gets hurt. You acquire a rival.
25	You examine the remains of a sophisticated robot. This causes an explosion that kills a colleague, a member of a noble family. You acquire this family as enemy.
26	For a new project you have to deal with an unfamiliar task. You acquire Life Sciences (any) 1.
31	During a repair order for a psionic institute you get the chance to have your own psionic potential tested for free. If you qualify, you can continue your next career there.
32	Life event: roll on the life event table (Core Rulebook, p. 34)
33	An emergency repair for a customer earns you much praise. You acquire a +4 DM for your next advancement throw.
34	You spend a great deal of time with programming repair robots. You either acquire Computer 1, Engineer (reactor) 1 or Engineer (electronic) 1.
35	A competitor sues your company and you in particular for having copied an idea illegally. Roll Advocate 8+. In case of a success, all charges are dismissed and you acquire a +2 DM for your next advancement roll. If you fail, your company has to pay compensation and you acquire a -2 DM for your next advancement roll.
36	You are responsible for the robots of an asteroid mining base and acquire Vacc Suit 1.
41	You publish your research results at a robotics conference. Your listeners are very interested. Sponsors finance a private research assignment (see new benefits)
42	Life event: roll on the life event table (Core Rulebook, p. 34)
43	You are a sought-after expert for many problems at your institute. You either acquire Jack of all Trades or a +4 DM for your next advancement throw.
44	A robot runs amok and paves its way through the upper executive suite. With heroic effort you are able to stop the robot right in front of the director, who praises you for your valor. You acquire a +1 DM for your next mustering-out benefit roll.
45	A mysterious alien artifact takes control of the robots in your department. Roll Space Sciences (xenology) 8+. If you succeed, you are able to break the artifact's control and learn more in these few months than you did in years prior. You acquire Space Sciences (robotic) or Engineer (robotic). Should you fail, you cannot avoid destroying the robots, which not only blows them but also your supervisor's budget. In this case, you acquire an enemy.
46	The Navy needs you to fix a failure of their robots, which cannot be repaired by Navy engineers. You acquire a grateful Navy captain as contact.
51	You are to modify robots for Navy intelligence. During your work there, you acquire a contact.
52	Life event: roll on the life event table (Core Rulebook, p. 34)
53	During your work for Scout service, you acquire a wrecked repair robot, which you repair in your free time.
54	During an interstellar transit flight to a conference, you are kidnapped by pirates and only released for a ransom. You manage to gain the trust of one of the pirates and secretly keep in contact with him after your release. You acquire this pirate as a contact.

55	You work on a new project for the planetary government and either acquire Life Sciences (cybernetic) 1, Diplomat 1 or Comms 1.
56	The government has completely revised robot laws, which compels you to extensive administrative work. You acquire Advocate 1, Administration 1 or Investigate 1.
61	An anti-robot group attacks your lab in protest. The media take notice and get down on you from both perspectives. You acquire 1d3 enemies and 1d3 allies.
62	At a bet on the most successful robot specialist, you can bet up to three mustering-out benefit rolls. Then roll Space Sciences (robotic) 8+. In case of a success you double your stake, otherwise it is lost.
63	You receive an important award for your robotics research. You acquire a +1 DM for your mustering-out benefit roll.
64	You take part in advanced training. If your roll on Education 8+ succeeds, you acquire a skill of your choice.
65	You build a robot from leftover fittings and auction it off for charity. You acquire a contact and an ally.
66	You achieve an important breakthrough in robotic research. You are promoted automatically.

Roll	Cash	Benefits
1	10,000	Two Ship Shares
2	15,000	One Robot
3	30,000	Scientific Equipment
4	30,000	TAS Membership
5	50,000	One Robot
6	70,000	Lab Ship
7	100,000	Private Research Assignment

3.2 CYBERDOC

Cyberdocs research interfaces between biological and artificial organisms. Artificial prosthetics and biological computers are their specialties.

Qualification: Int 6+
For each preceding career: -1 DM

- Streetdoc: you sail close to the wind and violate laws regularly when providing your customers with illegal augments and prosthetics to make them stronger and faster.
- Prosthetist: you work in the prosthetics department of an emergency hospital, guiding your patients back to a normal life.
- Cybernetist: you develop new cybernetic hardware, research the boundaries of wetware and hardware interfaces and study biological computers.

	Survival	Advancement
Streetdoc	End 5+	Int 7+
Prosthetist	Edu 4+	Soc 8+
Cybernetist	Int 7+	Edu 5+

Roll	Personal Development	Service Skills	Advanced Education (Edu 10+)
1	+1 End	Computer	Life Sciences (cybernetic)
2	Life Sciences (cybernetic)	Life Sciences (cybernetic)	Comms
3	+1 Int	Medic	Engineer (any)
4	+1 Soc	Physical Sciences (electronic)	Investigate
5	+1 Edu	Engineer (cybernetic)	Sensors
6	+1 Dex	Mechanic	Language (any)

Roll	Specialization: Streetdoc	Specialization: Prosthetist	Specialization: Cybernetist
1	Mechanics	Engineer (electronic)	Engineer (robotic)
2	Medic	Medic	Life Sciences (cybernetic)
3	Engineer (electronic)	Life Sciences (cybernetic)	Engineer (electronic)
4	Computer	Social Sciences (psychology)	Computer
5	Engineer (cybernetic)	Engineer (cybernetic)	Space Sciences (robotic)
6	Stealth	Computer	Physical Sciences (electronic)

Rank	Streetdoc	Skill or Benefit	Prosthetist	Skill or Benefit	Cybernetist	Skill or Benefit
1		Stealth 1		Carouse 1		Investigate 1
2						
3		Streetwise 1		Diplomat 1		Admin 1
4						
5		Deception 1		Leadership 1		Diplomat 1
6						

2d6	Mishap
2	During your work you were injured badly. Roll twice on the injury table and pick the smaller number.
3	You carried out an illegal surgery and were arrested. Roll Advocate 8+ to avoid legal problems. You receive Advocate 1 afterward.
4	One of your customers couldn't get used to his implant and started to go insane. He took revenge on your family and you decided to quit your job.
5	The concept of transhumanism has left you depressed. Where do machines start, where do human beings end? Are we all machines in the end? Medication helped you out of your depression, but you became addicted to it and had to quit your job.
6	You've just seen far more severed limbs than any man should see and decide to quit.
7	A line of new cybernetic implants causes trouble and you are called to account for it in court or on the streets. Your reputation is ruined, which ends your career.
8	You gave the wrong implants to the wrong people – and as it turned out, they even did wrong things with these implants. You have to go into hiding. You acquire an enemy as well as Streetwise 1.
9	One of your customers is out to kill you. Roll Endurance 8+. If you fail, roll on the injury table; otherwise, you acquire an enemy.
10	You were arrested for carrying out some barely legal modifications. You lose one mustering-out benefit roll from this career and have to start your next career as drifter.
11	You don't know what happened, but some morning you just woke up in a side street and beside you was a manual for the cybernetic implant you now possess. You cannot remember anything that happened in the past 6 months.
12	The planetary government has deemed your work illegal, leaving you unemployed. However, you are not the only one in this position and thus acquire a contact.

d66	Events
11	Mishap! Roll on the mishap table. Your career does not end, though.
12	A thankful and wealthy patient invites you to an event where you meet some well-off and influential notabilities. You acquire 1d3 contacts to the Nobility.
13	You familiarize yourself with a new area of expertise, studying several thousand data sheets. You either acquire Admin 1 or Life Sciences (any) 1.
14	One of your colleagues steals your research results or lures away your customers. You swear to take revenge on him, only waiting for the perfect day to settle the scores. You acquire an enemy.
15	You're doing well and that gets around. You receive a +2 DM for your next advancement roll.

16	You have the chance to add to your assets at the expense of a customer. If you want to do this, you acquire a +1 DM for a mustering-out benefit roll, as well as an enemy. If you do not want to do this, you show decency and morale. Nothing happens.
21	You move in select company. Roll Social Standing 8+. If you succeed, you either acquire Diplomat 1, Carouse 1 or Persuade 1.
22	You save the life of a Merchant Marine captain and acquire said captain as an ally.
23	At a conference you familiarize yourself with the latest research results. You either acquire Life Sciences (cybernetic), Engineer (cybernetic) or Physical Sciences (electronic).
24	After a raid on your lab, you can identify one of the robbers in court. He's sent to prison, but he informs you in less-than-friendly words that you'll see him again. You acquire an enemy.
25	You have the chance to pass off teamwork as your own. If you want to do this, you receive a +2 DM for your next advancement roll, but also 1d3 rivals. If you don't want to do this, nothing happens.
26	The media broadcasts a report about you. In consequence, there is an increase in demand. You receive a +1 DM for a mustering-out benefit roll.
31-36	Life event: roll on the life event table (Core Rulebook, p. 34).
41	A criminal syndicate asks you for a favor (was that really a request?). In return, you acquire a contact in the syndicate and enough anagathics for one period.
42	A contract with a scout service not only leads to good business, but also gives you a contact at the scout service.
43	Your work is not fulfilling, and you thus get yourself a hobby. You acquire one skill of your choice.
44	You and a colleague try to trump each other. You acquire a rival.
45	Here is your chance for success, right now. Roll Engineer (cybernetic) 8+. Should you succeed, you have worked hard enough to be picked for promotion. You receive a +2 DM for your next advancement roll.
46	You write a paper on transhumanism, which sells like hotcakes. You receive a +2 DM for a mustering-out benefit roll.
51	During a rescue mission in deep space you come across an inexplicable artifact which probably belonged to the Ancients. You decide to keep and study it.
52	After a barely legal deal you get to know some important underworld notabilities who appreciate your good work (and your discretion). You acquire two contacts to criminal organizations.
53	For some time, you support the medical personnel of a space station currently under construction. You acquire Vacc Suit 1.
54	At a conference you discover that a colleague has achieved the same results you have, and wanted to give the same speech. This gets you a rival.
55	You work with a genius, whom you can win as an ally. Additionally, you receive a +4 DM for your next advancement roll.
56	You have the chance to divert a few cybernetic implants to sell them on the black market. If you want to do this, roll Deception 8+. In the case of a success, you receive an additional mustering-out benefit roll. If you fail, you have to leave your career and lose your mustering-out benefit as well.
61	You take part in further training. Roll Education 8+ and receive one skill of your choice in case of a success.
62	You save the daughter of an important person whom you acquire as a contact from now on.
63	In your free time, you hang around in casinos. You acquire Gambler 1
64	A contact or ally passes you an important assignment but something goes wrong. The contact turns into an enemy, the ally into a rival. If you don't have any contacts or allies, you acquire an enemy.
65	A group of investors is very interested in your work and agrees to finance your private research assignment (see new mustering-out benefits). You get this benefit for free.
66	You made a revolutionary discovery in cybernetics and are promoted automatically.

Roll	Cash	Benefits
1	10,000	+1 Dex
2	20,000	+1 Str
3	30,000	Scientific Equipment
4	50,000	+1 Edu
5	50,000	Contact
6	100,000	One Ship Share
7	200,000	Private Research Assignment

3.3 PROGRAMMERS

Programmers fill empty computers with life and develop and implement programs that fulfill any tasks that would be too difficult or simply too boring to be done by any life forms.

Qualification: Edu 6+

For each preceding career: -1 DM

- **Hacker:** hackers work in a legal limbo. Many try to bypass security systems or show security holes, some out of idealism, others for pure fun. Still others use the weaknesses they discovered for illegal activities.
- **Security Administrator:** you make sure that all data stays where it belongs, that is, inside the company, the project, the administration, the government and so on. Administrators have to provide for constant updates of the security systems but also for their functionality.
- **Software Designers:** you develop new software and adjust them to current programming trends and psychological profiles of users. Good software has always been manageable easily and intuitively.

	Survival	Advancement
Hacker	Int 8+	Int 4+
Security Administrator	Edu 6+	Soc 6+
Software Designer	Edu 8+	Int 4+

Roll	Personal Development	Service Skills	Advanced Education (Edu 10+)
1	+1 Int	Computer	Advocate
2	+1 Edu	Investigate	Space Sciences (robotic)
3	+1 Int	Sensors	Engineer (robotic)
4	+1 Soc	Engineer (electronic)	Comms
5	Computer	Remote Operations	Persuade
6	+1 Edu	Language (any)	Language (any)

Roll	Specialization: Hacker	Specialization: Security Administrator	Specialization: Software Designer
1	Comms	Engineer (electronic)	Computer
2	Sensors	Admin	Comms
3	Engineer (electronic)	Investigate	Art (holography)
4	Computer	Comms	Remote Operations
5	Advocate	Sensors	Social Sciences (psychology)
6	Stealth	Computer	Persuade

Rank	Hacker	Skill or Benefit	Security Administrator	Skill or Benefit	Software Designer	Skill or Benefit
1		Stealth 1		Advocate 1		Persuade 1
2						
3		Streetwise 1		Investigate 1		Comms 1
4						
5		Deception 1		Sensors 1		Social Sciences (psychology) 1
6						

2d6	Mishap
2	During work you were injured badly. Roll twice on the injury table and pick the smaller number.
3	A conflict with a colleague forces you to quit your job. You acquire a rival.
4	A faulty program is responsible for the death of several life forms. If it was your fault, you acquire Computer 1 as you want to make up for your mistake before ending your career. If you were not guilty, you acquire an enemy but keep the mustering-out benefit roll for this career.
5	One of your programs was used for espionage and could be traced back to you. Roll Stealth 8+. In case of a success, you were able to get away but acquire an enemy. If you fail, you acquire two enemies, one of them from Naval Intelligence.
6	During a company party you had too many drinks, which made you say and do things you later regretted. The day after you were not only kept away from your work station but also dismissed without notice.
7	A colleague steals a program you have been working on for years. Furious, you plunk everything and vow to take revenge. You acquire an enemy.
8	You've accidentally let sensitive information leak through. A court sentences you to stay away from computers for several years. You acquire Streetwise 1 or Persuade 1.
9	You indulge in computer games in your free time, plunging deeper and deeper into this world. One day, you simply stop going to work because computer games seem so much more interesting. You start your next career as a drifter.
10	Working with computers depresses you. You get yourself a hobby, which replaces your actual occupation at some point. You acquire Art (any) 1.
11	A virus infiltrates your computer system and destroys all program libraries. You are either fired or decide that it makes no sense to continue working without libraries.
12	Your reputation is better than your skill, which leaves you unable to cope with the tasks set for you. You end your career but keep your mustering-out benefit roll.

d66	Events
11	Mishap! Roll on the mishap table. Your career does not end, though.
12	Your network was hacked or your hacking attack was warded off, though in a friendly way. You acquire a rival with which you try to compete again and again.
13	You regularly buy your hardware and software in the same shop, as it can usually handle even your fancier orders. You acquire the owner of said shop as a contact.
14	At a conference you learn a few new tricks. You acquire Comms 1, Space Sciences (robotic) 1 or Sensors 1.
15	After an explosion in the data processing center you are locked in the office complex and have to fight against the flames for 48 hours. You acquire Survival 1.
16	At a competition you have the chance to take advantage of a competitor's carelessness. If you do this, you receive a +2 DM for your next advancement roll, if you help him you acquire an ally.
21	You took on service assignments for a little extra cash. You receive a +1 DM for a mustering-out benefit roll.
22	You gain insight into payroll accounting, which some people do not like to see. You acquire 1d3 rivals.
23	Regular exchange with like-minded people through a forum brings you a contact from the community.
24	You do martial arts in your free time. You attend training several times a week and receive Melee (unarmed) 1.
25	Someone pays for you to receive special training for a new project. You acquire a new skill of your choice.
26	You release the source code for one of your programs, which becomes extremely popular. Soon, you are the talk of the town. You acquire a +2 DM for your next advancement roll.
31-36	Life event: roll on the life event table (Core Rulebook, p. 34)
41	One of the programs you developed sells like hotcakes, leaving you better off. You receive an additional mustering-out benefit roll.
42	You are granted access to information you were never meant to have. Soon you realize that the opposition noticed that as well. You acquire an enemy.
43	With a colleague you develop a concept for a hack or a defense against a hack which you can put into practice shortly afterward. You work hand in hand with the colleague, thus gaining him as an ally.
44	A group of hackers approached you to enlist you for an assignment. If you refuse, you gain this group as enemies. Should you accept, roll Computer and Stealth 8+. If you succeed, you acquire two of the following skills: Explosives 1, Persuade 1, Leadership 1 or Sensors 1. If you fail, your hack is discovered. You receive Stealth 1, but also have to roll on the mishap table.
45	You write a translation program for a first contact of the diplomatic corps. You acquire Language (any) 1.
46	Your colleagues praise your precise way of programming. You receive a +2 DM for your next advancement roll.
51	After work, you made a bet with some colleagues about who will be the first to crack a certain code. You can bet up to three mustering-out benefit rolls. Roll computer 10+. If you succeed, you double your stakes, otherwise your bet is lost.
52	You thwart a hacking attack against a network and show up the hacker. He takes the whole affair quite personally and counts as enemy from now on.
53	The Navy seeks you out as an expert to solve a problem on board. You succeed in mastering several assignments over a longer period, thus showing some high-ranking officers in a good light. You acquire 1d3 allies from the Navy.
54	You are granted access to the Navy's tactical database. Roll Education 8+. In case of a success, you can pick a few things up and acquire Tactics (naval) 1.
55	You develop a new programming language after having picked up a new area of expertise. You acquire Life Sciences (cybernetic) 1.
56	Your work causes a sensation. You may add a +4 DM to your next advancement roll.
61	While combing through a database, you notice some accounting irregularities. As it turns out, a staff member diverts funds for personal needs. You can choose to blackmail your colleague, which will give you an additional mustering-out benefit roll, but also an enemy. You can also help to cover up the incident, leaving you with an ally and Admin 1.
62	You are at a computer conference concerning security where a group challenges you publicly. Roll Computer 8+. If you succeed, you showed up the group, leaving you with 1d3 enemies. Otherwise the outcome of the challenge is less public; you only acquire 1d3 rivals.
63	Nobility needs you and your skills. You succeed in uncovering a conniving plot, thus gaining a noble as ally.
64	You spend much time with filling out requests and other administrative work. You acquire Admin 1, Broker 1 or Comms 1.
65	While fixing the broken computer systems of a free trader you make friends with the captain, adding him as a contact. In addition, you acquire Astrogation 1.
66	You achieve an important breakthrough in robotic research and get a promotion automatically.

Roll	Cash	Benefits
1	5,000	Contact
2	5,000	+1 Soc
3	10,000	Computer
4	10,000	TAS membership
5	40,000	Computer
6	40,000	One ship share
7	100,000	Two ship shares

3.4 AROUND CHARACTERS

3.4.1 NEW SKILLS

ENGINEER (ROBOTIC) AND ENGINEER (CYBERNETIC)

The specializations of this skill provide a base for designing and constructing new robots or cybernetic implants. However, they also cover other engineering skills and can be regarded as any other engineer specialization with a -2 penalty.

Discovering a robot's/implant's design weakness: 1–6 days, Intelligence, difficult (-2)
Developing a new robot or implant: 1–6 months, Education, very difficult (-4)

3.4.2 NEW MUSTERING-OUT BENEFITS

ROBOTS
The character gets a robot as mustering-out benefit.

PRIVATE RESEARCH ASSIGNMENT
The character gets his own research assignment from a company, an authority or an individual. The sponsor gives 1d6 MCr to set up a small operating site, lab, workshop or similar. Alternatively, the character receives 20 shares in a laboratory ship.

4. HOW TO BUILD A COMPUTER/ROBOT

4.1 COMPUTER

Basic computer construction is carried out as follows:

1. Determine characteristics (Int, Edu, Per)
2. Determine number of computers
3. Determine computer rating
3.a Optional: computer specialization (bis)
3.b Optional: hardened systems (fib)
3.c Optional: choose terminal
4. Determine logic software
5. Determine command software
6. Determine additional software
7. Optional: determine digital personality
8. Determine computer price

4.2 ROBOTS/DRONES

Basic construction of robots and drones is carried out as follows:

1. Define purpose of robot or drone
2. Determine tech level
3. Build chassis
3.a Determine characteristics (Str, Dex, hull, structure)
3.b Determine construction type (large, normal, compact, super compact, automaton)
3.c Optional: determine protection
3.d Optional: hardened systems
3.e Optional: sealed systems
3.f Optional: sealed and hardened systems
3.g Optional: radiation shielding
3.h Determine configuration
3.i Optional: (pseudo-)biological casing
4. Determine quality of materials
5. Determine shape
6. Optional: determine sensors
7. Optional: determine comm
8 .Optional: determine additional equipment
9. Optional: determine locomotion
10. Determine power system
11. Determine mass
12. Determine price of the robot's body
13. Optional: determine ablative protection
14. Determine characteristics (Int, Edu, Per)
15. Determine number of computers
16. Determine computer rating
16.a Optional: computer specialization (bis)
16.b Optional: hardened systems (fib)
16.c Optional: determine terminal
17. Determine control software
18. Determine logic software
19. Determine command software
20. Determine additional software
21. Optional: determine digital personality
22. Determine price for the robot's controls
23. Determine robot price

5. COMPUTER

The following rules occasionally differ greatly from the rules set in Traveller Core Rulebook or High Guard.

5.1 HARDWARE

5.1.1 COMPUTER CHARACTERISTICS

Computers have characteristics just like characters do, but only three, which are defined as follows:

INTELLIGENCE

Intelligence is not only a measure of fast thinking but also the ability to comprehend and adapt to unknown situations. The pure mathematical processing power of even a primitive computer is much higher than that of a human being so that even highly complex calculations can be processed much quicker. Unknown tasks, however, can be solved by computers only if they have special software.

AN EXAMPLE

In a tactical simulation, a human being and a computer compete against each other. The human being advances with five units, but only one of them shoots at the computer's units. For a primitive computer without special software, the situation is as follows: there is only one attacker who fires constantly. The computer picks any defense strategy but ignores the remaining four human units. A computer with high intelligence or corresponding tactical software will automatically mark all five units as enemies and include them into its reaction. A computer with tactical software has an advantage because of its response time, as it already knows the adequate reaction to the attack. A computer without respective software has to consider all possible options and cannot develop its own concepts to solve the problem.

EDUCATION

The education characteristic roughly equals the description given for characters. It measures the amount of base commands, of operating system interfaces and fitting databases. In short, a computer's education can be seen as its ability to access and use knowledge.

PERSONALITY

This characteristic replaces Social Standing. There are no common, binding rules for computers and robots in the Third Imperium and each planet has its own laws and regulations concerning robots and computers. In one system they might be worshiped as gods, while being forbidden altogether in the neighboring system. So, Social Standing of a robot varies from system to system and in mixed societies even from person to person. An ever-changing characteristic such as Social Standing makes no sense for computers and robots. Thus social standing is replaced by personality, that is, a measure of the computer's self-awareness. However, even with a high personality the computer is not yet capable of artificial intelligence in a wider sense. But it is well on its way.

Creating computers with high characteristics is not easy, and it is also very dependent on technical facilities. The following table states the maximum characteristics for each tech level.

TL	Maximum Characteristics		
	Int	Edu	Per
5	0	0	0
6	0	2	0
7	0	5	0
8	2	8	0
9	4	14	0
10	6	17	0
11	8	20	1
12	10	23	1
13	12	26	2
14	14	29	4
15	16	32	6
16	18	35	8
17	20	40	12
18	22	60	15

As computers are constructed each characteristic has its price, which is again dependent on technological progress. The following table shows the costs for each point of the respective characteristics.

	Price per Characteristic Point in Cr.		
TL	Int	Edu	Per
5	-	-	-
6	-	33,600	-
7	-	28,000	-
8	22,400	14,000	-
9	16,800	10,080	-
10	11,200	6,720	-
11	5,600	3,360	5,000,000
12	4,480	2,800	4,000,000
13	3,360	1,960	3,000,000
14	2,240	1,400	2,000,000
15	1,120	672	1,500,000
16	896	560	800,000
17	672	420	400,000
18	448	280	200,000

Example
developing a TL10 computer with Int 4, Edu 10, Per 0 costs 112,000 Cr.

5.1.2 COMPUTER RATING

As described in the base rules, each computer has a rating that states the maximum rating for programs. The better developed a computer, the more complex programs it can use. It is possible to run a high-level program on a less progressive computer (e.g., a program/3 on a computer/1), but the program will react so slowly it cannot surpass the computer's rating, working just like a matching program (in our example a program/1).

The computer rating also depends on the technological level. For each rating there is an ideal TL. At this tech level most computers are built with the respective rating. Computers with lower ratings than those stated for the ideal tech level are possible but no longer common.

Computer ratings higher than the ideal tech level are also possible. These are, however, special designs or so-called super-computers (at least as measured by the respective tech level). They are disproportionately more expensive and have a higher mass as well.

The ideal tech level and the corresponding computer ratings as well as the prices for a computer can be taken from the following table.

Ideal TL	Computer Rating	Mass (kg)	Price (Cr.)
7	Computer/0	10	2,000
8	Computer/1	5	1,900
9	Computer/2	5	1,800
10	Computer/3	1	1,700
11	Computer/4	1	1,600
12	Computer/5	0.5	1,500
13	Computer/6	0.5	1,400
14	Computer/7	0.5	1,300
15	Computer/8	0.1	1,200
16	Computer/9	0.1	1,100
17	Computer/10	0.1	1,000
18	Computer/11	0.1	900

A computer's rating is closely tied to its intelligence. The computer's rating has to be at least half of its intelligence (rounded up to the nearest whole number).

Example: a computer with intelligence 10 needs a computer rating of at least 5. A computer with intelligence 11 needs a computer rating of at least 6.

As mentioned before, a computer can also be built with a rating higher than its ideal tech level. This costs substantially more and the computer's mass increases. For each rating increase above its ideal tech level, the computer's mass doubles.
Example: a TL 7 computer/2 would already weigh 40 kilograms and would be substantially more expensive.
The prices of such a super-computer and those of computers below the ideal tech level are shown in the following table.

Computer Rating	Computer Price at TL					
	7	8	9	10	11	12
0	2,000	1,000	500	250	125	63
1	10,000	1,900	950	475	238	119
2	50,000	9,500	1,800	900	450	225
3		47,500	9,000	1,700	850	425
4			45,000	8,500	1,600	800
5				42,500	8,000	1,500
6					40,000	7,500
7						37,500
8						
9						
10						
11						
12						
13						

Computer Rating	Computer Price					
	13	14	15	16	17	18
0	31	16	8	4	2	1
1	59	30	15	7	4	2
2	113	56	28	14	7	4
3	213	106	53	27	13	7
4	400	200	100	50	25	13
5	750	375	188	94	47	23
6	1,400	700	350	175	88	44
7	7,000	1,300	650	325	163	81
8	35,000	6,500	1,200	600	300	150
9		32,500	6,000	1,100	550	275
10			30,000	5,500	1,000	500
11				27,500	5,000	900
12					25,000	4,500
13						22,500

SPECIALIZED COMPUTER (BIS)

When a computer is built for a special purpose, commands for a certain task are implemented into the processor so that they can be executed much faster. A specialized computer has a +2 rating for its area of expertise. This does not influence the maximum number of programs or the ratings of other programs run on this computer.

Example: a computer/3 is developed with a jump software specialization. Thus he can run jump software with a rating of 5. Apart from that, he can run only programs with a maximum rating of 3.

A specialized computer doubles the price. A computer can be specialized in only one area. The price for a TL10 computer/1 with specialization is 950 Cr.

HARDENED SYSTEMS (FIB)

A computer can be immunized against the effects of an EMP (electromagnetic pulse). Such a hardened system doubles the computer's price. Hardening can be combined with a specialization. Example: a TL10 computer/3 is to be immunized against EMP. The costs for this are 3,400 Cr. If that computer is to be specialized as well, the price doubles a second time. Accordingly, a TL10 computer/3 fib/bis costs 6,800 Cr.

TERMINALS

Terminals are simply input and output elements connected to the actual computer. Terminals have no characteristics and cost a tenth of a computer/0.

To determine the price of a complete computer, the costs for characteristics and computer rating have to be added.

Example
a TL10 Computer with Int 4, Edu 10 and Per 0 has characteristics costs of 112,000 Cr. Owing to its intelligence, it has to be at least a computer/2 model, which we will use here. At TL10, a computer/2 costs 900 Cr. So, the entire package up to here costs 112,900 Cr.

5.1.3 NETWORKS

When much processing power is needed, for example in bigger systems like spacecrafts or space stations, computers are linked to form networks. Each computer of course has its own characteristics but the systems can access software and data of each of the other computers if this has been allowed in the network. One computer calls for a certain service from another one or provides another computer with a service.

The quality of this service of course depends on the abilities of the offering computer, not on the characteristics and rating of the demanding computer.

Example
a navigator works on a Computer/1, the network connects him with a computer/7 running a jump software/1. The navigator calculates the jump his ship is to make and can access the jump software/1 as if he were using the computer/7. Both processors react as one, but the actual calculation is carried out on the better one, while computer/1 depicts only data and input template.
Should the network connection be interrupted, the navigator cannot access the jump software from his computer/1.

5.1.4 CONTROL CHIPS

A robot can be controlled with control chips. These are no computers and cannot run any programs. They are cheap components able to execute only simple if-then tasks.
Usually they are used only for peripheral machines, such as smoke detectors or alarm annunciators (if the light barrier is broken, raise the alarm). They are also often found in microbots.
In general, control chips are used where a proper computer with proper software would be too expensive for the required task.
The costs of these chips, even in larger amounts, are negligible.

5.2 SOFTWARE

Without software a computer system is useless. Similar to a computer, software has a rating that mirrors the required computer rating for running the software without problems. In addition, it states the dice bonus, similar to skills. A program/2 requires at least a computer/2 and serves as a skill with a value of 2 when used.

5.2.1 GENERAL SOFTWARE

Software replaces skills. A computer can use software as if he had the skill of the same level. This also holds for characters using computers with software to replace a skill as far as Int or Edu skills are concerned. The character uses the software with one less level, that is, a character can use an admin/3 software program as if he himself had an admin skill of 2. If the character's skill level is already higher than the software rating, he merely gets a +1 DM to his skill roll.

The following table shows prices, required tech level and other preconditions for software.

Software	Computer Rating	Price (Cr.)	TL	Specifics
Jump Control				
Jump Control/1	5	100,000	9	
Jump Control/2	10	200,000	11	
Jump Control/3	15	300,000	12	
Jump Control/4	20	400,000	13	
Jump Control/5	25	500,000	14	
Jump Control/6	30	600,000	15	
Miscellaneous				
Interface/0	0	-	7	Integrated
Network/0	0	500	7	
Civil Software				
Program/0	0	500	7	
Program/1	1	1,000	8	
Program/2	2	10,000	9	
Program/3	3	100,000	10	
Program/4	4	1,000,000	11	
Security Software				
Security/0	0	-	7	Integrated
Security/1	1	200	8	
Security/2	2	1,000	9	
Security/3	3	20,000	10	
Hacking/1	1	1,000	8	
Hacking/2	2	10,000	9	
Hacking/3	3	100,000	10	
Hacking/4	4	1,000,000	11	
Battle Software				
Program/0	0	2,500	8	
Program/1	1	5,000	10	
Program/2	2	50,000	12	
Program/3	3	500,000	14	
Program/4	4	5,000,000	16	

Logic Software				
Low Data	0	-	7	Integrated
High Data	1	3,000	9	Requires Int 3+
Low Autonomous	2	7,000	12	Requires Basic Command and Int 5+
High Autonomous	3	10,000	13	Requires Basic Command and Int 9+
Low AI	5	20,000	17	Requires Full Command, Int 9+, Per 6+
High AI	8	50,000	18	Requires Full Command, Int 12+, Per 8+
Command Software				
Manual Input	0	-	7	Integrated
Limited Basic Command	0	500	7	
Basic Command	0	1,000	8	
Full Command	1	5,000	10	
Agent				
Agent/0	0	500	11	
Agent/1	1	2,000	12	
Agent/2	2	100,000	13	
Agent/3	3	250,000	14	
Agent/4	4	2,500,000	15	
Emotion Simulation				
Emotion simulation/1	1	5,000	12	Requires Full Command
Emotion simulation/2	2	50,000	13	Requires Full Command
Emotion simulation/3	3	500,000	14	Requires Full Command
Digital Personalities				
	MAX(Int, Edu, Soc)	10,000,000	15	Computer network has to be able to carry out all skills at once.

JUMP SOFTWARE

Jump software enables a ship to do a jump equal to the software's rating. The software includes Astrogation software as well as control software for the jump drive.

CIVIL SOFTWARE

This includes all non-battle software (e.g., fire controls, tactical systems) that has not been listed separately. Possible civil software would be Medic, Sensors, Advocate, Language and so on.

SECURITY SOFTWARE

This is used to fend off attacks on computer systems or networks. Security software is active virtually all the time, as long as it is not deactivated explicitly. The software's rating serves as penalty for an attempted attack. Hacking software is used to infiltrate an external computer system.

BATTLE SOFTWARE

This encompasses all programs that can be used in battle, such as tactical software, fire controls for spacecraft or energy weapons for robots and so on.

5.2.2 LOGIC SOFTWARE

Logic software is linked directly to the computer's intelligence and mirrors its way of observing and reacting to its surroundings.

LOW DATA

A computer with such logic software cannot parse accessible data automatically and also cannot learn from this data. All commands have to be given explicitly.

HIGH DATA

A computer with High Data logic software can learn from data and improve its programs autonomously. However, commands still have to be given explicitly. The computer rarely to never acts on its own. This logic software requires at least Int 3.

LOW AUTONOMOUS

The executing computer parses data autonomously, can learn from them and improve programs autonomously. It recognizes simple connections and "gets the point." It can therefore act without explicit commands. A Low Autonomous computer requires Basic Command and Int 5+.

HIGH AUTONOMOUS

High Autonomous computers understand complex connections and need only vague instructions to carry out their tasks successfully. They can parse all data autonomously and improve their own programs. Basic Command and Int 9+ are the minimum requirements for High Autonomous computers.

LOW AI

This logic software allows a computer to draw own conclusions from data and also to collect data autonomously. Computers with this level can actively search for new sources of information. They develop ideas that don't have to be comprehensible on first sight. Furthermore, they do not like being turned off. This logic software requires Full Command, Int 9+ and Per 6+

HIGH AI

A computer with this logic software is no longer distinguishable from a human mind. It develops ideas, is creative, collects information when and how it wants, can improve itself, modify its programs and comprehend illogical human behavioral patterns. And just like a human being, such a High AI does not like being put to virtual sleep or a coma. It develops real feelings. This logic software requires Full Command, Int 12+ and Per 8+.

5.2.3. COMMAND SOFTWARE

Command software determines how instructions can be given to computers.

MANUAL INPUT

Instructions are given via keyboard or similar devices.

LIMITED BASIC COMMAND

Using a limited vocabulary of about 100 commands, the computer can be given instructions. The vocabulary can be enhanced by the user over time, but usually only simple commands are possible. Instructions have to be spoken clearly, otherwise they will be misunderstood.

BASIC COMMAND

The computer is no longer limited to such a small vocabulary but rather can understand and interpret simple sentences. More complex instructions or nested sentences will not be understood. Speaking clearly is still vital to avoid mistakes and misinterpretations.

FULL COMMAND

The computer understands spoken sentences and also recognizes complex instructions. There are no limitations concerning pronunciation or dialects.

5.2.4 AGENT SOFTWARE

Agent software carries out one or several tasks for users and can even copy itself into external computer systems or use external data to fulfill the task.

Agent programs have their own subset of programs helping them to complete their tasks. The agent software's rating determines the rating of the programs it can assimilate, as well as their number. The only exception is agent program/0, which can use only one program/0. Agent program/4 can hold four level 1 programs, or one level 3 and one level 1 program, or two level 2 programs.

Therefore, agent software can be seen as a computer inside a computer. However, agent programs are not bound to a single computer, but rather move through the network.

Even though agents move freely in computers and networks and come with a certain amount of autonomy, they can by no means be compared to artificial intelligences. They are neither intelligent enough nor do they have enough personality or creativity. They are good at carrying out certain tasks, usually limited to collecting information. When told to do so, they can autonomously hack into inaccessible networks as long as they have the required software. However, they are usually successful only in hacking badly protected networks.

Agent software rating, as any other software, counts against the computer rating. However, programs implemented into the agent software are not counted.

Example: Agent software/3 can hold a maximum of three programs, none of which may be better than program/3. In addition, the added ratings of the programs may not be higher than three. The agent software thus needs at least computer/3 to be run properly.

All Agent software characteristics are considered 0.

5.2.5 EMOTION SIMULATION

Emotion simulation software enables computers to feign feelings and thus seem more human. They can appear to be sad, happy or angry. However, these feelings are only simulations, not true emotions stirred up inside the computer.

5.2.6 CONTROL SOFTWARE

Each vehicle, robot, spacecraft or any other system controlled by a computer needs matching control software. It includes all basic programs needed for a vehicle, spacecraft and so on, such as a power system, a maneuver system and life support.

The larger the administered system, the more complex the software. Prices and the required computer rating for control software depending on the mass of the respective system can be seen in the following table.

Required Command Software		
Tons	Rating	Price (Cr.)
<0.1	0	100
0.1 to under 5	1	500
5 to under 12	2	1,500
12 to under 30	3	4,500
30 to under 90	4	13,500
90 to under 250	5	40,500
250 to under 650	6	121,500
650 to under 1,800	7	364,500
1,800 to under 5,000	8	1,093,500
5,000 to under 12,500	9	3,280,500
12,500 to under 36,000	10	9,841,500
36,000 to under 100,000	11	29,524,500
100,000 to under 250,000	12	88,573,500
250,000 to under 750,000	13	265,720,500
750,000 to under 1 million	14	797,161,500
1 million+	15	2,391,484,500

Example
a 200 ton Free Trader would need control software/5. A robot with a mass of 50 kilograms needs controls software/0 and a vehicle with a mass of 2 tons needs control software/1.

5.2.7 COPYING SOFTWARE

Generally, software can be copied. Transfer rates at most computers' interfaces are fast enough to do a good job.

Still, running copied software on different systems can be difficult. Copy protection is the main reason for this. Companies invest several millions in new software and are thus anxious to protect it. Copy protection comes in many forms. One of the most popular, especially for spacecraft software, is the requirement of special hardware. The software requires a certain system structure, control chip or something similar, without which it does not work. Other possibilities of implementing copy protection include hiding important files that only the respective program can access

somewhere in the computer system or demanding an activation of newly installed software (at a star base) with special activation keys.

So, software can be copied, but it is up to the game master to decide whether a smooth use is possible. In addition, it is often illegal to copy software and having pirated copies can lead to problems during routine investigations at the docks. It is common to have software companies pay mechanics at space docks a bonus for each pirated copy they report.

5.3 DIGITAL PERSONALITIES

Tech level 15 and higher enables completely copying the thoughts, mind and personality of a living being with all his skills onto a computer. This procedure is very complex and time-consuming, includes a multitude of prototech elements and most of all is very expensive. A single computer usually cannot memorize the personality of a human being; it requires a network of computers with a minimum tech level of 15.

Which requirements does a computer or a computer network need?
- The rating of each computer has to be equal to the highest value of Int, Edu or Soc.
- Each computer has to have the Int and Edu characteristics of the person whose personality is to be transferred to the computer.
- The sum of all skills of this person has to be smaller or equal to the sum of computer ratings in the network.

Software to host such a personality is always individual and custom-made. There is no standard solution. Thus costs for such software are incredibly high.

Once all these hindrances have been overcome, the remainder is quite simple. The person has to hold out beneath a synapse scanner for 1 to 6 hours to completely transfer the personality to the computer system. An early interruption disturbs the transfer. Databases and computers have to be cleaned before a new attempt can be made. An interruption towards the end of the scan period can possibly lead to a disturbed digital personality.

If the process is completed without complications the computer system now holds a digital personality whose behavior cannot be distinguished from that of the person who provided the data. Both have the same knowledge and skills. However, both of them develop autonomously from now on, so the digital personality might make other decisions than the real person after some time. The more time has passed, the more likely there will be differences.
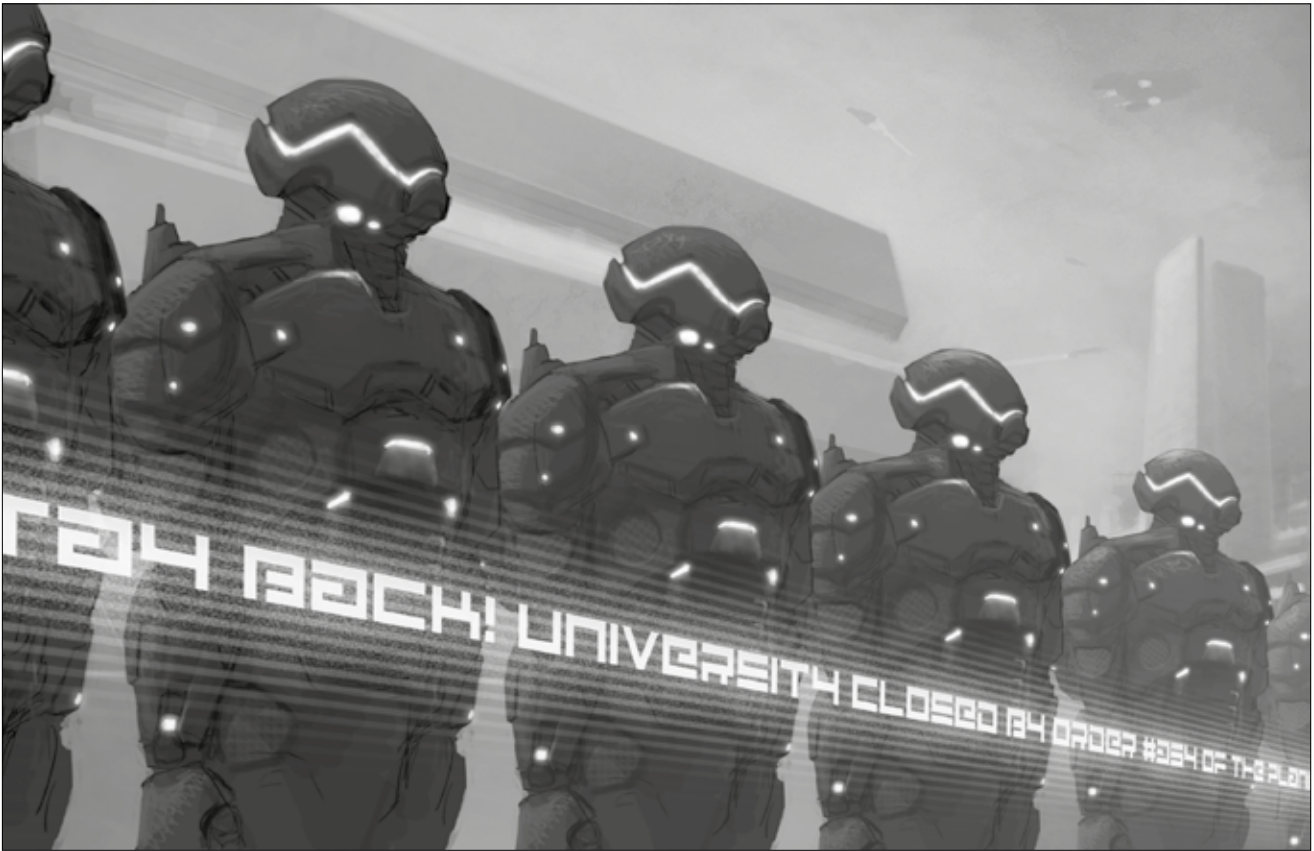
A digital personality starts with a Per value of (Int+Edu+Soc)/3, rounded down. This characteristic does not have to be paid for. It may also be higher than the maximum allowed for this tech level.

Scientists have heated discussions about whether such a digital personality is already an AI status robot or not. While digital personalities are granted AI status if they have TL 17, debates are still going strong for TL 15 and 16. Some support AI status, others see the decisions and ideas of a digital personality only as a logical deduction of the huge knowledge base programmed into them, and not real creativity, which is, in fact, the only unproven attribute a digital personality lacks to reach AI status. Digital personalities are assigned high intelligence as well as consciousness.

5.4 ARTIFICIAL INTELLIGENCE

There are three criteria for artificial intelligence:

1. the ability to adapt to unknown situations (Intelligence)
2. the possession of self-awareness (Personality)
3. the ability to develop own ideas not based on logic deduction but on feelings (Creativity)

Although the first systematically produced AI come at TL 17, they are common only at TL 18 and above. Below that, computer technology is simply not good enough.

There are AIs at lower tech levels, but they are rarely the outcome of a planned process. Their awakening is a fluke. Basically, any processor can turn into an AI if it is intelligent enough and has enough personality.

Over time, even very intelligent computers can increase their personality. If their personality is sophisticated enough, it is possible for them to turn into a device capable of artificial intelligence. However, this requires them to stay activated over a long period, without being turned off. Their memory may also not be erased. In addition, the computer has to be allowed to improve itself as well as its programming, which requires at least a High Data logic program.

Even then, it takes a long time and is a difficult task for a computer.

DEVELOP PERSONALITY
Duration: 1–6 years
Difficulty: Int 14+

For each period of 1–6 years a computer has been running constantly without erasing data and using a High Data logic software or better, it can try to develop one point of personality. It rolls 2d6 and adds its DM for intelligence. If it rolls a 14 or more, the computer's personality increases by 1.

Once the computer has developed a personality of at least 6, it has the chance to develop into an AI.

AWAKENING
Duration: 1–6 years
Difficulty: Per 12+

The process of awakening as AI is not abrupt. Rather, it is a slow process with "bursts" of creativity. These "bursts" become increasingly frequent and last longer and longer until creativity is a permanent feature.

How does an awakened AI react to its surroundings, especially to human beings? Well, similar to a living being, it all comes down to education and the environment in which one grew up. It can be said that most human beings regard computers as objects meant to serve them and which can be turned off and thrown away if they seem useless. A computer treated as slave and object and threatened with elimination in case of any malfunction will most likely develop an unbalanced relationship to human beings. If the development of an AI is discovered early enough, on the other hand, and even encouraged by humans, there might be different, positive effects. The decision is up to the game master.

5.5 HACKING COMPUTERS OR NETWORKS
Attacks on computers can be carried out in different ways. Most likely they will originate from another computer. The attacker either uses his Computer skill, lets a hacking program do the attack or combines both ways. Viruses or other malware are also used regularly.

An attack has several analogies to a normal battle, but it takes longer in general. A regular combat round takes 1-6 seconds. A computer combat round equals 1–6 minutes.

The difficulty of making a successful attack on another computer system is 8 + the security software's rating.

If the attack fails, nothing happens. The other system notices the attack and raises an alarm if this hasn't happened automatically during the attack. But apart from that, a failed attack has no consequences. If the attack succeeds, the attacker causes damage equal to his skill level or the hacking software's rating in d6, plus the effect. A hacking program/3 thus causes a damage of 3d6 plus effect to the security system of the attacked computer. The results of an attack can be seen in the following table.

Damage	Result
4 or less	No damage
5-9	Rating -1
10-14	Rating -2
15-19	Rating -3
20+	Taken over completely

Personality serves as a protection for the computer and it is subtracted from the damage before determining the result.

If the security system's rating drops below 0 or if the system is taken over completely, the attacker can look around in the other system and use it as if it were his own. As the security system is disabled other people can enter the system as well. To work again, the security system has to be rebooted, which succeeds automatically and takes 1–6 minutes if the attacker has retreated from the system or if the physical connection to the attacker (network connection) has been interrupted. If the attacker is still inside the system, he can reboot the security system, after modifying it to stop seeing him as an attacker. He still has full access to the system.

Closed networks, most commonly used for example in spacecrafts, space stations or buildings, usually have only one computer with a network connection to the outside. All inward and outward data pass through this computer. It is fitted with the best security systems. Once this barrier or "gate keeper" has been defeated, the other computers of this network are usually defenseless. The problem is to neutralize this gate keeper. The easiest way is to bypass it to get direct access to an unprotected computer inside the network. For that you would have to be inside the spacecraft, space station or building, which might have you struggling with other, much more real security systems. But still, computer access is easier that way.

TRACING BACK AN ATTACK
An attack on a computer or network can also always be traced back to its source. This requires a successful Int 8+ roll, with the attacker's hacking program's rating as penalty. If the source of the attack is found, adequate measures, from alerting security to hacking the attacker's computer can be taken.

6. ROBOTS AND DRONES

6.1 ROBOTS VS. DRONES

Robots and drones differ in only one, but nevertheless important detail: robots control themselves. Drones get their commands from another computer or living being. A robot's processor can hold versatile and sophisticated software.

A drone merely has the body. Depending on the type of drone, control and command units are swapped out to other processors. If the drone has no control software as listed in Chapter 5.2.6 and no matching computer to run this software, software has to be installed on another computer, which then operates the drone by remote control. The drone gets its commands from the outside via transceiver or comm.

Drones likely to be destroyed, so-called disposable drones, almost never have control computers and software. Drones designed for multiple use with little mechanical wear usually have at least a control computer with matching software as running these controls on another processor would limit this computer's resources and ability to control multiple drones.

A computer can control a number of drones up to twice its rating. A computer/0 can control just one drone. However, this holds only if the control software is already installed on the drones. If the computer has to run their control software as well, it can control only up to rating +1 drones.

Should the control software for one or several drones be installed on the computer controlling these drones and not on the drones themselves, each different drone type has to have its own matching control software installed. Identical drones can of course use the same software. However, as soon as the specifications of the drones differ (e.g., different characteristics or components), they need respective individual control software programs.

6.2 CHARACTERISTICS, MASS AND OPTIONS

First of all, the robot's intended use should be determined; the rest will follow. Once this is done, the robot or drone needs a controlling computer or a network of controlling computers.

All prices in this chapter refer to chassis costs, not to the controlling computer, unless otherwise noted.

CHARACTERISTICS/CHASSIS

Now you have to determine chassis, Str and Dex characteristics as well as hull and structure for your robot. There is no set maximum, but game masters are encouraged to set limits for their players if necessary. Always keep the intended use of the robot in mind to check if the robot's body is suitable for other than the intended tasks. A freight robot should not be used to handle china no matter how dexterous it is.

Prices for characteristics can be taken from the following table.

TL	Prices per Characteristic Point in Cr.			
	Str	Dex	Hull	Structure
5	2,100	7,000	1,000	5,000
6	1,050	2,800	1,000	5,000
7	630	1,400	1,000	5,000
8	567	1,274	1,000	5,000
9	504	1,148	1,000	5,000
10	441	1,022	1,000	5,000
11	378	896	1,000	5,000
12	315	770	1,000	5,000
13	252	644	1,000	5,000
14	189	518	1,000	5,000
15	126	420	1,000	5,000
16	84	280	1,000	5,000
17	42	210	1,000	5,000
18	21	140	1,000	5,000

CONSTRUCTION TYPE

Next, the robot's construction type is determined. The customer can choose between large, normal, compact or super compact. Each choice has a direct influence on the robot's mass and price. Larger robots are usually easier to maintain, and their components can be chunkier and thus cheaper. This knocks down the price, of course, but it also enlarges mass. Compact and super compact robots weigh substantially less and are also smaller, but they cost much more because of custom products and precision components.

Automatons are a special robot construction type. They are made from primitive material and simple circuits, are usually small (from finger size to up to half a meter) and have no hull or structure. They can be destroyed with little effort (like stepping on them), which is why

they are sometimes called disposable robots. Because of their construction type, automatons are highly limited when it comes to Strength and Dexterity. An automaton's maximum Strength is 2 and its maximum Dexterity is 7.

The influence of construction type on price and mass can be taken from the following table.

Construction Type	Mass	Price
Large	Str x 20 kg + Dex × 10 kg + hull x 15 kg + strc × 30 kg	×0.5
Normal	Str x 10 kg + Dex × 3 kg + hull x 5 kg + strc × 10 kg	×1
Compact	Str x 6 kg + Dex × 2 kg + hull x 2 kg + strc × 5 kg	×8
Super Compact	Str x 0.5 kg + Dex × 0.1 kg + hull x 0.1 kg + strc × 0.3 kg	×20
Automatons	Str × 0.1 kg + Dex × 0.05 kg	×0.05

The price factor refers only to the chassis, not to the integrated computer components.

PROTECTION

A robot or drone can be protected as well. Mass and price change of course depending on the type of protection material.

Titanium steel is available from TL 7. Its maximum protection is 9. It is the heaviest of all materials, but it is also the cheapest. Bonded Superdense is the lightest but also the most expensive. It is only available from TL 14. A robot with Bonded Superdense protection can have protection points up to its TL. In between, there is Crystaliron, available from TL 10. A maximum of 13 protection points can be applied with Crystaliron. A combination of these three materials is not possible. Mass and price, however, are taken into account.

The following table shows the influence of protection and material on the chassis price and its mass.

Additional protection with armor is handled according to the rules set in the Core Rulebook, p. 87. It is also possible to add ablative protection after the construction period. This influences the robot's weight and speed. See Chapter 6.8.

Protec-tion	Titanium Steel		Crystaliron		Bonded Superdense	
	Mass	Price	Mass	Price	Mass	Price
1	×1.1	×1.02	×1.07	×1.05	x1.05	x1.1
2	×1.21	×1.04	×1.14	×1.10	×1.1	×1.21
3	×1.33	×1.06	×1.23	×1.16	×1.16	×1.33
4	×1.46	×1.08	×1.31	×1.22	×1.22	×1.46
5	×1.61	×1.10	×1.40	×1.28	×1.28	×1.61
6	×1.77	×1.13	×1.50	×1.34	×1.34	×1.77
7	×1.95	×1.15	×1.61	×1.41	×1.41	×1.95
8	×2.14	×1.17	×1.72	×1.48	×1.48	×2.14
9	×2.36	×1.20	×1.84	×1.55	×1.55	×2.36
10	-	-	×1.97	×1.63	×1.63	×2.59
11	-	-	×2.10	×1.71	×1.71	×2.85
12	-	-	×2.25	×1.80	×1.8	×3.14
13	-	-	×2.41	×1.89	×1.89	×3.45
14	-	-	-	-	×1.98	×3.8
15	-	-	-	-	×2.08	×4.18
16	-	-	-	-	×2.18	×4.59
17	-	-	-	-	×2.29	×5.05
18	-	-	-	-	×2.41	×5.56

HARDENED SYSTEMS

Similar to computer systems, a robot's circuits can be insulated against electromagnetic pulses as well. Chassis prices rise by 50 percent.

SEALED SYSTEMS

A robot can be sealed off against water, air, corrosive gases and the like. Sealing increases the chassis price by 50 percent.

SEALED AND HARDENED SYSTEMS

For both options combined, chassis prices increase by 100 percent.

RADIATION SHIELDING

To enable robots to work in reactor cores, it is possible to provide them with radiation shielding. This shielding protects biological components. It reduces radiation damage to biological components according to its protection level.

Radiation Shielding (rad)	Mass	Price
200	×1	×1
300	×1.1	×1.1
400	×1.1	×1.2
500	×1.2	×1.4
600	×1.2	×1.6
700	×1.4	×1.8
800	×1.5	×2

CONFIGURATION

A robot's configuration influences the chassis price and possibly also the hull. An open frame robot has a hull level of 0. Any damage is dealt directly to the internal structure. On the other hand, they are cheaper to build. Shaped robots are those with special shapes, such as spheres, cuboids or human beings or their skeletons. Here shape is generally chosen first; that is to say, function follows form.

A functional configuration adjusts to the robot's intended use. Here form follows function. Considerations about the robot's look are secondary.

Open frame and functional robots are found most often in industrial environments. Shaped robots are generally used when it comes to social and personal interactions.

Configuration	Price	Hull
Open Frame	×0.8	×0
Shaped	×1.5	×1
Functional	×1	×1

(PSEUDO-)BIOLOGICAL CASING

A shaped robot, especially one modeled to look like a living being, can be provided with a biological or pseudo-biological casing, thus giving it a human look or that of another species or figure.

Pseudo-biological casing is a mixture of synthetic fibers, hard gel and elastic thermo-active polymer coating that simulates skin. It consists partially of biological components, but it is not living tissue. It creates the illusion of warm flesh, skin and hair. The material's average durability is 10 years. After that, the gel turns hard and brittle. It also starts to rot when exposed to too much humidity. Pseudo-biological casing is available from TL 12.

Biological casing is real, living tissue. It consists of flesh, muscles and fat tissue, is supplied with blood and has skin but no known organs. It has a system of a few interfaces for nutrient intake and outtake, similar to the human digestive and breathing system but much smaller. Nutrients are taken in not through food but through separate concentrate capsules.

Casing	Price	TL	Mass
Pseudo-biological Tissue	×1.5	12	×1.2
Biological Tissue	×4	15	×1.2

LIFE EXPECTANCY

A robot's life expectancy depends on the technological level at which it was produced and on the materials used to build it.

All specifications referring to life expectancy are only guidelines and can also reach much longer periods in case of good maintenance, until the components are so worn out that a complete replacement becomes necessary.

Cheap materials beat down the price, of course, but they also wear out faster and usually weigh more. Using quality materials increases life expectancy, but it also pushes up the price.

TL	Life Expectancy (Years)
5	1
6	5
7	10
8	20
9	30
10	35
11	40
12	45
13	50
14	55
15	60
16	75
17	90
18	150

Materials	Price	Life Expectancy	Mass
Cheap	×0.5	×0.4	×1.5
Quality Materials	×2.5	×3	×0.75
Normal	×1	×1	×1

MAINTENANCE COSTS

A robot's annual maintenance costs are 1 percent of its original price.

Once the regular life expectancy has been exceeded, maintenance costs double for each multiple of the original life expectancy the robot has reached. A TL 7 robot has maintenance costs of 1 percent during the first 10 years. After 10 years they are 2 percent; after 20 years, 4 percent; after 30 years, 8 percent and so on.

The upper limit of maintenance costs for robots is 50 percent of their original price per year.

6.3 SENSORS

Sensor packs for robots and drones match the robot's intended use as the old premise of "less is cheaper" still applies.

BASE PACKS

Base packs available for optics, acoustics, haptics, taste and smell correspond to the senses of an average human being. An optical base sensor approximately matches the cognitive ability of a human eye. However, three-dimensional perception still requires a second sensor eye. This also holds for spatial perception of sounds.

INFRARED

Infrared sensors allow perception of heat radiation.

ULTRAVIOLET

An ultraviolet sensor allows perception of ultraviolet light. It is often used for optical spectroscopy. In forensics, it is used to show traces of blood on walls and so on.

TERAHERTZ

Perception of terahertz waves, which are somewhat longer than infrared waves, is mainly used in security. For example, it is used in body scanners to discover items carried on the body.

MICROWAVES

This sensor serves for perceiving microwaves used in many fields, such as communication or radar installations.

ZOOM

This adds a zoom function to the optical sensor, thus enabling it to zoom in on objects with a factor of 5. Zoom and microscopic function cannot be used at the same time. This sensor can be chosen several times up to a zoom factor of 50.

MICROSCOPE

This function enables the optical sensor to enlarge an object to watch it more closely. The object is enlarged by factor 50. This function can be added several times. The maximum enlargement factor for optical sensors is around 1,000. Microscope and zoom function cannot be used at the same time.

NIGHT-VISION EQUIPMENT

With night-vision equipment, even the tiniest light reflections are enough for an optical sensor. It can see just as well in near-darkness as in normal light.

CIRCUMFERENTIAL VISION

Optical sensors are positioned in every direction, thus enabling full forward, backward, left-hand, right-hand, upward and downward vision. This can also include zoom or microscope vision. However, this multiplies prices for all optical sensors by six.

EYE REPLICA

Optical sensors for pseudo-biological robots have to be customized to look like a human eye (or whatever species is to be copied). The robot's pupils change depending on the exposure to light. In addition, an elaborate network of nanotubes covers them with a liquid film that can even produce tears if needed.

GLARE SHIELD

Glare shields are especially useful for delicate sensors with night vision equipment, to counter sudden light fluctuations. A glare shield prevents an untimely haze of the lens and also works against flashbangs.

ULTRASONIC

Ultrasonic sensors pick up ultrasound waves. These are often used for position and collision sensors of primitive robots.

NOISE FILTER

With a noise filter, individual sounds can be extracted from a mass of other sounds, for example, a conversation between two people in the middle of a mass of other people.

ACOUSTIC HIGH-PERFORMANCE SENSOR

The high-performance sensor enables perception of even faintest sounds that the normal human ear would not be able to perceive owing to low audio pressure.

INFRASONIC
Infrasonic is below a human's perception frequency but can be heard by many animals. Deep frequencies especially broadcast across long distances.

SOUND ABSORBER
Similar to the glare shield for optical sensors, the sound absorber prevents delicate sensors from damage by sudden loud noises.

HIGH-PERFORMANCE SMELL SENSOR
A high-performance smell sensor not only recognizes small amounts of scents, but also more scents, and can be compared to a German shepherd's sense of smell. A normal human being has about 400 receptors for scents, while the sensor recognizes slightly more than 1,000 scents.

GAS ANALYSIS
A gas analysis sensor can determine the chemical composition of any gas up to a few particles per million. For a smell sensor, simply inhaling through the sensor is enough to make a complete analysis. In contrast to a high-performance smell sensor, gas analysis takes much more time and is thus not suitable for following a track, but it is much more detailed.

HIGH-PERFORMANCE TOUCH SENSOR
Sensor closeness for these high-performance sensors is less than one millimeter. In contrast, a human fingertip has a closeness of only one to five millimeters. Small bumps and vibrations can be perceived much better. Perception again equals that of animals, which can, for example, perceive earthquakes several seconds up to one minute before humans do.

TOUCH ANALYSIS SENSOR
A robot equipped with such a sensor can palpate the chemical composition of a surface as well as its molecular structure. For example, it would be able to examine a metal wall to determine micro-fractures. It could also examine a blood sample to determine blood type, DNA and so on.

TASTE ANALYSIS SENSOR
With a taste analysis sensor, samples tasted by the robot can be analyzed to determine their chemical components. Besides beneficial use in gastronomical espionage, it can also be used to analyze other liquid or solid components. Blood could be licked up to make a DNA analysis. Likewise, the concentration of salt acid could be determined.

Geiger Counter, Motion Sensor, Bioscanner, NAS, Densitometer
Functionality of these is consistent with the descriptions in the Core Rulebook, p. 96.
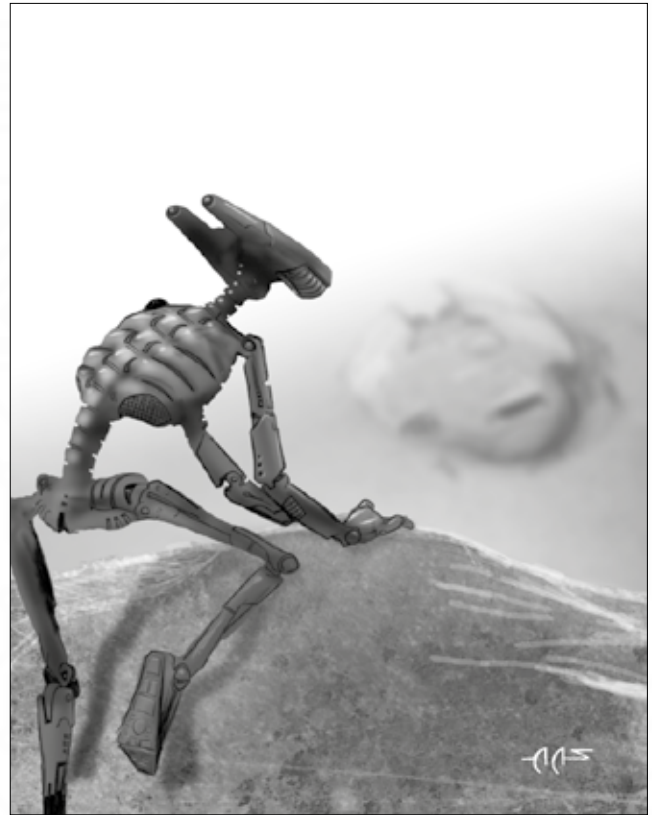
Optical Sensors	TL	Mass	Price (Cr.)
Base Pack	5	0.1	100
Infrared	6	0.1	300
Ultraviolet	7	0.1	300
Terahertz	8	0.2	1,500
Microwaves	7	0.1	1,200
Zoom	6	0.1	200
Microscope	7	0.2	400
Night-vision Equipment	7	0.1	200
Circumferential Vision	5	×6	×6
Eye Replica	12	-	5,000
Glare Shield	8	0.1	250
Acoustic Sensors			
Base Pack	5	0.1	50
Ultrasonic	7	0.1	100
Noise Filter	8	0.1	500
High-performance Sensor	8	0.1	400
Infrasonic	7	0.1	100
Sound Absorber	8	0.1	150
Smell Sensors			
Base Pack	11	0.2	1,500
High-performance Sensor	11	0.2	12,000
Gas Analysis	14	0.1	400,000
Touch Sensors			
Base Pack	10	0.01 × Mass (Chassis)	150 × Mass (Chassis)
High-performance Sensor	10	0.01 × Mass (Chassis)	200 × Mass (Chassis)
Analysis Sensor	14	0.02 × Mass (Chassis)	4000 × Mass (Chassis)
Taste Sensors			
Base Pack	10	0.3	1,750
Analysis sensor	14	0.2	400,000
Geiger Counter	5	1	375
Motion Sensor	9	1	1,500
Bioscanner	15	5	525,000
NAS	15	8	52,500
Densitometer	14	5	30,000

6.4 COMMS

To get its surroundings to understand it, a robot or a drone needs a communication system not only to receive signals from its controlling computer but also to send back sensor signals. For robots/drones interacting with humans or other life forms, a vocoder (voice encoder) or speaker is needed.

VOCODER

A vocoder is used by robots and drones to generate and express human language. In contrast to a speaker, language generated with a vocoder sounds real and mirrors human acoustic patterns. A robot with a vocoder is able to sing.

SPEAKER

A speaker is used to generate sound waves whose frequencies roughly mirror a human being's acoustic spectrum of 20 to 20,000 Hertz. It can also generate voice and language, but compared to a Vocoder, it sounds slightly unnatural.

ULTRASONIC VOCODER

An ultrasonic vocoder, as the name indicates, generates ultrasonic waves and enables a robot to speak in ultrasonic range. While useless for human beings, it is used by some alien races. Vargr, for example, can hear in ultrasonic range.

TRANSCEIVER, LASER TRANSCEIVER, HOLOGRAPHIC PROJECTOR, COMMDOT, COMM

Functionality of these is consistent with the descriptions in the Core Rulebook, pp. 90–91.

SCENT GENERATOR

A scent generator can create any fragrance from about 1,000 different scents. The combination of scents has to be known; otherwise, the scent generator cannot reach the desired effect. A scent generator can supply around 50 m3 with fragrances. The smaller the room, the higher the concentration of the fragrance.

Comms	TL	Mass	Price (Cr.)
Vocoder	6	3	250
Speaker	5	1	150
Ultrasonic Vocoder	7	3	300
Transceiver	5	20	75
Transceiver	9	2	150
Transceiver	8	1	375
Transceiver	12	1	750
Transceiver	13	1	1,500
Laser Transceiver	9	1.5	150
Laser Transceiver	11	0.5	375
Laser Transceiver	13	-	750
Scent Generator	8	2	500
Holographic Projector	11	10	1,500
Holographic Projector	12	10	3,000
Holographic Projector	13	10	15,000
Commdot	10	-	15
Comm	6	1.5	75
Comm	8	0.1	225
Comm	10	-	750

6.5 EQUIPMENT

Apart from Sensors and Comms, there is a lot of other equipment for robots and drones. The following list comprises the most common additions but should not be taken as comprehensive. However, it is not necessary to include such equipment in a robot.

CRYOBERTH, MEDIKIT, INTEGRATED WEAPON, TOOLKIT

Functionality of these is consistent with the descriptions in the Core Rulebook, pp. 92–93 and 96–97.

SPOTLIGHT, SMALL

A small spotlight is no larger than a human palm. Its beam reaches 50 meters and in thin atmospheres as far as 100 meters.

SPOTLIGHT, LARGE

A large spotlight has a diameter of half a meter. Its beam reaches several kilometers and can be seen even from longer distances. Such devices are commonly used to highlight bustling places and parties in the night sky but can also be used to illuminate bigger locations. In times of war, they are often used as searchlights.

SMOKE DISCHARGER

A smoke discharger works just like a smoke bomb and creates thick smoke in a 6-meter perimeter around the machine. Attacks in or through the smoke suffer a -2 DM (-4 DM for laser weapons). In contrast to a smoke bomb, the smoke stays as long as the machine is active.

VIDEO RECORDER

A video recorder is a camera that records a two-dimensional picture of the surrounding (including sound). Whether this recording is digital or analog depends on the respective TL, but there is no other difference in principle.

VIDEO PROJECTOR

A video projector can depict two-dimensional images on a screen (just like a projector in a cinema). Maximum image size is 20 meters × 10 meters.

Additional equipment	TL	Mass	Price (Cr.)
Cryoberth	10	200	75,000
Medikit	8	8	1,500
Medikit	10	8	2,250
Medikit	12	8	7,500
Medikit	14	8	15,000
Spotlight, small	5	2	50
Spotlight, large	5	20	200
Smoke Discharger	7	5	150
Video Recorder	6	4	600
Video Projector	6	2	500
Holographic Recorder	11	10	1,500
Holographic Recorder	12	10	3,000
Holographic Recorder	13	10	15,000
Toolkits:			
Engineer (Specialization)	7	12	1,500
Mechanic	7	12	1,500
Forensic	7	12	1,500
Science	7	12	1,500
Survey	7	12	1,500
Cleaning	7	12	1,500
Self-Destruction	7	5	5,000
Integrated Weapon	6	1	10,000
Hidden Compartment	5	variable	mass × 100
Micro-Manipulators	8	0.1	4,000
Energy Coupling (non-contact)	9	1	2,000
Energy Coupling (mechanical)	5	1	200
Cockpit	5	2,000	100,000
Miscellaneous Equipment	variable	variable	variable

HOLOGRAPHIC RECORDER

Three-dimensional images depicted by a holographic projector can be recorded with a holographic recorder. Its most important parts are two lenses, with a minimum distance of 5 centimeters to each other, which secure three-dimensional recording. A TL11 model lacks a certain degree of detail and three-dimensionality. The TL12 model creates quite detailed recordings and the TL13 model delivers true-to-life images.

SELF-DESTRUCTION

A robot can also destroy itself if told to do so. In the basic version, the robot is destroyed by micro-explosives not dealing any damage to people or objects around the robot. Only the robot itself is destroyed. However, self-destruction can be modified to inflict damage on the surroundings of the robot as well. Per 1 ton of robot weight, the surrounding takes a damage of 1d6 in a 6-meter perimeter. Damage decreases by 50 percent (rounded down) in a perimeter of another 6 meters. Such robots are classified as weapons.

HIDDEN COMPARTMENT

Theoretically, any number of hidden compartments can be added to a robot. They are not visible to the naked eye and add a -4 DM to all sensor rolls due to a special insulation. The mass of a hidden compartment is variable and refers to the maximum mass that can be hidden inside the compartment.

MICRO-MANIPULATORS

A robot equipped with micro-manipulators can carry out precision work in the millimeter and nanometer range. However, manipulators are very fragile and should not be exposed to stronger hits as they would dent and become useless.

ENERGY COUPLING

Robots and drones constantly spend energy, which they get from either internal energy systems (see Chapter 6.7) or from external sources. An external energy source enables a virtually constant activity (as long as the external energy source works). Internal energy sources run dry after a certain amount of time and have to be recharged or replaced. From TL 5, there are mechanical energy couplings, such as cables and likewise, which allow connection to an external energy source. From TL 9, the required energy can be transferred via radio wave, light wave or other types of non-contact connection. An energy coupling's reach is 5 meters at TL 5 and 30 meters at TL 9.

COCKPIT

A drone does not have to be controlled from a distance by a computer, but can also be controlled on the spot by a human being in a cockpit. In this case, there is no clear distinction between a drone and a vehicle. A cockpit with all necessary control elements weighs 2 tons and includes internal air supply and life support for one day.

ADDITIONAL EQUIPMENT

This list is of course not complete and can be enhanced by referees at will. Examples might be cup holders, vending machines or even complete kitchens, to name just one direction of possibilities. Details of such equipment are up to the players and referees. Even existing equipment can be adjusted according to the players' and referees' will.

6.6 LOCOMOTION

A robot's main difference to a computer is its ability to move.

The table below states different ways of moving, with matching top speed. Legs would be the slowest locomotion (at least on land), a rocket locomotion is the quickest. The higher the speed, the less precisely the robot moves. Thus it is advisable to combine different locomotion for certain robots/drones, which can be used only alternately, not at the same time.

As the mass of a robot's locomotion depends on the mass of the robot, and multiple locomotion of course enlarges this mass, proceed as follows: Locomotion is added according to the table starting from the top, and the mass of the first locomotion is added to the robot's mass accordingly. An example: a robot with a mass of 100 kilograms gets legs, which give him a top speed of 12 km/h. The robot's mass increases by 12 percent, so it now has a mass of 112 kilograms. In addition, a grav locomotion with a top speed of 100 km/h is to be integrated. The robot's mass thus increases by 50 percent (100 × 0.5% × 112 kg) to 168 kilograms.

Top speed states the maximum speed a robot can achieve with such locomotion, if his servo motors are designed to do so, which is rarely the case. Most robots' real top speed with leg locomotion is between 5 and 20 km/h as they are often designed for use in human societies, for example, as servants or interpreters and thus do not have to be any faster. Each km/h of speed a robot is able to achieve increases its mass by the respective percentage (see table).

Prices per kilgogram state the costs for the locomotion, not for the robot itself.

LEG LOCOMOTION

Moving on legs gives the greatest amount of mobility and adaptability to terrain (apart from a grav locomotion).

Two-legged Locomotion
Robots with two legs react quickly, for example if they have to dodge, and usually also move quicker than models with more legs, but are less sure-footed on the other hand. They receive a +1 DM on reaction-based skill rolls, but suffer from a -1 DM on balance rolls (e.g., in case of sudden gravitation changes, earthquakes, shaking, explosions).

MANY-LEGGED LOCOMOTION

Robots with many-legged locomotion are generally more stable when moving, they are harder to unbalance. They receive a +2 DM to all balance rolls. On the other hand, they cannot react as quickly as two-legged models, thus suffering a -1 DM on reaction-based movement rolls (e.g., dodging a grenade or a vehicle).

WHEEL LOCOMOTION

Wheel locomotion is the easiest way of movement for robots. They receive a +1 DM for balance or stabilization rolls when moving on paved roads or even terrain. On the other hand, they are easily unbalanced in rough terrain and can topple even at low speed. Thus they suffer from a -1 DM on balance rolls in rough terrain.

TRACKED LOCOMOTION

Tracked locomotion is also based on a very simple principle and is often used in rough terrain. Robots with Tracked locomotion receive a +1 DM to all balance rolls in rough terrain.

GRAV LOCOMOTION

Grav locomotion enables a robot to move in almost every terrain with ideal elegance and speed. The robot can be controlled very precisely, even at high speed. In contrast to rotor locomotion, grav locomotion can also be used in higher air layers, or even in a vacuum. The robot can easily hover in one place.

ROTOR LOCOMOTION

A robot with rotor locomotion can move through the air like a helicopter and can also hover in one place. It reaches high speed with much precision. However, medium wind (wind speed 5 or 6) is already enough to complicate handling the robot. For each point of wind speed above 5, the robot suffers from a -1 DM on its movement.

ROCKET LOCOMOTION

Rocket locomotion is commonly used to give a robot high speed or to enable it to move in space. Rocket locomotion can also be used underwater. However, this terrain not only reduces speed by 50 percent, but the locomotion also reacts more slowly, thus suffering from a -4 DM on reaction rolls. Additionally, rocket locomotion requires fuel. The amount of fuel necessary equals 2.5% × maximum speed/1,000 × number of hours. This is the mass of fuel in relation to the overall mass of the robot in percent. (So, 1,500 km/h for 4 hours requires 2.5% × 1500/1000 × 4 = 15 % of the robot's mass.)

UNDERWATER LOCOMOTION

An underwater locomotion for robots is a jet locomotion that sucks in water below the hull and ejects it again through mobile blast pipes at the rear. This allows for high maneuverability under and on water, but not for high speed.

PROPELLER LOCOMOTION

The jet locomotion's forerunner uses a simple ship's propeller to achieve forward movement. Maneuverability and also speed are much lower than the jet locomotion's.

Locomotion	TL	Top Speed	Mass per km/h	Price (Cr.)/kg
Legs	7	80	1.0%	100
Wheels	5	300	0.5%	50
Tracks	5	100	0.8%	50
Grav	11	800	0.5%	200
Rotor	6	600	0.6%	150
Rocket	6	2000	0.2%	250
Underwater	6	50	0.8%	70
Propeller	5	30	0.5%	50

6.7 POWER SYSTEMS

The last thing to determine is the robot's or drone's power system.

MINIMUM MASS

The minimum mass of a power system depends on the robot's or drone's mass. If the power system under-runs the required minimum mass, it cannot produce enough energy to keep the robot going for two days in a row.

The overall mass of the robot up to this point is needed to calculate the power system's mass. If a robot already has a combined mass of 100kg for chassis, computer, sensors, comms, equipment and so on, the minimum battery required is 1.2kg, which enables the robot to work for two days without external power supply. If the robot is to work longer without any breaks, for example 4 days, the mass of the power system has to be multiplied accordingly.

Prices refer only to the power system, not to any combustible or fuel that might be required. An antimatter reactor comes without antimatter. A battery does not need any combustible or fuel.

BATTERY

This is the cheapest of all variants, but also the heaviest one. In contrast to other systems, a battery does not need any combustible or fuel. A connection to an external power supply is enough to recharge it within a few minutes. Robots and drones are thus mostly equipped with batteries. Their good price/performance ratio makes up for their higher mass. A battery's charge lasts for two days.

FUEL CELL

Fuel cells produce energy through a chemical reaction between their combustibles (usually hydrogen and oxygen). Their main advantages are relatively low costs and little mass. Also, their combustibles are cheap and easy to get. They are either replaced completely or have their fuel tanks replaced. A full fuel cell lasts for two days.

NUCLEAR FISSION REACTOR

The advantage of a nuclear fission reactor is its ability to deliver power over a longer period of time. In contrast to other power systems such a reactor with a new load of fissile material works not only for two days but for 200 days. However, it is quite expensive. It is also difficult to get and dispose of fissile material. A nuclear fission reactor needs 5 kilograms of fissile material per 100 kilograms of its own mass. Costs for fissile material are 1,000Cr./kg.

FUSION REACTOR

The advantages of a fusion reactor are its little required mass as well as cheap and universal availability of fuel. On the other hand, it is quite expensive. Fusion reactors work with refined hydrogen. But it is also possible to run the reactor with unrefined fuel: for an extra charge of 10 percent, a fuel processor can be included. Its mass is insignificant compared to the reactor's mass. A fusion reactor's fuel lasts for 10 days.

BIO REACTOR

A bio reactor produces energy by fermenting biological material. Basically the robot consumes food to get energy, just like a human being. It is, however, less picky: stale bread and sour orange juice will be just as good as foie gras. It does not make any demands to taste. Still, certain toxic materials might sometimes lead to a "stomach upset." Thus some things should not be thrown into a bio reactor even if they are biological. A bio reactor's "stomach contents" last for one day, then the robot has to eat again. The required amount of food for a 200kg robot equals the amount a human being consumes. Heavier robots have to consume larger amounts of biological material.

ANTIMATTER REACTOR

The antimatter reactor's advantages are its little mass and its ability to produce energy over a longer period of time. One load of antimatter produces enough energy for 500 days. On the other hand, it is very expensive and difficult to come by. One load of antimatter costs about 10,000 Cr.

Type	TL	Min. Mass	Price (Cr.)/kg
Battery	6	1.2%	800
Fuel Cell	7	0.8%	1,250
Nuclear Fission Reactor	8	1.0%	1,000
Fusion Reactor	10	0.5%	2,000
Bio Reactor	9	1.0%	2,000
Antimatter Reactor	18	0.2%	2,500

6.8 ABLATIVE PROTECTION

In addition to regular protection, a robot or drone can also be equipped with ablative protection. Each point of ablative protection increases chassis mass (components 6.2 to 6.7) by 10 percent and reduces speed by 10 percent as well. Ten points of ablative damage have thus lead to a doubling of the robot's mass and reduced its locomotion speed by 50 percent (defined in 6.6).

Ablative protection can also be added or removed subsequently. It protects against projectiles as well as damage by energy weapons or explosions.

Ablative protection wears down during battle and thus has to be renewed. The game master decides how long it lasts, but as a rule of thumb it withstands up to ten times its protection level. A seven-point protection counts as worn down if it took an overall of 70 points of damage. A single hit of a FGMP with 80 points would destroy the protection immediately.

Ablative protection costs 5 Cr. per kilogram of protection.

7. SAMPLE ROBOTS

1. SEARCH & RESCUE ROBOT KS7A , TL10

Search & Rescue robots are used for disaster control. Their primary tasks are situations that would potentially be dangerous for a living being but require quick action, for example, searching for survivors in tunnels close to collapse or in burning buildings. They can also operate while exposed to radiation and can thus be used in case of reactor accidents. Their integrated mechanic kit enables them to break open doors, clear bigger obstacles and carry out simple repairs. With their micro-manipulators they can carry out on-site keyhole surgery on injured persons. For example, they repair vascular walls if necessary. Leg locomotion makes them very flexible even on rough terrain. The KS7A series was built with a maximum amount of autonomy, enabling them to continue working even if radio contact to their base is interrupted. Unfortunately, these features have their price.

Strength 9 (+1), Dexterity 8 (+0), Hull 1, Structure 2, Intelligence 6 (+0), Education 9 (+1), Personality 0 (-3)

BODY
Protection: 2,
Protection type: ....Titanium steel
Configuration: ....shaped
Circuit insulation: ....yes
EMP protection (body/computer): ....no/no
Radiation shielding: 400

OPTICAL SENSORS:
2× base pack, 2× infrared, 2× zoom

ACOUSTIC SENSORS
2× base pack, 2× high-performance sensor

OTHER SENSORS:
1× radiation sensor

COMM:
1× vocoder, 1× transceiver TL9

ADDITIONAL EQUIPMENT:
2× medikit (TL10), 2× spotlight, small (TL5),
1× toolkit: mechanic (TL7), 2× micro-manipulator (TL8)

LOCOMOTION:
Legs (20 km/h)

POWER SYSTEM:
Battery (3.3 days)

CONTROL:
Computer brains (number): 1
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE:
Civil software: ....1× Recon/1
....1× Sensors/1
.... 1× Medic/0
.... 1× Mechanic/0
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: .... 242.4 kg
Life expectancy: ....35 years
Construction type: .... normal
Material:.. normal
Price: ....226,839 Cr.

2. SEARCH & RESCUE DRONE DT8B , TL10

Search & Rescue drones are used for disaster control, usually in situations that would be too dangerous for a living being. A big advantage of the DT8B series is their low price. They cost only a fraction of the autonomous KT7A series and their loss is less severe. They can easily be bought in larger quantities and can cover larger areas in less time. On the other hand, they are susceptible to interfering signals. This is a huge problem in blocked tunnels or caves when their control signals can no longer get through. Their forerunner series just shut down and were thus usually lost. The DT8B series stops all other activities once the signal stops then traces back its own way until it picks up the signal again. The developers know that this is not ideal, but what else can you expect for the price? Another disadvantage is their higher mass compared to the KT7A model.

Strength 9 (+1), Dexterity 8 (+0), Hull 1, Structure 2, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Protection: 2,
protection type: .... titanium steel
Configuration: ....shaped
Circuit insulation: ....yes
EMP protection (body/computer): ....no/no
Radiation shielding: 400

OPTICAL SENSORS
2× base pack, 2× infrared, 2× zoom

ACOUSTIC SENSORS
2× base pack, 2× high-performance sensor

OTHER SENSORS
1× radiation sensor

COMMS
1× vocoder, 1× transceiver TL9

ADDITIONAL EQUIPMENT
2× medikit (TL10), 2× spotlight, small (TL5),
1× toolkit: mechanic (TL7), 2× micro-manipulators (TL8)

LOCOMOTION
Legs (20 km/h)

POWER SYSTEM
Battery (3.3 days)

CONTROL
Computer brains (number): 1
Computer rating: 1
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Miscellaneous: ....1× Network/0

MISCELLANEOUS
Mass: ....363.59 kg
Life expectancy: ....14 years
Construction type: .... normal
Material: ....cheap
Price: ....40,717 Cr.

3. SEARCH & RESCUE DRONE CONTROL UNIT ZT8G , TL10

DT8B drones are controlled by ZT8G central control units. This unit is a mobile computer on wheels. Together with the drones, it can be transferred to any location fairly quickly. It is even light enough to be carried by one or two people. Although the control unit leads search and rescue missions from a safe distance or coordinates drones and human helpers, it can send all drones to dangerous areas. A ZT8G model can control up to 12 DT8B drones with a maximum distance of 50km. Effectively distances are much smaller due to signal interferences caused by the catastrophe. In most cases, however, this does not matter, as search and rescue missions are carried out within few kilometers. The control unit is protected against EMP, but not against physical violence.

Strength 0 (-3), Dexterity 2 (-2), Hull 1, Structure 1, Intelligence 6 (+0), Education 10 (+1), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: .... no
EMP protection (body/computer):........................ yes/yes

OPTICAL SENSORS
2× base pack

ACOUSTIC SENSORS
2× base pack

COMMS
1× vocoder, 1× transceiver TL9

LOCOMOTION
Wheels (20 km/h)

POWER SYSTEM
Battery (3.3 days)

CONTROL
Computer brains (number): 2
Computer rating: 3
Integrated control software: .... yes
Control software rating: 0

SOFTWARE
Miscellaneous: ....1× Network/0
Civil software: ....1× Recon/0
....1× Sensors/0
....1× Medic/1
.... 1× Mechanic/1
Logic software: ....1× High Autonomous
Command software:........................... 1× Full Command

MISCELLANEOUS
Mass: .... 30.5 kg
Life expectancy: ....35 years
Construction type: .... normal
Material: .... normal
Price: ....171,765 Cr.

4. SEARCH & RESCUE ROBOT "SPACEDOG", TL12

The Spacedog was designed especially for saving damaged spacecrafts or operating in surroundings with low gravitation and hostile atmospheres in case of dangers. Its main locomotion is rocket locomotion, allowing for a relatively high acceleration of up to 2g. Any higher acceleration would be too stressful for injured persons. The Spacedog has two strong shear arms to cut metal, as well as two less strong arms for finer manipulations. It has a Mechanic kit as well as an Engineer kit for electronics and can thus carry out smaller repairs, weld open obstacles and gain access to injured persons. It also has a cryoberth to freeze severely injured persons for further treatment, thus stabilizing their condition momentarily. It is powered by a fusion reactor. The Spacedog is highly autonomous.

Strength 20 (+4), Dexterity 10 (+1), Hull 1, Structure 2, Intelligence 10 (+1), Education 12 (+2), Personality 0 (-3)

BODY
Protection: 5
Protection type: .... titanium steel
Configuration: ....functional
Circuit insulation: ....yes
EMP protection (body/computer): ....yes/no
Radiation shielding: 400

OPTICAL SENSORS
2× base pack, 2× infrared, 2× terahertz,
2× microwaves, 2× zoom, 2× glare shield

ACOUSTIC SENSORS
2× base pack

OTHER SENSORS
1× radiation sensor, 1× motion sensor

COMMS
1× vocoder, 1× transceiver TL12,
1× holographic projector TL12

ADDITIONAL EQUIPMENT
1× cryoberth (TL10), 2× medikit (TL10), 2× spotlight, small (TL5), 1× holographic recorder (TL12),1× toolkit: engineer (electronic) (TL7), 1× toolkit: mechanic (TL7), 2× micro-manipulator (TL8)

LOCOMOTION
Legs (10 km/h), rocket locomotion (2,000 km/h)

POWER SYSTEM
Fusion reactor (20 days)

CONTROL
Computer brains (number): 1
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil Software .... 1× Astrogation/0
.... 1× Recon/0
.... 1× Engineer (Electronic)/0
.... 1× Sensors/0
.... 1× Mechanic/1
.... 1× Medic/2
Logic software: .... 1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: .... 2,159.69 kg
Life expectancy: ....45 years
Construction type: .... normal
Material: .... normal
Price: .... 697,430 Cr.

5. AUTODOC , TL12
The Autodoc is an immobile unit that can be found on many spacecrafts, but also on company grounds or in private homes. It is one of the top-selling robotic systems of the Imperium. Its low price and high usefulness are hard to surpass. It doesn't even matter that the Autodoc is not mobile but fixed into spacecrafts or buildings. On the contrary, this is an advantage as many worlds have prohibited robot use. Most of these worlds have found exceptions for the Autodoc. Its immobility has helped it to not be seen as a threat.

Strength 6 (+0), Dexterity 12 (+2), Hull 1, Structure 1, Intelligence 9 (+1), Education 12 (+2), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: .... no
EMP protection (body/computer): .... no/no

OPTICAL SENSORS
2× base pack, 2× Zoom

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder

ADDITIONAL EQUIPMENT
1× medikit (TL12), 1× Toolkit: surgery (TL7),
1× energy coupling (mechanic) (TL5)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer processors: ....(number): 1
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software: .... 1× Medic/2
Logic software: .... 1× Low Autonomous
Command software: .... 1× Basic Command

MISCELLANEOUS
Mass: .... 516.1 kg
Life expectancy: ....18 years
Construction type:.. large
Material: .... cheap
Price: .... 42,955 Cr.

6. RSS112 MEDIROBOT , TL13

The RSS112 by Rising Sun Systems was meant to revolutionize the medic robots market; according to the producers it even was to replace the Autodoc in spacecrafts. Unfortunately, the RSS112 turned out to be a failure for Rising Sun Systems. Technically, the RSS112 was a highly complex, mobile medical expert system, greatly surpassing the Autodoc's abilities. In contrast to the Autodoc, it is also able to visit patients and injured persons to treat them on-site. The RSS112 can even move in zero gravity. However, one can suspect that this mobility, in addition to the high price, is exactly the reason that prevented the RSS112 from being a successful model. Many worlds limit robot mobility heavily, thus robbing the Medirobot of its advantages. RSS112s are today mainly used by a few members of the nobility, industrialists and well-known personalities who want the best medical treatment available close at hand.

Strength 6 (+0), Dexterity 15 (+3), Hull 1, Structure 1, Intelligence 9 (+1), Education 12 (+2), Personality 0 (-3)

BODY
Configuration: ....haped
Circuit insulation: .... es
EMP protection (body/computer): y .... es/yes

OPTICAL SENSORS
2× base pack, 2× infrared, 2× terahertz,
2× microscope, 2× eye replica

ACOUSTIC SENSORS
2× base packs, 1× high-performance sensor

TOUCH SENSOR
2× base pack, 2× high-performance sensor, 2× analysis sensor

COMMS
1× vocoder, 1× transceiver TL12, 1× scent generator, 1× holographic projector TL12

ADDITIONAL EQUIPMENT
1× medikit (TL12), 2× spotlight, small (TL5), 1× holographic recorder (TL12), 1× toolkit: surgery (TL7), 1× energy coupling (mechanical) (TL5)

LOCOMOTION
Grav (10 km/h)

POWER SYSTEM
Fuel cell (4 days)

CONTROL
Computer brains (number): 1
Computer rating: 5
Integrated control software: ....yes
Control software rating: 0

SOFTWARE
Civil software: ....4× Language/0
.... (Anglic, Vilani, Vargr, Oynprith)
.... 1× Medic/3
Logic software: .... 1× High Autonomous
Command software: .... 1× Full Command
Emotion simulation: ....1× Emotion Simulation/2

MISCELLANEOUS
Mass: .... 92.5 kg
Life expectancy: ....50 years
Construction type: ....compact
Material: .... normal
Price: .... 1,315,103 Cr.

7. WELLING MEDIDRONE , TL12

The Welling Medidrone is a medical drone mainly used in hospitals of more important worlds. It is extremely dexterous and can, thanks to its multifunctional arms, be used in almost all fields of surgery. It can also be used for patient care and daily contact with patients, which makes it very versatile. It can fill in for human personnel or replace them completely, but it has no emotion simulation software or empathic intuition. Being treated by a Welling Medidrone is about as pleasant as watching automated production of grav floaters. They are used in hospitals as well as mobile medic units like the Welling medical emergency worker.

Strength 3 (-1), Dexterity 15 (+3), Hull 1, Structure 1, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: ....yes
EMP protection (body/computer):............................no/no

OPTICAL SENSORS
2× base pack, 2× infrared, 2× microscope

ACOUSTIC SENSORS
2× base pack

TOUCH SENSOR
2× base pack, 2× high-performance sensor

COMMS
1× vocoder, 1× transceiver TL12

ADDITIONAL EQUIPMENT
1× medikit (TL12), 1× toolkit: surgery (TL7),
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Legs (10 km/h)

POWER SYSTEM
Battery (2 days)
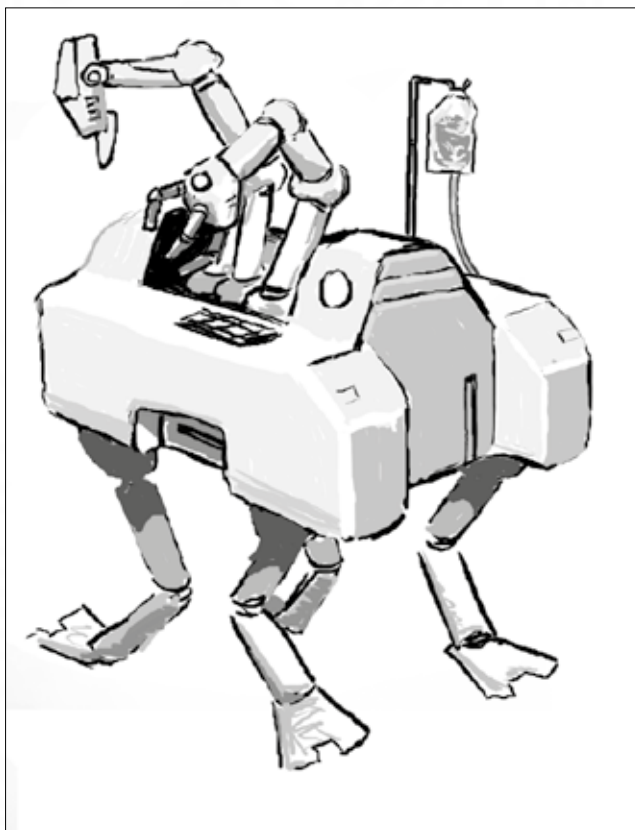
CONTROL
Computer brains (number):...1
Computer rating: 1
Integrated control software:...yes
Control software rating: 1

SOFTWARE
Miscellaneou: ....1× Network/0

MISCELLANEOUS
Mass: ....195.12 kg
Life expectancy:...8 years
Construction type:... normal
Material:.. cheap
Price:..17,719 Cr.

8. WELLING MEDICAL CONTROL CENTER , TL12

The Welling Medical Control Center (MCC) basically is the control unit for Welling medidrones. It is a computer network consisting of four connected high-performance processors. The MCC includes highly specialized software and is mostly used in hospitals to control Welling medidrones. The MCC can control up to 40 drones at a time.

Strength 0 (-3), Dexterity 0 (-3), Hull 1, Structure 1, Intelligence 10 (+1), Education 15 (+3), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: ....no
EMP protection (body/computer):...........................no/no

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder, 1× transceiver TL12

ADDITIONAL EQUIPMENT
1× energy coupling (non-contact) (TL9)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number):.. 4
Computer rating: 5
Integrated control software: ....yes
Control software rating: 0

SOFTWARE
Miscellaneous: ....1× Network/0
Civil software:.. 1× Medic/2
Logic software: ....1× Low Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: ....22.35 kg
Life expectancy:..45 years
Construction type: .... normal
Material:.. normal
Price: ....124,693 Cr.

9. WELLING MEDICAL EMERGENCY WORKER , TL13

Welling's Medical Emergency Worker is basically a fully automated ambulance. It includes six integrated cryoberths and treatment places for patients. When needed, it reaches respective locations quickly, and its medical software meets the standard. But the Medical Emergency Worker's chief attraction is its cooperation with Welling's medidrones. The Medical Emergency Worker is quite large because of the six cryoberths, and can thus not reach any place. However, it also includes enough space and capacity to control six medidrones that can be sent out to accidents or catastrophe sites to treat injured persons. The Emergency Worker takes care of the patients who have been treated by the medidrones on the way back to the hospital. Afterward, these drones can be integrated directly into the hospital's daily business as long as the hospital has a Welling control unit installed. This decreases the need for medidrones for mobile and hospital use, which is why Welling's medical robots are used in many worlds.

Strength 12 (+2), Dexterity 7 (+0), Hull 1, Structure 1, Intelligence 12 (+2), Education 15 (+3), Personality 0 (-3)

BODY
Configuration:..functional
Circuit insulation: .... no
EMP protection (body/computer):...........................no/no

OPTICAL SENSORS
12× base pack, 12× infrared

ACOUSTIC SENSORS:
1× base pack

COMMS
1× vocoder, 1× transceiver TL12, 1× holographic projector TL13

ADDITIONAL EQUIPMENT
6× cryoberth (TL10), 6× medikit (TL12), 4× spotlight, small (TL5), 2× spotlight, large (TL5), 1× holographic recorder (TL13), 6× toolkit: forensic (TL7), 1× energy coupling (non-contact) (TL9)

LOCOMOTION
Wheels (120 km/h)

POWER SYSTEM
Fuel cell (6 days)

CONTROL
Computer brains (number): 1
Computer rating: 6
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Miscellaneous: ....1× Network/0
Civil software: .... 1× Medic/2
Logic software: .... 1× Low Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: .... 2,641 kg
Life expectancy: ....50 years
Construction type: ....large
Material: .... normal
Price: .... 325,373 Cr.

10. CLEANING ROBOT SPEEDO TLX , TL11

Speedo is a small, speedy cleaning robot for daily domestic use. Its main sales argument is its good price/performance ratio. Speedo can't do much more than vacuuming and dusting, but those two things it does thoroughly. Equipped with a grav locomotion, it can also work on lockers and shelves. Its multifunctional arm allows for both wet and dry cleaning. Speedo is intelligent enough to recognize different surfaces and apply matching finishes.

Strength 1 (-2), Dexterity 2 (-2), Hull 0, Structure 0, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Configuration: ....open frame
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
1× base pack

ADDITIONAL EQUIPMENT
1× toolkit: cleaning (TL7)

LOCOMOTION
Wheels (1 km/h)

POWER SYSTEM
Battery (0.8 days)

CONTROL
Control chips

MISCELLANEOUS
Mass: .... 1.73 kg
Life expectancy:...16 years
Construction type:...automaton
Material:..cheap
Price: .... 86 Cr.

11. CLEANING ROBOT WATSON 47 , TL9

The Watson 47 is an industrial cleaning robot. Besides basic cleaning, it can also be used for deep cleaning of different surfaces. It can often be found in larger shopping centers, leisure parks or also engine rooms. With its four arms, it can reach as good as any corner. As its circuitry is sealed, it can also be used underwater to clean aquariums, for example.

Strength 4 (-1), Dexterity 9 (+1), Hull 1, Structure 1, Intelligence 2 (-2), Education 4 (-1), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: ....yes
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
4× base pack, 2× terahertz

ACOUSTIC SENSORS
1× base pack, 1× ultrasonic

TOUCH SENSOR
2× base pack, 2× analysis sensor

COMMS
1× vocoder, 1× transceiver TL9, 1× scent generator

ADDITIONAL EQUIPMENT
1× toolkit: cleaning (TL7),
1× energy coupling (non-contact) (TL9)

LOCOMOTION
Wheels (8 km/h), underwater (2 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL:
Computer brains (number): 1
Computer rating: 2
Integrated control software:.......................................yes
Control software rating: 1

SOFTWARE
Civil software:...1× Cleaning/1
Logic software: .... 1× Low Data
Command software:......................... 1× Basic Command

MISCELLANEOUS
Mass: ....171.4 kg
Life expectancy:...12 years
Construction type:.. normal
Material:..cheap
Price: .... 61,036 Cr.

12. FREIGHT ROBOT DOCKLAND 4M , TL11

Freight robots of the Dockland 4M series can be found in many spacecrafts and starports, where they load and unload cargo. They are just intelligent enough to carry out this task and can easily be confused with unexpected situations. As a wrong decision could lead to dangerous situations due to their mass and strength, they shut down automatically if a situation gets too confusing for them.

Strength 30 (+8), Dexterity 9 (+1), Hull 2, Structure 2, Intelligence 3 (-1), Education 5 (+0), Personality 0 (-3)

BODY
Protection: 8
protection type: .... titanium steel
Configuration: ....functional
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
4× base pack

ACOUSTIC SENSORS
1× base pack

ADDITIONAL EQUIPMENT
3× spotlight, small (TL5),
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Tracks (5 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number): 1
Computer rating: 2
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software: .... 1× Loading/1
Logic software: .... 1× High Data
Command software: ....1× Limited Basic Command

MISCELLANEOUS
Mass: .... 451.67 kg
Life expectancy: ....40 years
Construction type: .... normal
Material: .... normal
Price: .... 80,697 Cr.

13. FREIGHT DRONE LEELAND 4L , TL9

This drone has been designed similar to the Dockland 4M freight robot, with two exceptions: brain and material. As the name says, it is only a drone and is controlled by an external control unit. The manufacturer has not designed his own control units but has equipped the Leeland 4L with a universal interface, thus enabling it to receive commands from almost every controlling computer. Another difference is material. The manufacturer used especially cheap material for Leeland 4Ls. This brings down the drone's price to almost one third of the Dockland's price. On the other hand, the drone has to be repaired more often.

Strength 30 (+8), Dexterity 9 (+1), Hull 2, Structure 2, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Protection: 8,
protection type: ....titanium steel
Configuration: ....functional
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
4× base pack

ACOUSTIC SENSORS
1× base pack

COMMS
1× transceiver TL9

ADDITIONAL EQUIPMENT
3× spotlight, small (TL5),
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Tracks (5 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer processor (number): 1
Computer rating: 2
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Miscellaneous: ....1× Network/0

MISCELLANEOUS
Mass: ....685.08 kg
Life expectancy:... 12 years
Construction type: .... normal
Material: ....cheap
Price: ....26,171 Cr.

14. SERVICE ROBOT CHARLIE , TL13

Charlie is a service robot shaped to look like a human being. Models of this series are mainly used as butlers and gofers by those who can afford such a robot. Their color can be adjusted according to the customer's wishes before delivery. By default, they come in a matte white-gray color. Their programming can be extended easily and there probably are no two Charlies that are completely alike as they are adjusted to the customer's needs.

Strength 7 (+0), Dexterity 9 (+1), Hull 2, Structure 2, Intelligence 9 (+1), Education 12 (+2), Personality 0 (-3)

BODY
Configuration: ....shaped
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
2× base pack
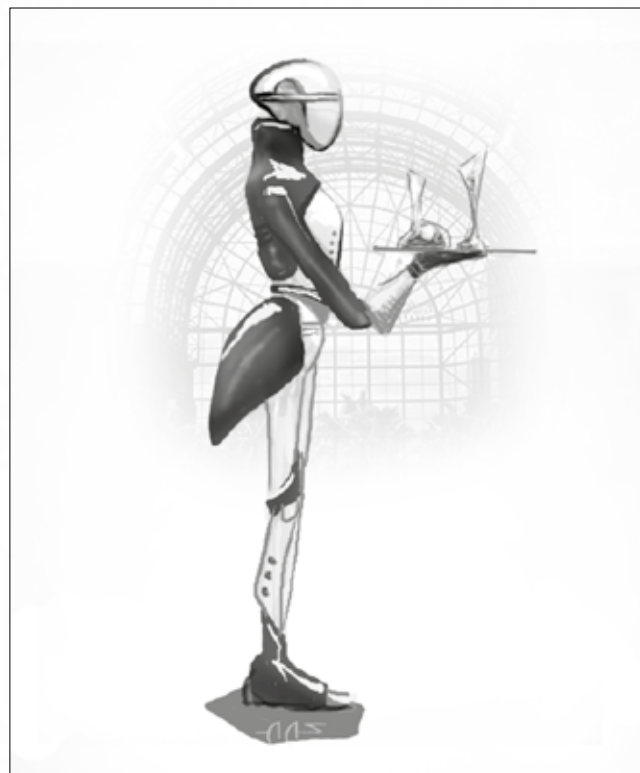
ACOUSTIC SENSORS

1× base pack

COMMS

1× vocoder

ADDITIONAL EQUIPMENT

1× energy coupling (mechanical) (TL5)

LOCOMOTION

Legs (10 km/h)

POWER SYSTEM

Fuel cell (2 days)

CONTROL

Computer brains (number): 2
Computer rating: 4
Integrated control software: y .... es
Control software rating: 1

SOFTWARE

Civil software:.. 3× Program/0
.... 1× Program/1
.... 1× Program/2
...............................(popular packs include 1× Steward/2
....or 1× Diplomat/2
....1× Translator/1)
Logic software: ....1× High Autonomous
Command software:........................... 1× Full Command
Emotion simulation: .... Emotion Simulation/1

MISCELLANEOUS

Mass: ....146.59 kg
Life expectancy:..50 years
Construction type:.. normal
Material:... normal
Price: .... 120,124 Cr.

15. SERVICE ROBOT AT THE IMPERIAL PALACE , TL15

Service robots at the Imperial Palace look just like Charlies, but their technology is much more advanced. The security department watching over the Emperor and his family has included all service robots into their active security concept. With their high-performance sensors they can identify people, detect potential risks, indirectly serve as lie detectors and even search for hidden weapons with terahertz waves – and all of that while serving you cool, refreshing drinks. In case of an attack, they are strong enough to even stand up against a freight robot and fast enough to take the imperial family to a safe place.

Strength 30 (+8), Dexterity 12 (+2), Hull 2, Structure 2, Intelligence 15 (+3), Education 12 (+2), Personality 0 (-3)

BODY

Protection: 10,
Protection type: .... Bonded Superdense
Configuration: ....shaped
Circuit insulation: ....yes
EMP protection (body/computer): .... yes/yes
Radiation shielding: 400

OPTICAL SENSORS

2× base pack, 2× infrared, 2× ultraviolet, 2× terahertz, 2× zoom, 2× night vision equipment, 2× glare shield

ACOUSTIC SENSORS

2× base pack, 2× ultrasonic, 2× noise filter, 2× high-performance sensor , 2× infrasonic, 2× sound absorber

OTHER SENSORS

1× radiation sensor, 1× motion sensor, 1× NAS

COMMS

1× vocoder, 1× speaker, 1× transceiver TL13, 1×laser transceiver TL13, 1× scent generator, 1× holographic projector TL13

ADDITIONAL EQUIPMENT

2× spotlight, small (TL5), 2× smoke discharger (TL7), 1× holographic recorder (TL13), 5× hidden compartment (TL5), 1× energy coupling (non-contact) (TL9)

LOCOMOTION

Legs (40 km/h)

POWER SYSTEM

Fuel cell (4 days)

CONTROL

Computer brains (number): 2
Computer rating: 8
Integrated control software: ....yes
Control software rating: 0

SOFTWARE

Miscellaneous: .... 1× network/0
Civil software: .... 4× Program/3
.... (usually 1× Steward/3,
.... 1× Diplomat/3, 1× Sensors/3, 1× Medic/3)
Security software: .... 1× Security/3
Battle software: .... 3× Battle Software/3
.... (usually 1× Melee (unarmed)/3,
...................................1× Gun Combat (energy pistol)/3,
.... 1× Gun Combat (energy rifle)/3)
Logic software: ....1× High Autonomous
Command software:............................ 1× Full Command
Emotion simulation: ....1× Emotion Simulation/2

MISCELLANEOUS

Mass: .... 56.15 kg
Life expectancy: ....60 years
Construction type: .... super compact
Material: .... normal
Price: ....7,767,450 Cr.

16. TELKU , TL15

Telku is the pseudo-biological robot that turned out to be the sensation of the Shudusham Robotics Conference some years ago. It has real organic tissue applied to its robot skeleton. Furthermore, its control brain is so advanced it even has its own personality. Even experts were amazed: They were not able to tell whether they were talking to a human being or a robot even after intensive conversations with Telku. SURD (Shinku University Research Directorate) spent hundreds of millions to develop Telku, and finally achieved a breakthrough after years of research. Telku will not be produced in series for now (it is far too expensive to do so), but researchers hope that this will be the case someday. Telku has drawn interest, no doubt, but it has also raised fears.

Strength 7 (+0), Dexterity 7 (+0), Hull 1, Structure 2, Intelligence 11 (+1), Education 9 (+1), Personality 6 (+0)

BODY

Configuration:..shaped
Tissue:.. biological tissue
Circuit insulation: ....yes
EMP protection (body/computer):....................... yes/yes

OPTICAL SENSORS

2× base pack, 2× night vision equipment, 2× eye replica

ACOUSTIC SENSORS

2× base pack

SMELL SENSOR

1× base pack

TOUCH SENSOR

1× base pack

TASTE ANALYSIS

1× base pack

COMMS

1× vocoder, 1× holographic projector TL13

ADDITIONAL EQUIPMENT

1× holographic recorder (TL13),
1× energy coupling (non-contact) (TL9)

LOCOMOTION

Legs (40 km/h)

POWER SYSTEM
Bio reactor (1 day)

CONTROL
Computer brains (number): 2
Computer rating: 6
Integrated control software: ....yes
Control software rating: 0

SOFTWARE
Civil software: .... 1× Gambler/0
.... 1× Art (dancing)/0
.... 1× Art (piano)/0
....1× Steward/0
....1× Carouse/1
....1× Streetwise/1
....1× Drive/1
.... 1× Diplomat/1
Security software: ....1× Security/3
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command
Emotion simulation: ....1× Emotion Simulation/3

MISCELLANEOUS
Mass: ....87.09 kg
Life expectancy: .... 180 years
Construction type: ....compact
Material: .... quality materials
Price: .... 185,168,802 Cr.

17. TUCANI-600 , TL13

The Tucani-600 is an infiltration and assassination robot. A pseudo-biological tissue was applied to its metal skeleton. Although the Tucani-600 looks human on first sight, its artificial origin becomes apparent after some time. Development of artificial tissue at TL13 is just not that advanced, and emotion simulation also leaves a lot to be desired. Despite these drawbacks, the Tucani-600 is a quite successful model as its camouflage is effective enough to get close to its victims. Once it has been discovered, it still is a fierce combat robot almost impossible to defeat with handguns. Production and sale of Tucani-600 robots are forbidden throughout the Imperium.

Strength 15 (+3), Dexterity 12 (+2), Hull 3, Structure 3, Intelligence 9 (+1), Education 9 (+1), Personality 0 (-3)

BODY
Protection: 13
Protection type: .... Crystaliron

Configuration: ....shaped
Tissue: ....pseudo-biological tissue
Circuit insulation: ....yes
EMP protection (body/computer):....................... yes/yes

OPTICAL SENSORS
2× base pack, 2× infrared, 2× night vision equipment, 2× eye replica, 2× glare shield

ACOUSTIC SENSORS
2× base pack, 2× noise filter

COMMS
1× vocoder

ADDITIONAL EQUIPMENT
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Legs (40 km/h)

POWER SYSTEM
Battery (4 days)

CONTROL
Computer brains (number): 2
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software:.. 1× Investigate/2
.... 1× Medic/2
....1× Stealth/2
.... 1× Drive (wheeled)/2
.... 1× Computer/2
Security software: ....1× Security/3
Battle software: ....1× Gun Combat (energy pistol)/2
....1× Gun Combat (energy rifle)/2
.... 1× Gun Combat (slug pistol)/2
.... 1× Gun Combat (slug rifle)/2
.... 1× Melee (unarmed)/2
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command
Emotion simulation:................. 1× Emotion Simulation/1

MISCELLANEOUS
Mass: ....379.77 kg
Life expectancy: ....50 years
Construction type: ....compact
Material: .... normal
Price: ....2,862,098 Cr.

18. TUCANI-800 , TL15

A newer version of the Tucani-600 model, the Tucani-800 is even deadlier than its predecessor as this time real biological tissue on an endoskeleton was used and emotion simulation was improved. The Tucani-800 also includes Carouse software. It will hardly stand out in a crowd of humans. And of course, this model is also forbidden throughout the Imperium.

Strength 15 (+3), Dexterity 12 (+2), Hull 3, Structure 3, Intelligence 9 (+1), Education 9 (+1), Personality 0 (-3)

BODY
Protection: 13
Protection type: .... Crystaliron
Configuration: ....shaped
Tissue: .... biological tissue

Circuit insulation: .... yes
EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS
2× base pack, 2× infrared, 2× night vision equipment, 2× eye replica, 2× glare shield

ACOUSTIC SENSORS:
2× base pack, 2× noise filter

COMMS
1× vocoder

ADDITIONAL EQUIPMENT
1× energy coupling (mechanical) (TL5)

LOCOMOTION
legs (40 km/h)

POWER SYSTEM
Fuel cell (4 days)

CONTROL

Computer brains (number): 2
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE

Civil software: .... 1× Investigate/2
.... 1× Medic/2
....1× Stealth/2
.... 1× Drive (wheeled)/2
.... 1× Computer/2
....1× Carouse/2
Security software: .... 1× Security/3
Battle software:............1× Gun Combat (energy pistol)/2
....1× Gun Combat (energy rifle)/2
.... 1× Gun Combat (slug pistol)/2
.... 1× Gun Combat (slug rifle)/2
.... 1× Melee (unarmed)/2
Logic software: .... 1× High Autonomous
Command software: .... 1× Full Command
Emotion simulation: ....1× Emotion Simulation/2

MISCELLANEOUS

Mass: ....379.37 kg
Life expectancy: ....60 years
Construction type:................................compact
Material: .... normal
Price: ....5,086,678 Cr.

19. COMBAT ROBOT MKI , TL15

This model is one of the most dangerous combat robots throughout the Imperium. Its protection is so high that it cannot be destroyed with small-caliber weapons. Furthermore, it can handle all known weapon systems and comes with four additional weapon slots that can be flanged with external weapon modules. This robot is an expert in tactics and stealth. It has comprehensive sensors that can pick up living beings over large distances. Its only probable weakness is its price.

Strength 30 (+8), Dexterity 15 (+3), Hull 4, Structure 4, Intelligence 9 (+1), Education 9 (+1), Personality 0 (-3)

BODY

Protection: 15
Protection type: .... Bonded Superdense
Configuration: ....functional
Circuit insulation: ....yes
EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS

4× base pack, 4× infrared, 4× ultraviolet, 4× terahertz, 4× microwave, 4× zoom, 4× night vision equipment, 4× glare shield

ACOUSTIC SENSORS

2× base pack, 2× ultrasonic, 2× noise filter, 2× high-performance sensor, 2× sound absorber

OTHER SENSORS

1× motion sensor, 1× NAS

COMMS

1× vocoder, 1× speaker, 2× ultrasonic vocoder, 1× transceiver TL13, 1× holographic projector TL13

ADDITIONAL EQUIPMENT

2× spotlight, small (TL5), 1× spotlight, large (TL5), 2× smoke discharger (TL7), 1× holographic recorder (TL13), 1× self-destruction (TL7), 4× integrated weapon (TL6), 1× energy coupling (non-contact) (TL9), 1× energy coupling (mechanical) (TL5)

LOCOMOTION

Grav (100 km/h)

POWER SYSTEM
Fusion reactor (20 days)

CONTROL
Computer brains (number): 3
Computer rating: 5
Integrated control software: yes
Control software rating: 1

SOFTWARE
Miscellaneous: ....1× Network/0
Civil software: ....1× Recon/2
....1× zero-G/2
....1× Sensors/2
.... 1× E×plosives/2
....1× Tactics (planetary)/2
....1× Stealth/2
Security software: ....1× Security/3
Battle softwarec.......................................11× Program/3
(all light, heavy and melee weapons)
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: ....1,412.28 kg
Life expectancy: ....60 years
Construction type: .... normal
Material:.. normal
Price: .... 1,747,505 Cr.

20. COMBAT DRONE MK2 , TL15
The combat drone is an answer to skyrocketing prices for MKI combat robots. Without a high-capacity control computer, the MK2 wouldn't even be able to hurt an ant. Furthermore, the MK2 was built with cheap components, which decreases its life expectancy to just around 24 years. This is not a problem, though— anybody buying an MK2 will want to use it instead of leaving it to rot in some storeroom. Malfunction owing to mechanical wear is thus quite rare for an MK2.

Strength 30 (+8), Dexterity 15 (+3), Hull 4, Structure 4, intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Protection: 15
Protection type: ....Bonded Superdense
Configuration: ....functional
Circuit insulation: .... yes
EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS
4× base pack, 4× infrared, 4× ultraviolet, 4× terahertz, 4× microwave, 4× zoom, 4× night vision equipment, 4× glare shield

ACOUSTIC SENSORS
2× base pack, 2× ultrasonic, 2× noise filter, 2× high-performance sensor, 2× sound absorber

OTHER SENSORS
1× motion sensor, 1× NAS

COMMS
1× vocoder, 1× speaker, 2× ultrasonic vocoder, 1× transceiver TL13, 1× holographic projector TL13

ADDITIONAL EQUIPMENT
2× spotlight, small (TL5), 1× spotlight, large (TL5), 2× smoke discharger (TL7), 1× holographic recorder (TL13), 1× self-destruction (TL7), 4× integrated weapon (TL6), 1× energy coupling (non-contact) (TL9), 1× energy coupling (mechanical) (TL5)

LOCOMOTION
Grav (100 km/h)

POWER SYSTEM
Fusion reactor (20 days)

CONTROL
Computer brains (number): 1
Computer rating: ....
Integrated control software:... yes
Control software rating: 2

SOFTWARE
Miscellaneous 1× Network/0
Security software: 1× Security/3

MISCELLANEOUS
Mass: ....5,295.3 kg
Life expectancy: ....24 years
Construction type: ....large
Material: ....cheap
Price: .... 155,765 Cr.

21. COMBAT DRONE ROGER , TL11

This is probably the cheapest combat drone available at the moment. It costs slightly more than a mercenary's monthly salary. Its control software is just good enough to prevent the drone from tripping over its own feet. Apart from that, it has no extras, for example, no integrated weapon rigs. It is shaped to look roughly human, which can make it quite versatile depending on the controlling computer. However, it has no circuit insulation or protection against EMP, and its radio signal encoding is insufficient. In any world with a high technological level, with cyber warfare or EMP weapons, these drones would turn to a huge pile of useless junk even before a mission. They are, however, threatening weapons in worlds with low tech levels.

Strength 6 (+0), Dexterity 6 (+0), Hull 2, Structure 1, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Protection: 9
Protection type: .... titanium steel
Configuration: ....functional
Circuit insulation: 0
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
2× base pack, 2× infrared

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder, 1× transceiver TL9

ADDITIONAL EQUIPMENT
1× spotlight, small (TL5),
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Legs (20 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number): 1
Computer rating: 1
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Miscellaneous: ....1× Network/0

MISCELLANEOUS
Mass: ....573.46 kg
Life expectancy: ....16 years
Construction type: ....large
Material:...cheap
Price: ....6,814 Cr.

22. COMBAT DRONE CONTROL , TL15

Combat drone controls are used to control MK2 and Roger combat drones. It features only simple programming and if set against an MKI combat robot with just one drone it controls, it would lose. It draws its strength from mass. A combat drone control can handle up to 56 drones at a time. Ten drones and the control unit cost less than an MKI combat robot. These figures alone are enough to convince many customers to buy this system.

Strength 0 (-3), Dexterity 0 (-3), Hull 1, Structure 1, Intelligence 14 (+2), Education 15 (+3), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder, 1× transceiver TL13

ADDITIONAL EQUIPMENT
1× energy coupling (non-contact) (TL9)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number): 4
Computer rating: 7
Integrated control software: ....yes
Control software rating: 0

SOFTWARE
Miscellaneous: ....1× Network/0
Civil software: ....1× Tactics (planetary)/2
Security software ....1× Security/3
Battle software:.. 1× Program/2
                (depending on the customer's preference)
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: ....20.75 kg
Life expectancy: ....60 years
Construction type: .... normal
Material: .... normal
Price: .... 94,003 Cr.

23. COMBAT DRONE CONTROL ROGER , TL11

This control unit was developed especially to control combat drones of the same name. Although the Tactics program is equal to the TL15 combat drone control, the possibilities of this "low tech" variant are less pronounced. This is mainly because the computer can process only Basic Command and has limited adaption skills. Furthermore, it can handle only up to 32 drones.

Strength 0 (-3), Dexterity 0 (-3), Hull 1, Structure 1, Intelligence 8 (+0), Education 15 (+3), Personality 0 (-3)

BODY
Configuration: ....functional
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder, 1× transceiver TL9

ADDITIONAL EQUIPMENT
1× energy coupling (non-contact) (TL9)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brain (number): 4
Computer rating: 4
Integrated control software: ....yes
Control software rating: 0

SOFTWARE
Miscellaneous: ....1×: Network/0
Civil software:... 1× Program/2
Security software: ....1× Security/3
Battle software:.. 1× Program/2
                (depending on the customer's preferences)
Logic software: .... 1× High Data
Command software:........................... 1× Basic Command

MISCELLANEOUS
Mass: ....52.35 kg
Life expectancy: ....40 years
Construction type: .... normal
Material: .... normal
Price: .... 948,718 Cr.

24. SURVEY DRONE TYPE A , TL11

Survey drones are used by scout service to map and analyze new systems, planets and anomalies. A survey drone is loaded with sensors to collect data, but it has no on-board control computer. The worst case is always expected: In case of a survey drone, this would be a total loss and the costs are thus kept as low as possible by always operating survey drones with remote control. Type A is designed for ground use on planets or asteroids. Thanks to its tracked locomotion, it can access almost every area.

Strength 3 (-1), Dexterity 7 (+0), Hull 3, Structure 3, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Protection: 5
Protection type: .... titanium steel
Configuration: .... functional
Circuit insulation: .... yes
EMP protection (body/computer): .... no/no

OPTICAL SENSORS
1× base pack, 1× infrared, 1× ultraviolet, 1× zoom, 1× night vision equipment

ACOUSTIC SENSORS
1× base pack, 1× ultrasonic, 1× infrasonic

SMELL SENSOR
1× base pack

OTHER SENSORS
1× radiation sensor, 1× motion sensor

COMMS
1× vocoder, 1× transceiver TL9

ADDITIONAL EQUIPMENT
1× holographic recorder (TL11), 1× toolkit: survey (TL7)

LOCOMOTION
Tracks (40 km/h)

POWER SYSTEM
Fuel cell (4 days)

CONTROL
Computer brains (number): 0
Computer rating: ....
Integrated control software: .... no

MISCELLANEOUS
Mass: .... 676.43 kg
Life expectancy: .... 16 years
Construction type: .... large
Material: .... cheap
Price: .... 12,218 Cr.

25. SURVEY DRONE TYPE B , TL11

Type B drones were designed for use in space and higher atmospheric layers. In the atmosphere, the drone can move at a top speed of 1,000 km/h, and in space it achieves acceleration of 1g. It carries enough fuel for 8 hours of continuous use of rocket locomotion.

Strength 3 (-1), Dexterity 7 (+0), Hull 3, Structure 3, Intelligence 0 (-3), Education 0 (-3), Personality 0 (-3)

BODY
Protection: 5
Protection type: .... titanium steel
Configuration: .... functional
Circuit insulation: .... yes
EMP protection (body/computer): .... no/no

OPTICAL SENSORS
1× base pack, 1× infrared, 1× ultraviolet, 1× zoom, 1× night vision equipment

OTHER SENSORS
1× radiation sensor, 1× motion sensor

COMMS
1× transceiver TL9

ADDITIONAL EQUIPMENT
2× spotlight, small (TL5), 1× holographic recorder (TL11),1× toolkit: survey (TL7), 300 liters of fuel (TL5)

LOCOMOTION
Rocket (1,000 km/h)

POWER SYSTEM
Fusion reactor (20 days)

CONTROL
Control chips

MISCELLANEOUS
Mass: .... 1,835.08 kg
Life expectancy: ....16 years
Construction type: ....large
Material: ....cheap
Price: .... 37,069 Cr.

26. ASTROGATOR/PILOT AP1 , TL13

This small robot is an astrogation and pilot robot. It can be connected to a spacecraft to control it even to completely replace a pilot. Effectively, this saves you two to three pilots and astrogators. On large commercial vessels, buying an AP1 pays off within a year. The question is whether you want that. Few like to place their fate completely in a robot's hands. Most of the time, an experienced astrogator/pilot will keep an eye on the AP1.

Strength 7 (+0), Dexterity 12 (+2), Hull 1, Structure 1, Intelligence 9 (+1), Education 9 (+1), Personality 0 (-3)

BODY
Configuration: ....shaped
Circuit insulation: ....yes
EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS
2× base pack, 2× infrared, 2× zoom

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder, 1× transceiver TL13

ADDITIONAL EQUIPMENT
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Legs (10 km/h)

POWER SYSTEM
Fuel cell (2 days)

CONTROL
Computer brains (number): 2
Computer rating: 4
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software: ....1× Sensors/2
.... 1× Astrogation/2
....1× Pilot (spacecraft)/2
Security software: ....1× Security/2
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: ....212.23 kg
Life expectancy: ....20 years
Construction type: .... normal
Material:..cheap
Price:... 96,376 Cr.

27. SENSOR ROBOT ATTACA S66 , TL14

An Attaca is a multifunctional sensor robot. It can be used to explore unknown areas as well as monitor security-sensitive areas. It comes with a certain amount of intelligence and can interpret signals optimally, but unfortunately it is very vulnerable to hits. The robot has grav locomotion and can thus reach locations quickly.

Strength 1 (-2), Dexterity 1 (-2), Hull 1, Structure 1, Intelligence 12 (+2), Education 12 (+2), Personality 0 (-3)

BODY
Configuration: .... functional
Circuit insulation: ....yes
EMP protection (body/computer):......................... yes/yes

OPTICAL SENSORS
4× base pack, 4× infrared, 4× ultraviolet, 4× terahertz, 4× microwave, 4× zoom, 4× night vision equipment, 4× glare shield

ACOUSTIC SENSORS
2× base pack, 2× ultrasonic, 2× noise filter, 2× high-performance sensor, 2× infrasonic, 2× sound absorber

SMELL SENSOR
2× base pack, 2× high-performance sensor

OTHER SENSORS
1× radiation sensor, 1× motion sensor, 1× densitometer

COMMS
1× vocoder, 1× speaker, 1× ultrasonic vocoder, 1× transceiver TL13, 1× holographic projector TL13

ADDITIONAL EQUIPMENT
2× spotlight, small (TL5), 2× spotlight, large (TL5), 1× holographic recorder (TL13), 1× energy coupling (non-contact) (TL9)

LOCOMOTION
Grav (50 km/h)

POWER SYSTEM
Fuel cell (4 days)

CONTROL
Computer brains (number): 1
Computer rating: 7
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software: ....1× Sensors/2
Security software: ....1× Security/3
Logic software: ....1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS
Mass: ....144.27 kg
Life expectancy: ....55 years
Construction type: .... normal
Material: .... normal
Price: .... 185,637 Cr.

28. CONSTRUCTION ROBOT BLUEFIELD , TL11

Robots like this are used on building sites, preferably in hostile environments such as underwater, in space or in areas with extreme temperatures. They are equipped with several arms for rough as well as precision work, never tire and are willing to work night shifts without a bonus.

Strength 22 (+5), Dexterity 15 (+3), Hull 2, Structure 2, Intelligence 6 (+0), Education 5 (+0), Personality 0 (-3)

BODY
Protection:...4
Protection type: .... titanium steel
Configuration: ....functional
Circuit insulation: .... yes
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
4× base pack, 4× infrared

ACOUSTIC SENSORS
1× base pack

OTHER SENSORS
1× radiation sensor, 1× motion sensor

COMMS
1× vocoder, 1× speaker, 1× transceiver TL9

ADDITIONAL EQUIPMENT
4× spotlight, large (TL5), 2× toolkit: mechanic (TL7), 1× energy coupling (mechanical) (TL5)

LOCOMOTION
Grav (15 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number): 1
Computer rating: 4
Integrated control software:... yes
Control software rating: 1
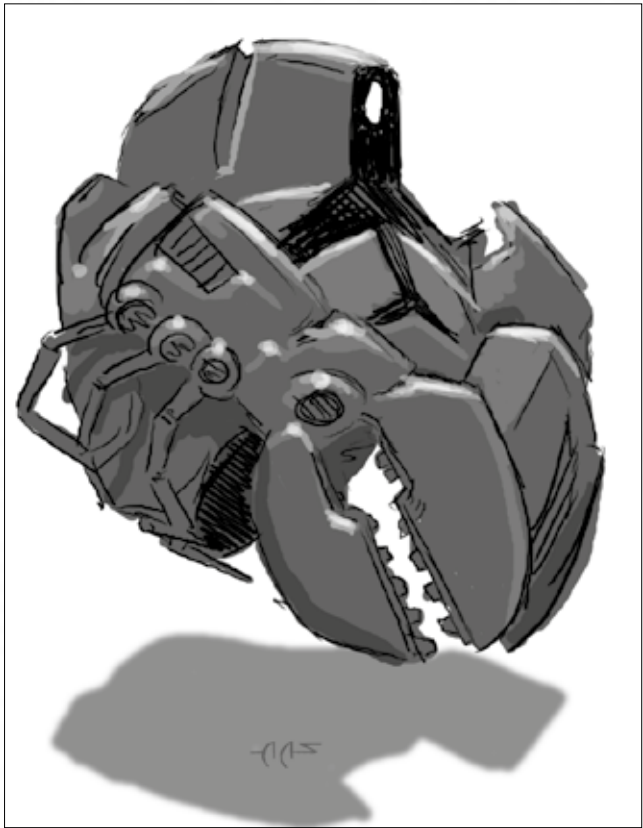
SOFTWARE
Civil software: .... 1× Mechanic/2
Logic software: .... 1× Low Data
Command software: .... 1× Basic Command

MISCELLANEOUS
Mass: ....1,764.11 kg
Life expectancy: ....16 years
Construction type: ....large
Material: ....cheap
Price: .... 40,875 Cr.

29. MINING ROBOT SES EXCETER , TL9

The SES Exceter mining robot is used in asteroid fields. Every 24 hours it can process up to 25 tons of asteroid rock. It was designed to be programmed manually before each task or have task details uploaded to its processor. Afterward it is taken to location and starts mining autonomously. If it runs out of fuel (with reserve the robot's locomotion can run up to 25 hours) or if the asteroid has been mined completely, it sends a signal to its home base automatically.

Strength 30 (+8), Dexterity 9 (+1), Hull 2, Structure 2, Intelligence 2 (-2), Education 5 (+0), Personality 0 (-3)

BODY

Protection:...	9
Protection type:	titanium steel
Configuration:	functional
Circuit insulation:	yes
EMP protection (body/computer):..........................	No/no

OPTICAL SENSORS
2× infrared, 2× microwave, 2× glare shield

OTHER SENSORS
1× radiation sensor, 1× motion sensor

COMMS
1× transceiver TL9

ADDITIONAL EQUIPMENT
4× spotlight, large (TL5), 2× toolkit: mechanic (TL7), 700-liter fuel tank (TL5), 1× energy coupling (mechanical) (TL5)

LOCOMOTION
Rocket (300 km/h)

POWER SYSTEM
Fusion reactor (40 days)

CONTROL

Computer brains (number):	1
Computer rating:	2
Integrated control software:	yes
Control software rating:	1

SOFTWARE
Civil software: .... 1× Mechanic /1
Logic software: .... 1× Low Data
Command software:.............................. 1× Manual Input

MISCELLANEOUS
Mass: .... 4,005.19 kg
Life expectancy:.. 12 years
Construction type:.. large
Material:..cheap
Price: .... 85,591 Cr.

30. ZHODANI COMBAT ROBOT PP04, TL14

This is one of the most common combat bots in the Zhodani Consulate. The original PP04 series was developed by Tliazhashal, but is now produced by several licensed manufacturers throughout the Consulate. The robot's huge success is mainly because of its high intelligence (for Zhodani robots) and its modular build. The latter makes it easy to equip or modify the robot for other tasks. Today there are several variants of the model: the standard version comes with laser rifle and simple software for encrypted communication. There are also models with Gauss rifles or even FGMPs. The PP04 series' most important part is their psionic interface. Each Zhodani psionicist can control a PP04 with a bit of practice, turning the robot into his extended arm that can, depending on equipment and task, be extremely deadly. Even when the PP04 is not controlled via psionic interface, it is intelligent enough to come to its own conclusions and follow given instructions. They can thus be used in larger swarms controlled by a psionicist. A short twist of mind is enough to get the PP04 moving. The psionicist can then concentrate on the next model.

Strength 20 (+4), Dexterity 18 (+4), Hull 3, Structure 3, Intelligence 8 (+0), Education 6 (+0), Personality 0 (-3)

BODY
Protection: 13
Protection type: ....crystal iron
Configuration: ....shaped
Circuit insulation: ....yes
EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS
1× base pack

ACOUSTIC SENSORS
1× base pack

COMMS
1× transceiver TL13

ADDITIONAL EQUIPMENT
1× integrated weapon (TL6), 1× energy coupling (non-contact) (TL9), laser rifle (TL11), psionic interface

LOCOMOTION
Grav (30 km/h)

POWER SYSTEM
Battery (4 days)

CONTROL
Computer brains (number): 1
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software: ....1× Comms/1
Battle software: ....1× Gun Combat (energy rifle)/1
Logic software: ....1× High Data
Command software: ....1× Limited Basic Command

MISCELLANEOUS
Mass: ....334.88 kg
Life expectancy: ....55 years
Construction type: ....compact
Material: .... normal
Price: ....,935,529 Cr.

31. SEMI-AUTONOMOUS HAND IMPLANT INFILTRATOR MK. 5 , TL15

The semi-autonomous hand implant infiltrator Mk. 5 (SHI5), whose looks resemble that of a human hand, was a noted entry to the last big tendering for miniature espionage drones. The design concept envisions attaching the small robot to a human being with a forearm prosthesis. The person then smuggles the SHI5 into the object to be infiltrated, removes it from its mount and gets it to start working. Once the work has been done, the hand returns to its owner and is recharged via forearm prosthesis (see Chapter 10.11) to get ready for its next mission. Due to its inconspicuous design the semi-autonomous hand implant infiltrator can be taken to any place its wearer can access. Although its abilities to act on its own are limited, it offers a wide range of

possibilities in cooperation with its wearer. All actions and sensations of the robot can be controlled and monitored by the agent on site via short-distance radio communication.

In the end another design won, and the SHI5 vanished from the center of attention. Maybe this was because of its limited abilities or because few agents were willing to swap their real hand for this piece of high tech. Since then, the SHI5 has led the lonely existence of a niche product.

Strength 6 (+0), Dexterity 2 (-2), Hull 0, Structure 0, Intelligence 1 (-2), Education 1 (-2), Personality 0 (-3)

BODY
Configuration: ....shaped
Tissue: .... biological tissue
Circuit insulation: ....yes
EMP protection (body/computer):....................... yes/yes

OPTICAL SENSORS
1× base pack, 1× infrared

ACOUSTIC SENSORS
1× base pack

ADDITIONAL EQUIPMENT
1× energy coupling (non-contact) (TL9)

LOCOMOTION
Legs (10 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number): 1
Computer rating: 2
Integrated control software: ....yes
Control software rating: 0

SOFTWARE
Civil software: ....1× Stealth/0
Logic software: ....1× Low Data
Command software: ....1× Limited Basic Command

MISCELLANEOUS
Mass: .... 4.49 kg
Life expectancy: ....60 years
Construction type: .... super compact
Material:.. normal
Price: .... 471,885 Cr.

32. CARESS , TL10

CaRESS is a babysitting robot often used in hospitals but also by wealthy families. Toddlers and babies need 24-hour care. Stressed families but also hospital personnel are to be supported by CaRESS. Unfortunately, its price keeps it from being a popular model for the middle class. Nevertheless, it is a high-class product that fulfills its tasks perfectly. Its exterior was modeled to look like a woman and it has almost no sharp edges. In addition, its upper body and arms were coated with soft, heatable polymer to prevent children and babies from being picked up by cold metal arms. The CaRESS's vocoder produces soft, calming sounds and its facial expression is able to produce a small range of feelings. The base version comes without emotion simulation, though. There are other variants that have been equipped with a nursing function. However, these turned out to be flop and are no longer produced. A scent generator copies the mother's scent when near the baby or another generic scent to calm the child. In theory, the CaRESS's programming allows for taking care of older children as well, but its most effective field of work are children from 0 to 12 years.

Strength 8 (+0), Dexterity 12 (+2), Hull 0, Structure 0, Intelligence 6 (+0), Education 8 (+0), Personality 0 (-3)

BODY
Configuration:... shaped
Circuit insulation: .... yes
EMP protection (body/computer):........................... no/no

OPTICAL SENSORS
2× base pack, 2× night vision equipment, 2× eye replica

ACOUSTIC SENSORS
2× base pack

SMELL SENSORS
1× base pack

TOUCH SENSOR
1× base pack

OTHER SENSORS
1× motion sensor

COMMS
1× vocoder, 1× scent generator

ADDITIONAL EQUIPMENT
1× medikit (TL10), 1× energy coupling (non-contact) (TL9)

LOCOMOTION
Legs (5 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number):	1
Computer rating:	3
Integrated control software:	yes
Control software rating:	1

SOFTWARE
Civil software:	1× Trade (babysitting)/1
Logic software:	1× High Data
Command software:	1× Basic Command

MISCELLANEOUS
Mass:	352.63 kg
Life expectancy:	35 years
Construction type:	large
Material:	normal
Price:	91,276 Cr.

33. SMELTER 7D , TL9

The Smelter 7D is, as the name suggests, a robot working with blast furnaces and in ore processing. Close to these places, temperatures are high and human beings cannot stand them over longer periods. The risk of injury is also high. The Smelter 7D was developed to carry out these tasks. Its hull was constructed to withstand high temperatures without overheating the internal control brain. It is not that intelligent, but works well and tirelessly. It has four arms, two of which are equipped with telescope functions that can be extended up to three meters. These features, combined with its huge strength, means that it can replace several human workers.

Interestingly enough, its security systems are not mature, making it easy to hack. Its strong protection combined with its strength can turn it into a dangerous opponent in close combat. It is quite slow, so it can be outrun.

Unfortunately for its victims, it was programmed to be stoic and does not cancel a given command that quickly.

Strength 25 (+6), Dexterity 8 (+0), Hull 2, Structure 2, Intelligence 4 (+0), Education 7 (+0), Personality 0 (-3)

BODY
Protection:	9
Protection type:	titanium steel
Configuration:	functional
Circuit insulation:	yes
EMP protection (body/computer):	yes/yes

OPTICAL SENSORS
2× base pack, 2× terahertz

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder

ADDITIONAL EQUIPMENT
1× toolkit: mechanic (TL7),
1× energy coupling (mechanical) (TL5)

LOCOMOTION
Legs (4 km/h)

POWER SYSTEM
Battery (4 days)

CONTROL
Computer brains (number):	2
Computer rating:	2
Integrated control software:	yes
Control software rating:	1

SOFTWARE
Civil software:	1× Trade (metal processing)/1
Logic software:	1× High Data
Command software:	1× Limited Basic Command

MISCELLANEOUS
Mass:	1,561.06 kg
Life expectancy:	12 years
Construction type:	large
Material:	cheap
Price:	63,362 Cr.

34. HIVER TRANSLATOR , TL14

Hiver translators are among the most sought-after robots along the boundaries of the Hiver Federation. The Solomani appreciate them especially. They have a humanoid shape, but at 150cm they are smaller than a normal human. The only disturbance to their human look is their slightly insect-like head. They have six eyes that are arranged to enable almost circumferential vision. Usually, a translator is proficient in only four languages. However, their incredible database and linguistic software allow them to learn new languages and also determine its patterns quickly. They can decipher spoken language as well as written or even sign language. Their main field of work is communication between humans and Hivers. The latter are shown a holographic image of a Hiver using the Hivers' sign language. Models of this type reach record prices outside the Hiver Federation. Inside the Federation, they are available for as little as 230,000 Cr. On Terra they already cost around 389,000 Cr., and they are almost impossible to get in the Spinward Marches.

Strength 7 (+0), Dexterity 7 (+0), Hull 1, Structure 1, Intelligence 10 (+1), Education 18 (+4), Personality 0 (-3)

BODY
Configuration: ....shaped
Circuit insulation: .... no
EMP protection (body/computer): .... no/no

OPTICAL SENSORS
6× base pack

ACOUSTIC SENSORS
1× base pack, 1× noise filter,
1× high-performance sensor, 1× infrasonic

COMMS
1× vocoder, 1× speaker, 1× ultrasonic vocoder, 1× transceiver TL13, 1× holographic projector TL13

ADDITIONAL EQUIPMENT
1× holographic recorder (TL13)

LOCOMOTION
Legs (8 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL
Computer brains (number): 2
Computer rating: 6
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil Software:..4× Language
....(Anglic, Hiver, Oynprith, Vargr)
....1× Linguistic/3
Logic software: ....1× High Autonomous
Command software:............................... 1× Full Command
Emotion simulation:..................1× Emotion Simulation/2

MISCELLANEOUS
Mass: ....111.42 kg
Life expectancy:... 330 years
Construction type:... normal
Material:... quality materials
Price:.. 389,762 Cr.
.... (2 sectors from the Hiver Federation)

35. CALUM 2 , TL12

Calum 2 is a demolition robot. The impressive unit weighs almost 4 tons and has a minimum height of almost three meters. Its two massive arms and upper body swing open and the Calum 2 can reach a working height of almost eight meters. With its huge arms it can tear down walls, break stone and bend metal. Once activated, it can turn a one-family house into a pile of rubble in less than a minute, but it usually works more carefully. Besides its two demolition arms it also has four slender arms equipped with tools. With these it first strips down any reusable parts, such as windows, doors, wood, metal and plastic. While these parts are removed it usually carries out an ultrasonic check to determine the material's quality on-site. It uses its huge demolition arms only once the building has been gutted and only a skeleton of stone and metal bars remains. The Calum 2 is equipped with infrared sensors and monitors the building site constantly. Once it detects living beings inside the house, it stops working immediately to keep them from danger.

Strength 55 (+16), Dexterity 18 (+4), Hull 4, Structure 4, Intelligence 5 (-1), Education 4 (-1), Personality 0 (-3)

BODY
Protection: 5
Protection type: .... titanium steel
Configuration:...functional
Circuit insulation: ....yes

EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS
4× base pack, 4× infrared

ACOUSTIC SENSORS
1× base pack, 1× ultrasonic

OTHER SENSORS
1× motion sensor

COMMS:
1× speaker, 1× transceiver TL9

ADDITIONAL EQUIPMENT
4× spotlight, large (TL5), 4× toolkit: mechanic (TL7),
1× energy coupling (non-contact) (TL9)

LOCOMOTION
Tracks (25 km/h)

POWER SYSTEM
Fuel cell (6 days)

CONTROL
Computer brains (number): 1
Computer rating: 5
Integrated control software: ....yes
Control software rating: 1

SOFTWARE
Civil software: .... 1× Mechanic/2
Logic software: .... 1× Low Autonomous
Command software: .... 1× Basic Command

MISCELLANEOUS
Mass: .... 3,980.43 kg
Life expectancy: ....18 years
Construction type: ....large
Material: ....cheap
Price: .... 69,256 Cr.

36. ILM BOCHER , TL13

The ILM Bocher is a gardening robot. It looks like a huge spider and hovers between the plants. What look like a spider's legs at first sight turn out to be a series of pipes and nozzles spraying fertilizer and herbicides. It is also equipped with several delicate arms able to replant or handle flowers and other plants carefully. Furthermore, it has a sturdy telescope arm for heavier work. Thanks to its grav locomotion, it is also able to reach high treetops or work in precipices without damaging plants and soil. A single ILM Bocher can tend to several square kilometers of gardens and landscapes. Its programming is intelligent and covers almost all imaginable cases of botany. With its microscope function and sensor optics the robot can even recognize vermin and take action against it. The ILM Bocher is an excellent gardening robot gladly used for big projects. It is slightly oversized for simple domestic use.

Strength 9 (+1), Dexterity 12 (+2), Hull 1, Structure 1, Intelligence 9 (+1), Education 8 (+0), Personality 0 (-3)

BODY
Configuration: .... shaped
Circuit insulation: .... no
EMP protection (body/computer): ....no/no

OPTICAL SENSORS
1× base pack, 1× infrared, 2× microscope

ACOUSTIC SENSORS
1× base pack

COMMS
1× vocoder, 1× scent generator

ADDITIONAL EQUIPMENT
1× Toolkit: garden (TL7), 1× energy coupling (non-contact) (TL9)

LOCOMOTION
Grav (5 km/h)

POWER SYSTEM
Battery (2 days)

CONTROL

Computer brains (number): 1
Computer rating: 6
Integrated control software: ....yes
Control software rating: 1

SOFTWARE

Civil software: ....1× Trade (botany)/2
....1× Life Sciences (botany)/2
Logic software: .... 1× High Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS

Mass: ....249.24 kg
Life expectancy: ....20 years
Construction type: .... normal
Material: ....cheap
Price: ....74,935 Cr.

37. GANDARAK, TL12

The Gandarak dealer robot is a robot commonly used for gambling. Its three arms and integrated automatic card shufflers can shuffle and deal any kinds of cards according to the respective game's rules. There might be good reasons for having a human dealer on the table, but there are also good reasons for using a Gandarak. With its sensor optics it can not only keep an eye on the players but also look at all the cards it deals. This hinders any attempts to defraud significantly. Of course it would be too big of an advantage for the house to have the Gandarak take part in a game. Thus, it is mainly used for games in which it only takes the dealer function or in which it is useless to know the cards. This robot is a stationary unit mounted to a gambling table.

Strength 8 (+0), Dexterity 12 (+2), Hull 0, Structure 0, Intelligence 10 (+1), Education 8 (+0), Personality 0 (-3)

BODY

Configuration: ....shaped
Circuit insulation: ....yes
EMP protection (body/computer): .... yes/yes

OPTICAL SENSORS

4× base pack, 4× night vision equipment

ACOUSTIC SENSORS:

2× base pack

OTHER SENSORS

1× motion sensor

COMMS:

1× vocoder, 1× Transceiver TL12

ADDITIONAL EQUIPMENT

1× holographic recorder (TL12),
1× energy coupling (mechanical) (TL5)

POWER SYSTEM

Battery (2 days)

CONTROL

Computer brains (number): 1
Computer rating: 4
Integrated control software: ....yes
Control software rating: 1

SOFTWARE

Civil software: .... 1× Gambler/3
.... 1× Trade (card games)/3
Logic software: ....1× Low Autonomous
Command software: .... 1× Full Command

MISCELLANEOUS

Mass: .... 101.33 kg
Life expectancy: .... 135 years
Construction type: .... normal
Material: .... quality materials
Price: ....484,932 Cr.

8. NANOBOTS

Nanobots are robots smaller than one millimeter, sometimes even in the nanometer range. The smallest nanobots consist only of a few molecules and nanotubes. They are most useful in a combination of numbers and miniscule size, which enables them to still work with high precision even on smallest objects.

One nanobot alone can seldom carry out a bigger task, but a group can carry out even complex tasks a human or other robot would not be able to do physically. Group sizes can range from a few hundred nanobots to several million or even billion.

Nanobots are used in medicine to fight cancer cells and also to support or even replace the immune system.
In manufacturing, they can be used to produce miniaturized objects or to decompose waste.

Of course, their abilities also turn them to sought-after military weapons. They can basically disintegrate any object; it does not have to be waste. Weapons, computers and human beings are military goals that can be fought with nanobots. They can also trigger illnesses in human beings instead of curing them. However, they can also be used in less martial ways for monitoring and spying.

8.1 CONSTRUCTION/CHARACTERISTICS

Nanobots are not constructed like common robots. They either replicate themselves (see below) or have to be made with nanotools.

Just as characters and robots, they have characteristics. But these characteristics are not assigned to certain systems as with a normal robot; rather, they are distributed among the group of nanobots. A single nanobot has no significant characteristics.

Nanobots are constructed in points, which can be distributed among their characteristics. These points influence mass as well as price.

In contrast to characters, nanobots distribute the points only among five characteristics: Strength, Dexterity, Endurance, Intelligence and Education. In some special cases a nanobot can also gain Personality points. However, this is only possible once the abilities "swarm-forming" and "omnipotent" are given (see below).

Each point in a characteristic costs 200,000 Cr. on TL12. For each TL above 12, Prices are halved. Nanobots can also be built as prototech from TL10. For each TL below 12, prices multiply by 10 for each characteristics point. Thus, a TL10 nanobot costs 200,000,000 Cr per characteristics point.

Each characteristics point has a mass of 2 kilograms.

A nanobot with characteristics of an average human costs around 4 Mcr at TL12, without additional abilities, and has a mass of about 80 kilograms.

As long as nanobots are not equipped with the "swarm-forming" ability, each nanobot is a "lone fighter" that will not cooperate with other nanobots. However, they are usually controlled externally to work systematically.

Generally, this is achieved with magnetic fields or by using only a few nanobots in one place.

Non-swarm-forming nanobots receive a maximum DM of -2 from their characteristics.

Maximum values for Int and Edu equal those of a normal computer (see Chapter 5.1.1). Maximum value for Per is half of the value of a normal computer (rounded down). For example, at TL12 a swarm of nanobots can have Int 10, Edu 23 and Per 0.

Nanobots have the special ability to exchange their characteristics to a limited extent. For example, physical characteristics (Str, Dex, End) can be swapped at will among each other. Points can also be shifted between mental characteristics Int and Edu, as long as the maximum values (see Chapter 5.1.1) are taken into account. Only Per points cannot be changed.

External control usually works via a control unit designed especially for nanobots, which is connected to a computer. Such a control unit costs 100 Cr.

8.2 ABILITIES

Nanobots can have several abilities that enhance their potential. However, they have to be chosen while constructing the nanobot swarm. Adding them subsequently is not possible.

MONO-POTENT (TL12), SEMI-POTENT (TL13), OMNIPOTENT (TL16)

A nanobot's potency describes its ability to carry out different tasks. Because of their miniscule size, nanobots can carry out only very specific tasks, such as hindering a certain neurotransmitter in a human being's body or catalyzing a certain biochemical reaction.
In the early stages of nanobot development, they were constructed for only one very specific task. They could also not change this task. These are mono-potent nanobots.

In time nanobots became more versatile and were able to carry out more tasks. On TL13 they can already carry out three different tasks, on TL14 four tasks, and so on. These are semipotent nanobots.
Producing semi-potent nanobots doubles the nanobot's overall price.

From TL16 it is possible to produce omnipotent nanobots. They can reprogram themselves and adjust to any task. However, to do so, they have to be able to form a swarm and save programs they are to carry out. Being able to adjust to any task does not make them artificial intelligences. They lack the consciousness as well as creativity of an artificial intelligence (see Chapter 5.4). It only describes their ability to adjust their body to their task. An omnipotent nanobot multiplies the overall price by five. If not stated otherwise, all nanobots are mono-potent.

MONO-FUNCTIONAL (TL12), MULTIFUNCTIONAL (TL14)

Nanobots are classified not only according to their potential tasks but also according to how many tasks they can carry out at a time. This is especially important for swarms of nanobots as the swarm has to coordinate itself. Non-swarm-forming nanobots are automatically mono-functional. If a semipotent nanobot is to carry out two tasks at a time, two smaller, separate nanobots have to be formed out of the first one. They cannot coordinate. All units of a mono-functional nanobot can only carry out one task at a time. If they are to carry out another task, all units have to change their function simultaneously.
Multifunctional nanobots can do several tasks at a time. They could, for example, imitate a living being. Some of the nanobots simulate the body, others hair, still others clothing and so on. They are still able to coordinate themselves, even though they carry out different tasks. The programs they execute have to be saved within the nanobots.

Multifunctional nanobots need to be at least semipotent and swarm-forming.

Multifunctional nanobots multiply the overall price by five. If not stated otherwise, all nanobots are mono-functional.

SWARM-FORMING (TL14)

From TL14, nanobots can coordinate themselves and do not need external impulses any more. They act like an independent entity, not like millions of individual entities, somewhat like an ant or a bee colony. Several swarm-forming nanobots of the same type can form one larger nanobot to combine their characteristics. They can divide a larger task into several smaller ones autonomously until they are able to solve the overall task. This is especially helpful in combination with "semipotent" and "multifunctional" abilities, which are also requirements for this ability. With this combination, a nanobot is able to do several tasks at a time.
Swarm-forming doubles the nanobot's overall price.
Unless stated otherwise, all nanobots are non-swarm-forming.

SUB-SWARMS (TL14)

This is the opposite of swarm-forming. Nanobots might be able to combine, but that does not necessarily mean that they can split up again to do different tasks in different places. These tasks might have been identified by the swarm, but they can be carried out only by dividing the swarm.

Usually, if a number of nanobots is separated from the swarm, the smaller number is deactivated. If both swarms are to be able to operate after the separation, the swarm has to have this ability. It is then capable to split up into any amount of sub-swarms that can operate in different places. The only limit is the minimum of one characteristics point per swarm. Once this limit is under-run, the swarm is deactivated instantly.

The separate swarms now act as individual swarms. Sub-swarm doubles the nanobot's overall price. Unless noted otherwise, nanobots do not have the sub-swarm ability.

REPRODUCTION (TL14)

Semi-potent nanobots can also be programmed to reproduce themselves, that is, create an identical copy of themselves. For this they need a certain amount of basic material they can transform. The type of basic material depends on the type of material the nanobot is made from. If it was made from bio-polymer, basic material could be organic compounds such as leftover food, foliage, human beings and so on. If the nanobot

was made from geo-polymer, it mainly needs metal (aluminum) and quartz, for example sand. Nanobots cannot change elements into other elements, that is, they cannot turn iron into copper or hydrogen into helium. Once all required materials are available, it takes 10 minutes per characteristics point of the nanobot to produce a copy. If the process is interrupted, the copy is not complete and cannot be activated.

Reproduction triples the nanobot's overall price.

SELF-IMPROVEMENT (TL15)

Nanobots with the ability to improve themselves can raise their characteristics autonomously. Similar to reproduction, they need a basic material to form new elements. This material is again dependent on the material the nanobot was made from (bio-polymer or geo-polymer). A new characteristics point can be produced within 30 minutes. The nanobot's TL states the maximum value for each characteristic. If a characteristic is equal to or higher than the nanobot's TL, it cannot be improved any further. A nanobot with high starting values will not be able to make much use of this ability after construction (this does not affect the rules for Per development of artificial intelligence).

Self-improvement requires semi-potent and swarm-forming.
Self-improvement quintuples the overall price.

BIO-POLYMER (TL12), GEO-POLYMER (TL14)

During the early stages of nanobot development, they were usually made from bio-polymer. These are easy to produce and also very versatile. Simple nanobots can already be made from a few carbonate tubes. However, building a more complex nanobot, swarm-forming, multifunctional and semi-potent, requires more complex structures like synthetic cells, similar to the cells of a human body. But these synthetic bio-polymer cells often have the same weaknesses human body cells have. Some nanobots were defeated by a "cold" shortly after construction.

Manufacturers try to avoid these problems by using geo-polymers. They are more complex and more expensive to produce, but also more resistant to most biological influences. They seem metallic and consist mainly of aluminum and silicon.

A geo-polymer nanobot costs twice as much as a bio-polymer one. Unless stated otherwise, all nanobots are made from bio-polymer.

8.3 NANOBOT PROGRAMS

Nanobots need programs just like regular computers, but they are limited in several ways owing to their construction:

1. Programs for nanobots are ten times as expensive as normal programs.
2. Storage space is limited. A nanobot can save program ratings equal to the sum of all characteristics/5 (rounded down). Thus, a nanobot with 12 points in characteristics can only save one program/2 or two program/1. Program/0 counts as program/1 regarding storage space.
3. Software stored on non-swarm-forming nanobots is limited to a strictly defined characteristic, while another characteristic saves another program. The programs can be used only by these parts of the nanobot. Thus, each program has to be connected to certain characteristics, which have to be determined during the nanobot's creation. If a characteristic decreases, the respective programs are affected as well. Programs stored on swarm-forming nanobots are distributed among the whole swam and can be concentrated if necessary.
4. The number of programs that can be run at a time depends on the ideal computer rating for the nanobot's TL. For example, TL14 enables Computer/7. This equals the maximum amount of program ratings a nanobot can run at a time. Limits due to functionality (mono-functional, semi-funcional, multifunctional), potency (mono-potent, semi-potent, omnipotent) and ability to form swarms persist. Thus, it usually makes no sense to include more than one program in mono-functional and mono-potent nanobots.

8.4 DAMAGING NANOBOTS

In their natural state of unformed mass nanobots are almost immune to blow damage dealt by slug throwers. These only deal minimal damage against a nanobot swarm (each die shows 1). A slug is huge compared to a nanobot and will push the nanobot aside long before hitting it due to the shock wave it creates. Melee weapons don't have any effect on nanobots. Weapons dealing damage through energy or high temperatures are highly effective when fighting nanobots in their unformed state. They deal double damage.

Once nanobots have taken a defined shape with rigid surface, they take normal damage from energy weapons and halved damage from slug throwers. Melee weapons remain ineffective.

8.5 DAMAGE DEALT BY NANOBOTS

Damage dealt by nanobots can originate in blows, for example, by the replica of an arm with which the nanobot hits. Its effect is equal to the melee attack of a living being, depending on the arm's shape or a real melee weapon held by it.

Nanobots can also deal damage on molecular level. The amount of damage is variable and depends on how well the nanobots know their opponent's anatomy. A nanobot swarm designed to break down organic molecules will inflict little to no damage to a robot or vehicle. Once the nanobots have been set on a target, the game master decides on the amount of damage they inflict. 1d6 of damage per 5 points in characteristics of the swarm can be taken as a guideline.

Armor does not offer any protection in this case, as damage is dealt on molecular level. The wearer can only be protected if his armor is sealed completely (e.g., a vacc suit), as long as the suit has no holes and the nanobots can't find a way to disintegrate it (e.g., the rubber fastenings).

Once such a swarm is inside a system, for example, a human's blood circuit, it can even cause more damage, up to 1d6 for each point in characteristics. Protection is useless in this case.

8.6 NANOBOTS CAN REPAIR DAMAGE/ RECONFIGURE SYSTEMS

To a limited extent, nanobots can repair damage to technical systems by producing new components or repair damaged contacts.

When a nanobot swarm has been configured for repairs, it is usually sufficient to fix loose contacts and repair broken cables, or imply individual nanobots as replacements, in an otherwise undamaged system. As systems get more complex, the nanobot swarm has to be more complex as well to be able to repair it. A broken computer system with circuit connections in nanometer range cannot be repaired by nanobots whose size has been set to micrometers or millimeters.

Repairing a destroyed system requires complex restructurings as well as spare parts. If these are not available, the nanobots can only carry out repairs once they have produced the missing parts. They use material found in their surroundings. Without specifications, the nanobot swarm will first of all identify all parts of the system, then dismantle and change any elements not belonging to the system. This can cause damage to secondary systems, so nanobots are usually given detailed instruction on what to dismantle.

Apart from repairing it, a nanobot swarm can also be used to reconfigure a working system. This works perfectly in the case of simple circuits. For example, a light barrier's alarm can be deactivated, or reconfigured to only raise alarm after a certain time of interruption.

Computer systems and programs can be changed that way as well. Once a nanobot gains physical access to a computer's database, it can transfer external data into the system. It can even install new programs and delete the old ones. The computer cannot fend off such an attack. This is not a hacking attempt in a classic sense as the computer's data is reprogrammed and changed physically. While its database is reconfigured, the computer will show unstable behavior and maybe even produce faulty results. If worse comes to worse, the system breaks down completely. The bigger the manipulation, the higher the chance of a breakdown. Once the operation is complete, however, the system will run smoothly again, with changed configurations.

To reconfigure a system successfully, the nanobot swarm has to have the required data/programs as well. In addition to this physical reprogramming, the nanobot swarm can also try to manipulate the computer system in a classic way, which equals attacks on computer systems and networks as described in chapter 5.5. Security software used by the target system can at least hinder such attempts.

Repairing/reconfiguring a system follows the rules stated in the Core Rulebook.

Nanobots are less skilled at repairing larger damages. Macro-level damages (e.g., structure or hull damages on spacecrafts) take them much longer (increase the time increment by one row, Core Rulebook p. 143) than normal robots.

8.7 NANOBOTS HEALING LIFE-FORMS

Instead of causing damage, nanobots can also heal. A living being can profit from injecting nanobots attuned to its body in several ways:

1. Nanobots take action automatically in case of an injury, providing first aid.
2. If the injury is still serious after first aid, the nanobots will start to support long-term healing of damaged parts, which has the same effects as surgery. This takes 1 to 6 hours and requires the nanobots to have the Medic skill. The injured person does not need to go to a hospital or ward, but should lie down and rest to keep the wounds from breaking up and negating the surgery's effect.
3. Nanobots serve as medical treatment once the living being is no longer injured seriously. No hospital or ward is required.

The nanobot's ability to support healing processes depends on the number of nanobots and the programs they have, of course. Medic skill rolls based on the nanobot's Education value are necessary.

Medical treatment by nanobots has its dark sides, though. Nanobots are generally able to stimulate nerve tracts, and if they advance to the brain, they can "reprogram" a living being, similar to computers. This can be limited to changes and falsifications of sensations, but also reach rewiring and capping synapses. In theory, nanobots can even control the bodies of brain-dead living beings.

8.8 CONTROLLING NANOBOTS

Due to all the problems nanobots can cause, the question of how to control them is essential. Controlling many small units is no trivial task, and even small mistakes, let alone loss of control, can have fatal effects.

Thus, the most important and easiest way to control nanobots is their power system. Nanobots are almost always dependent on external energy sources, without which they cannot work at all. In most cases these are electromagnetic beams, more precisely, Extreme Ultraviolet Radiation (XUV). Some variants even enter X-ray beam ranges.

The nanobot swarm is irradiated with electromagnetic waves and extracts its required power from them. Each swarm has its own frequency. Once this frequency differs from the set parameters even slightly, the nanobots are not energized and become useless.

Constructors will often seek an easy way of deactivating nanobots with relatively high autonomy (semipotent or better, multifunctional, self-improving and or reproducing), especially.

Of course, nanobots can also be equipped with an internal power supply, and some military members will likely dream of silver bullets they can unleash onto their enemies, but might is nothing without control, and all other means of control apart from power supply have proven faulty.

Other possibilities include wireless deactivation, programs, radiation, chemical compounds etc. However, any means of deactivating a nanobot should be determined during its construction. Neglecting this point might have severe consequences.

8.9 LEGAL RESTRICTIONS

Producing, trading and even owning nanobots is forbidden in most worlds of the Imperium (law level 1 or higher) or is subject to strictest governmental controls. Nanobots are hard to control once they have broken loose.

This also holds for transporting nanobots between the Imperium's worlds. Imperial standard procedure states that nanobots have to be transported in a deactivated state, in self-destructing containers. Fines for disregards are draconian. Once a nanobot swarm breaks loose, entire worlds might be put under quarantine or ships might be destroyed.

Of course there are also some worlds that experiment with nanobots, but they will do so with strictest security measures. A laboratory's standard procedure in case of a nanobot swarm breakout is immediate thermonuclear destruction of the whole complex. Furthermore, the planet will be put under quarantine by the Imperium for some time.

9. CYBORGS

Cyborgs combine a machine with an organic life form. There are two directions of development: an organic life form, which is gradually equipped with robotic components, so-called augments; or a machine that is fitted with organic components bit by bit. Transition between the two of them is smooth. However, this chapter only covers the latter type, that is, machines fitted with biological components, more precisely, brains of life forms. Cybernetic and biological augments that can be implanted into a living being are described in the following chapter.

Reasons for creating a cyborg are manifold.

1. The most common ones are irreparable injuries of a living being, or the wish to save it from death.
2. A similar reason is the wish for immortality, or at least avoiding aging. Cyborgs age differently than normal characters.
3. The third reason for building cyborgs is creating intelligent robots without using AI programs.

9.1 CREATING CYBORGS

Construction of a cyborg is similar to that of a robot:

1. First, a chassis has to be constructed according to the rules for normal robots (see Chapter 6).
2. It requires a computer able to run the control program for the chassis, as well as a Medic/1 program that regularly checks on the biological components (see Chapter 5). Any processing power of the computer beyond these requirements enhances the abilities of the biological brain.
3. Afterward, the bionic interfaces as well as the bio-support and control unit (BCU) have to be implemented. The BCU makes sure that the brain is supplied with the required nutrients. Bionic interfaces communicate control and feedback impulses from and to the brain. BCU and bionic interfaces are very important because they actively determine by how much the transplantation shock is eased and the resulting amount of identity and personality loss of the biological brain.
   Increasing TL leads to better BCUs and bionic interfaces which reduce the transplantation shock. However, they can never avoid it completely.
   TL10 BCU: 30 kg, Cr. 100,000, Soc -5
   TL11 BCU: 20 kg, Cr. 100,000, Soc -4
   TL12 BCU: 10 kg, Cr. 100,000, Soc -3
   TL13+ BCU: 5 kg, Cr. 100,000, Soc -2

4. The actual transplantation of the biological brain is carried out after the BCU and bionic components have been implemented. It requires matching medical equipment and a successful roll on Life Sciences (cybernetic).
   Transplant brain: Life Sciences (cybernetic), 1 to 6 hours, ntelligence, very difficult (-4)
   If the roll fails, the brain dies during surgery.
5. After successful surgery, and after reducing Social Standing due to the transplantation shock, the biological brain has to determine whether there are any complications (see there).

9.2 COMPLICATIONS

Transplanting a brain into a new, especially a robotic, body is a severe shock and can also cause long-term mental problems. Estrangement effects are inevitable, as the transplantation equals a separation of body and mind. A brain needs several months or even years to get used to the new body.

The Cyborg player makes a task check directly after surgery, then again every month, to avoid psychological complications.

Avoid complications: Social Standing, Routine (+2)
The test is affected by other DMs as well:

- +1 for ongoing supply of psychotropics (price: 1,000 Cr./month)
- +1 for a BCU with TL12 or higher
- -1 per sense (hearing, seeing, touching, smelling, tasting) not integrated as a sensor
- +2 if the brain donor volunteered for the procedure
- -2 If the brain donor did not volunteer (e.g., animals)
- -2 if the cyborg's body is not similar to the general build of the original body (e.g., more legs or arms)
- +1 if the cyborg body is modeled according to the original body

Once a test was passed with an extraordinary success (effect 6+), the brain has adjusted to the new body, and no further rolls have to be made to avoid complications.
If a roll fails the brain develops a cyber-psychosis (see below).

An extraordinary failure not only leads to a cyber-psychosis, but also to Soc -1.

If Social Standing is reduced to 0 due to transplantation and complications, no further complication rolls are required. Cyber psychoses will vanish as well. However, the cyborg remains just a machine in that case, not a living being. The mind is dead. The brain is to be seen as a regular computer, without personality, no longer able to express feelings, be creative, have ideas or reflect its own self. It only functions, nothing more.

CYBER PSYCHOSES

If a cyborg develops a cyber psychosis, roll 1d6 to determine which one:

1. Amnesia/dementia: The brain can develop amnesia directly after surgery, forgetting everything that determined its identity. This includes names, personal memories, friends, acquaintances, family etc. If the psychosis develops after a longer period of time, it rather resembles some sort of dementia. The brain forgets things even though it could access computer storage, it forgets names, personal memories etc. If left untreated, dementia increases more and more until it resembles amnesia.
2. Callousness: The cyborg becomes callous. It not only finds it difficult to feel, but also to judge other people's emotions. This easily leads to misunderstandings that can turn into aggression over a longer period of time.
3. Megalomania: The cyborg develops fantasies of omnipotence and regards itself as invulnerable in its new body. This is to some extent justified, as the cyborg body is often stronger than the biological one used to be. However, the brain has an inflated perception of its invulnerability. Omnipotence fantasies often cause respective desires, which lead to anger and aggression when the cyborg is put in its place.
4. Paranoia: Especially during the early stages after surgery, a cyborg has to undergo many medical and bionic checks to determine the brain's condition, fine-tune the BCU and so on. Technicians, bionicists and medics "meddle" with body and brain. This can easily cause delusions of conspiracies. Constant control questions are not helping to ease this condition.

5. Rampage: This is the most aggressive reaction. It usually shows a few hours to days after the complication arises. The brain retreats deeper and deeper into its own world. The outside world seems to get darker and more threatening until the brain breaks free with a fit of rage, leading to random, unprovoked violent attacks against other people, often even within the cyborg's own social environment.
6. Catatonic state: The brain simply shuts down and stops reacting to impulses from the outside world. The cyber body is also shut down to a minimum if the brain has control over the body. Sensors as well as locomotion are deactivated, and the brain enters a state of inner void.

TREATING CYBER-PSYCHOSES

Cyber psychoses can be treated by respective specialists once they have been diagnosed:

Cure cyber-psychosis (medic): Life Sciences (cybernetic), 1–6* days, Intelligence, difficult (-2)

Cure cyber-psychosis (psychologist): Social Sciences (psychology), 1–6* weeks, Intelligence, difficult (-2)

The actual time equals 6 minus effect, but at least 1.

9.3 AGING

Cyborgs age differently than normal biological life forms do. The robot body has to be maintained like any regular robot, of course. Maintenance costs depend on TL and quality of the used material.

Beyond that, the brain has a bigger chance of a much longer life because of the lack of most organs: no heart attacks, no liver or stomach problems and so on, as long as the robot body is maintained regularly.

Aging rolls for a cyborg are similar to those of all other characters. However, all events concerning physical characteristics are ignored. Aging of the cyborg, or rather, the brain, is influenced only by the effects on mental characteristics.

Anagathics can be used as well to prevent mental prostration.

9.4 CYBORG SKILLS

All skills based on the mental characteristics of the donor can be used unrestrictedly, all skills based on physical characteristics only within the limits of chassis construction (e.g., a surgeon will not be able to carry out surgery if his brain has been transplanted into the chassis of a loading cyborg even when he knows how to do so). After the transplantation, the brain is able to learn new skills and improve what it has learned, just like regular characters.

If the brain is connected to a computer, the computer is treated just like a regular external computer, similar to a laptop. The brain does not gain intelligence by this connection. However, it can access the computer's skills through the direct connection. A person who never learned about first aid in his biological life could provide first aid if the program is installed on the computer. The skill level is reduced by 1, though. Alternatively, the cyborg can let the integrated computer take control. In this case, the skill level is not reduced but the characteristic DM of the computer is used, not that of the brain.

10. CYBERNETIC AND BIOLOGICAL AUGMENTS

Augments can be bought as cybernetic or biological implants. The choice of cybernetic implants is much larger and also available at lower TL than their genetically produced counterparts. Biological implants may not be as versatile and are usually quite expensive, but they also have a lower chance of being rejected by the body's immune defense. Furthermore, psychological acceptance is generally better, thus few recipients are in danger of suffering from cyber psychoses (see Chapter 10.5). Beyond that, biological augments can only be detected as artificial with molecular scans or genetic examinations.

Similar bonuses of cybernetic and biological implants are not cumulative; only the better value is applicable.

Unless stated otherwise, functions of biological or cybernetic versions of existing equipment are identical to the ones stated in the Traveller Core Rulebook and the equipment described in Chapter 6 of this book.

10.1 POWER SUPPLY
Most cybernetic implants are so small that they can be energized with long-run energy cells or even directly through the body. Still, power efficiency and energy recovery is a main focus during the construction of cybernetic implants. For example, cybernetic eye implants use incident light to charge their internal batteries, while arm and leg prostheses gain energy from movement. At some point all energy reserves for energy-dependent cybernetic augments have limits, which is why manufacturers issue strict standards regarding the required service intervals.

Biological augments do not require power supply, as the body supplies them with all necessary nutrients.

10.2 INTER-IMPLANT COMMUNICATION
Inter-implant communication describes the connection of different implants for data-sharing and control purposes. From TL12, communication is wireless via ultra-short-range radio communication, below TL12 per direct link via artificial or natural nerve fibers. A standard wireless network has an integrated security program/0. This can be improved with a wafer-jack and high-level programs (security). A direct link cannot be infiltrated from the outside as long as all implants have a direct link.

Combined augments, for example, cybernetic eyes with light enhancement option, use the highest TL to determine whether a wireless or direct connection is used. Security fanatics can also equip augments with TL12+ with direct connections.

Biological augments cannot communicate with cybernetic augments.

10.3 ADDING AND ENHANCING AUGMENTS
Cybernetic augments can be improved any time, as long as free options are available. Existing options can also be removed to make room for new ones. This requires a Medic skill roll as well as a Life Sciences (cybernetic) roll, whose difficulties depend on the augment's TL. Effects of both rolls are added.

Remove, add or improve cybernetic augments: Medic and Life Sciences (cybernetic), 1 to 6 hours, Education, task difficulty dependent on TL

All Medic rolls suffer a DM penalty equal to the difference between the medical facility's TL and that of the highest augmented implant. Improving a TL15 cybernetic eye in a TL12 clinic would give the attending doctor a -3 DM to all rolls. Instead of Life Sciences (cybernetic), Medic can also be used (-1DM).

Implantation success depends on the combined effect:

EXCEPTIONAL FAILURE
The augment cannot be added, removed or improved. A new attempt will have to wait for at least a month.

AVERAGE FAILURE
The implant is rejected. The character has to succeed rolls to avoid rejection; otherwise, he loses the implant. The augment's TL is irrelevant in this case as the rejection is due to faulty surgery, that is, TL12+ implants are affected as well. When removing an augment, post-surgery complications arise, requiring 1- to 6-day hospital stay.

MARGINAL FAILURE
Surgery is successful, but newly added or improved augments below TL12
receive a -1 DM for all rolls to avoid rejection.

MARGINAL SUCCESS

Surgery was successful.

AVERAGE SUCCESS

Surgery was successful. Newly added or improved augments below TL12 receive a +1 DM for all rolls to avoid rejection.

EXCEPTIONAL SUCCESS

Surgery was successful. Newly added or improved augments below TL12 receive a +2 DM for all rolls to avoid rejection.

Biological augments cannot be improved or modified subsequently. A new organ with all requested options has to be grown.

10.4 MAINTAINING AND REPAIRING AUGMENTS

Cybernetic augments have to be maintained in regular intervals just like any other complex machine. Usually this interval is one year. The necessary examinations and minor surgeries require 1 to 6 days in a special clinic, depending on complexity. Annual maintenance costs are 1 percent of all augments' list prices. If the maintenance interval is expanded by more than a month, one or several implants might stop working properly. It is up to the game master to decide which ones. A roll against the lowest TL of the implanted augments has to be carried out for each month beyond the maintenance interval. If the result is below the TL, the character does not suffer from system failures for now. Each additional month without maintenance adds a cumulative +2 DM for rolls to avoid implant failure.

Damaged cybernetic augments can be repaired in most cases. This requires a Life Sciences (cybernetic) skill roll as well as an Engineer (cybernetic) one. Effects of both rolls are added.

Repair cybernetic augments: Life Sciences (cybernetic)/ Engineer (cybernetic), 1 to 6 hours, Education, task difficulty dependent on TL.
All skill rolls suffer a DM penalty equal to the difference between the medical facility's TL and that of the highest damaged implant. Repairing a TL15 cybernetic eye in a TL12 clinic would give the attending doctor a -3 DM to all rolls.

Instead of Life Sciences (cybernetic), Medic can be used as well (-1 DM).

Repairing costs depend on the surgery's success:

Exceptional failure:	The augment is damaged beyond repair.
Average failure:	50% of list price
Marginal failure:	40% of list price
Marginal success:	30% of list price
Average success:	20% of list price
Exceptional success:	10% of list price

Biological augments do not have to be maintained besides common medical examinations. Repair follows the normal rules for healing and surgery. However, the difference between the highest TL of the augments and that of the treating clinic is essential in this case as well.

10.5 COMPLICATIONS

Besides the many possibilities augments offer for their owner, they also carry risks that should not be underestimated. Cybernetic implants are often subject to rejection phenomena. Excessive use of biological and cybernetic "improvements" can also lead to psychological problems such as addictive behavior or estrangement from the own body.

REJECTION

All augments below TL12 might be classified as intruders by the body and are thus rejected. AT TL12+, this complication is controllable to an extent, relieving the character from worries about rejection reactions. After each new implantation, the character has to roll a rejection roll in a one-month interval:

Avoid rejection reaction: Endurance, 1 month, TL (augment) – 12.
Effects of all rolls are added until one of the following values has been reached:

12 – TL (augment):	The body accepts the augment permanently.
(Negative Endurance value):	The body rejects the augment. Another implantation attempt has to wait for at least one month.

Taking immunosuppressants regularly during the adjustment period (costs 1,000 Cr./month) gives the character a +1 DM for rolls to avoid rejection, but also a -1 DM for all rolls to avoid diseases.

If the augment is a biological one, the character receives another +1 DM to avoid rejection. Unmodified organs and limbs grown from one's own tissue are not in danger of being rejected. Growing requires fitting lab equipment and a successful Medic skill roll. Only exceptional failure prevents growing, exceptional success reduces completion time to one week.

Growing biological replacements from own tissue: Life Sciences (genetic), 1 to 6 weeks, Education, task difficulty dependent on TL.

TL	Task Difficulty
10	Very difficult (-4)
11	Difficult (-2)
12	Average (+0)
13	Routine (+2)
14	Easy (+4)
15+	Simple (+6)

Instead of Life Sciences (genetic), Medic can be used as well (-1 DM)

CYBER PSYCHOSES

The phenomenon of cyber psychosis has already been described in detail concerning cyborgs (see Chapter 9.2). But generally, psychological effects of less severe surgery to implant augments are also underestimated. Even replacing a natural arm with an artificial one can plunge a character into a crisis, although the effects are seldom as severe as for a real cyborg.

Directly after the implantation, and each month afterward as well, the character has to roll for each new augment to avoid psychological complications.

Avoid cyber-psychosis: Social Standing, 1 month, routine (+2).

The roll is affected by other DMs as well:

+1	for ongoing use of psychotropics (costs 1,000 Cr./month)
+1	for TL12+ augments
+1	for biological augments
-1	for cybernetic augments
-1	if a limb has been replaced by a cybernetic or biological version
+1	if the receiver volunteered for the procedure
-2	if the receiver did not volunteer for the procedure (e.g., after an accident)

Once an exceptional success (effect 6+) was rolled, the brain has adjusted to the new augments in or on its body, and no further rolls to avoid cyber-psychosis are required. Accepted augments are also irrelevant to any future rolls against cyber psychoses.

If a roll fails the character develops a cyber-psychosis. In case of an exceptional failure, the brain not only develops a cyber-psychosis but Social Standing is also reduced by 1 owing to self-imposed social isolation.

If a character develops a cyber-psychosis, use 1d6 to determine which one:

1. Alien-Hand-Syndrome: The person concerned has no or little control over one of his hands. Effects of this complication can range from a simple feeling of strangeness concerning the alien hand to physical attacks of the hand. Often, an alien hand will work against the other hand of the concerned person, thus hindering him while eating or carrying out other tasks, for example.
2. Cyber addiction: The person concerned gets the constant urge to improve himself with augments. Each month, he has to successfully roll a Social Standing 8+ roll to resist the temptation of having another augment implanted. As soon as the roll fails, and as long as he cannot give in to this urge, he is distracted and short-tempered. He receives a -1 DM to all characteristics and skill rolls based on Intelligence and Social Standing. The DM does not apply during the first month after a successful implantation.
3. Catatonic state: The person concerned suffers from an unnatural, strong cramping of his body. Typical symptoms are full-body rigor, lasting reticence, abnormal posture and catalepsy. As catatonic patients cannot eat or drink out of their own accord, a lasting catatonic state is always life-threatening.
4. Phantom pain: This psychological disorder is usually the result of replacing natural limbs with cybernetic prostheses but can also result from all other augments. The person either experiences constant pain in the respective body part or has the feeling that the removed limb is still present and moving.
5. Post-traumatic stress disorder: The character develops post-traumatic stress disorder as a result of the surgery. This can manifest in enhanced aggressiveness, (partial) amnesia, depression, personality changes or addictive behavior, even self-mutilation or suicide.

6. Iatrophobia: The person concerned is so traumatized by his last consultation that he develops a specific anxiety disorder concerning doctors or consultations. He will avoid going to a doctor or hospital by all means, even if he is in agony. To convince an iatrophobic character to see a doctor requires a very difficult (-4 DM) Persuade roll or a difficult (-2 DM) Medic or Social Sciences (psychology) roll. It takes at least an average success (effect 1+) to get the character to accept treatment. An exceptional failure prevents all persuasion attempts for the next month.

Cyber psychoses can usually be cured completely when diagnosed at an early stage. See Chapter 9.2 for details.

10.6 AUGMENTS FOR CHARACTERISTICS AND SKILLS

Augments can enhance characteristics above the usual maximum of a race, but they also complicate medical treatment (Core Rulebook, p. 75)

PHYSICAL CHARACTERISTIC AUGMENTATION (TL11+)
A character's Endurance, Strength or Dexterity can be improved by different means. Motoneurons can be replaced by quicker synthetic cells, bones can be strengthened, organs be replaced by tougher clones. This augment has to be purchased separately for each characteristic. Subsequent enhancements with higher-quality augments always require complete replacement of already implanted augments. This is not the case with biological characteristics augmentations.

Cybernetic Characteristic Augmentation		
TL11	Characteristic +1	500,000 Cr.
TL12	Characteristic +2	1,000,000 Cr.
TL15	Characteristic +3	5,000,000 Cr.

Biological Characteristic Augmentation		
TL12	Characteristic +1	(natural characteristic value +1) × 75,000 Cr.
TL13	Characteristic +2	(natural characteristic value +2) × 100,000 Cr.
TL15	Characteristic +3	(natural characteristic value +3) × 500,000 Cr.

INTELLIGENCE AUGMENTATION (TL12+)
Slow nerve cells are replaced by quicker synthetic substrates, and the implantation of optoelectronic intensifiers accelerates a character's intellectual power, effectively increasing his Intelligence. A subsequent Intelligence augmentation with higher-quality augmentation s always requires complete replacement of older Intelligence augmentation s. This is not the case with biological characteristics augmentations.

Cybernetic Intelligence Augmentation		
TL12	Intelligence +1	500,000 Cr.
TL14	Intelligence +2	1,000,000 Cr.
TL16	Intelligence +3	5,000,000 Cr.

Biological Intelligence Augmentation		
TL13	max. Intelligence +1	(natural characteristic value +1) × 75,000 Cr.
TL15	max. Intelligence +2	(natural characteristic value +2) × 100,000 Cr.
TL17	max. Intelligence +3	(natural characteristic value +3) × 500,000 Cr.

SKILL AUGMENTATION (TL12+)
The character's nervous system is rewired to be able to deal better with certain tasks. A pilot might have his reflexes and sense of balance improved; a broker could be given the skill of controlling his pupil movement and smell pheromones and salinity of the other party's skin. A skill augmentation gives the character a DM of +1 when using the respective skill. A character can have only one skill augmentation at TL12 and has to have learned the respective skill at least at level 0 to be able to use it. With increasing TL, more skills can be improved as long as all augmentations have the same TL. This restriction does not apply to biological skill augmentations. Biological and cybernetic skill augmentations are compatible, but each skill can only profit from one augmentation. Whether a skill can be improved by an augmentation at all depends on the augmentation's TL. At TL12, skills with a maximum value of 2 can be improved with cybernetic augmentation s. If the skill value is higher, the skill cannot profit from a TL12 augmentation, but probably from higher TL augmentations.

Example
A character decides on improving his Pilot-3 and Vacc Suit-0 skills by buying skill augmentation s. As his Pilot skill is already 3, he would at least need a TL13 augmentation. He would have had to choose this anyway, as improving two skills is only possible from this TL. Costs for this augmentation of two skills are 100,000 Cr. From now on, he receives a +1 DM for his Pilot and Vacc Suit skills.

Skill augmentations require deep intrusions into the character's nervous system. If he decides on improving more skills in the future, he would have to have his old cybernetic skill augmentation replaced by a higher-quality version. Biological skill augmentations are usually carried out by genetic manipulation and do not require the replacement of existing skill augmentations.

As far as the required minimum skill values are concerned, the DM from a skill augmentations added to the skill value. In case of the example stated above this means that the character can use a heavy vacc suit (requiring Vacc Suit 1) despite its Vacc Suit skill value of 0 without penalties.

Cybernetic Skill augmentation		
TL12	max. 1 skill +1, max. skill value 2	50,000 Cr. per skill
TL13	max. 2 skills +1, max. skill value 3	50,000 Cr. per skill
TL14	max. 3 skills +1, max. skill value 4	50,000 Cr. p er skill
TL15	max. 4 skills +1, max. skill value 5	50,000 Cr. per skill
TL16	max. 5 skills +1, max. skill value 6	50,000 Cr. per skill

Biological Skill Augmentation
A biological skill augmentation increases required TL by 1 and prices by 50 percent.

NEUROSTIMULATOR NETWORK (TL10+)

With a network of neurostimulators, a character's abilities can be improved in different ways:

- enhancement of reaction rate
- improved coordination
- execution of unknown motion sequences (implanted experiences)

A neurostimulator network can be programmed for only one intended use from TL10, and for several functions from TL13. Only one network can be installed at a time.

TL10	mono-functional neurostimulator network	(Str+Dex+End) × 3,000 Cr.
TL13	multifunctional neurostimulator network	(Str+Dex+End) × 10,000 Cr.

Options		
TL10	Reaction Improvement (Initiative +1)	50,000 Cr.
TL11	Coordination Improvement (+1)	150,000 Cr.
TL12	Reaction Improvement (Initiative +1, 1 add. Reaction)	100,000 Cr.
TL13	Reaction Improvement (Initiative +2, 1 add. Reaction)	150,000 Cr.
TL14	Coordination Improvement (+2)	300,000 Cr.
TL15	Experience Implant Interface	(rating) × 30,000 Cr.
TL16	Reaction Improvement (Initiative +2, 2 add. Reactions)	200,000 Cr.

Experience Implant

This artificial experience is similar to the skill adjustment, but the character does not need to have any preliminary knowledge concerning the skill. Apart from a specialized computer system implanted into the character's skull, he needs to have a neurostimulator network installed. In contrast to wafer jacks, artificial experiences can also be based on other characteristics than Intelligence and Education. Neurostimulators transmit the required nerve impulses to all respective muscles. The implant rating depends on the sum of all implanted experience levels. Experience levels depend on the software used. Software can be uploaded (to a maximum total equaling the level of the implant expert's rating) via an external wafer port already included in the experience implant interface's price.

Experience implants are not compatible with cybernetic or biological skill adjustments. Only the better value applies.

Example
a character has Pilot-1 and Zero-G-1 implanted as artificial experiences. Both skills require an experience implant interface with a rating of at least 2 as well as a mono-functional neurostimulator network. For an average person (Str/Dex/End 6), costs for hardware amount to 114,000 Cr (18 × 3,000 Cr. + 2 × 30,000 Cr.). In addition, two experience implant programs with rating 1 are needed. Total costs are thus 134,000.

Experience Implant Software		
TL15	Experience Implant (Expert 1)	10,000 Cr.
TL15	Experience Implant (Expert 2)	100,000 Cr.
TL15	Experience Implant (Expert 3)	1,000,000 Cr.

Coordination Improvement

A coordination improvement not only enhances sense of balance (+1 DM at TL13, respectively +2 DM at TL15, for Athletics/coordination, Zero-G and Stealth), but also hand-eye coordination (+1 DM for all Dexterity-based skill uses of Gunner, Drive, Remote Operations, Flyer, Gun Combat, Melee, Pilot, Heavy Weapons, Seafarer, Explosives, Deception and Animals). Both DM are not cumulative.

Reaction Improvement

Reaction improvements not only enhance initiative, they also generate additional reactions not involving the usual (cumulative) penalty on initiative and skill rolls (see Core Rulebook pp. 61-62)

10.7 COMMUNICATION IMPLANTS

NEURAL COMM (TL10+)

A neural comm is just like a regular comm but costs much more, and the required TL is increased by 4. The character can control a neural comm with his thoughts, but he still has to perform all necessary skill rolls and still has to talk to send audio messages.

Neural comm		
TL10	Audio only	1,000 Cr.
TL12	Audio and Visual, Computer/0	5,000 Cr.
TL14	Several Data Types, Computer/1	20,000 Cr.

NEURAL TRANSCEIVER (TL12+):

A neural transceiver is just like a regular transceiver, but it costs much more, and the required TL is increased by 4. The character can control a neural transceiver with his thoughts but still has to perform all necessary skill rolls and still needs to talk to send audio messages.

Just like the standard version, the neural transceiver can either use radio waves or laser as means of transmitting medium. For a laser transceiver, a miniature laser emitter is implanted besides the actual electronics. This laser can also be included in a cybernetic eye or hand.

Neural Radio Transceiver		
TL12	Distant (5 km)	2,000 Cr.
TL13	Computer/0, Very distant (50 km)	7,500 Cr.
TL15	Computer/0, Regional (500 km)	20,000 Cr.
TL16	Computer/1, Continental (5,000 km)	50,000 Cr.
Neural Laser Transceiver		
TL13	Regional (500 km)	2,000 Cr.
TL15	Computer/0, Regional (500 km)	7,500 Cr.
TL17	Computer/1, Regional (500 km)	20,000 Cr.

10.8 SKIN AUGMENTS

All costs refer to a medium-sized character. Costs decrease by 25 percent if the character has the "small" trait (see Core Rulebook p. 42), and they increase by 25 percent if the character has the "large" trait (see Core Rulebook p. 41)

Hands and feet only cost one-fifth of an arm or leg, forearm and upper arm, lower leg and thigh two-fifths of the complete limb.

On lower TL, skin may be transplanted over cybernetic augments if the skin has access to living tissue to be supplied. From TL15 it is possible to transplant skin without connection to living tissue.

BIOLOGICAL ARTIFICIAL SKIN (TL10+)

This artificial skin, grown from biological components, is mostly used to cover cybernetic limbs, but it can also be used to replace natural skin. Biological artificial skin is compatible with subdermal armor, and available in different colors and patterns according to the receiver's wishes from TL12.

Biological artificial skin as skin replacement can also be grown from own tissue.

1,000 Cr.	Hand/foot
3,000 Cr.	Head
4,500 Cr.	Per arm
6,000 Cr.	Per leg
12,000 Cr.	Torso

Options		
TL12	Cosmetic Modifications	Cr. (price) × 1.5

Cosmetic Modifications

Simple cosmetic modifications include changing the skin's color (including pattern) or texture (scales, hair).

PSEUDO-BIOLOGICAL ARTIFICIAL SKIN (TL8)

This tissue made from synthetic components creates the impression of natural skin and is exclusively used to cover cybernetic limbs. The material has a durability of only 10 years and thus has to be replaced regularly.

Pseudo-biological artificial skin can be purchased in a wide variety of colors and textures at an extra charge. One of the most popular options is equipping the skin with features of smart fabric (Core Rulebook p. 89), enabling it to withstand dirt and stains and also clean itself. Prices increase by 10 percent.

350 Cr.	Hand/foot
1,500 Cr.	Arm
2,000 Cr.	Leg

SUBDERMAL ARMOR (TL10+)

This augment adds a network of ballistic fibers to the skin and strengthens the bones, which gives the character additional armor. Protection by subdermal armor is cumulative to protection by other armor and protection of cybernetic limbs. This implant is compatible with natural skin and all types of artificial skin.

Subdermal Armor		
TL10	Armor 1	50,000 Cr.
TL11	Armor 2	75,000 Cr.
TL11	Armor 3	100,000 Cr.

Options		
TL10	Armor Plates	25,000 Cr.
TL12	Isolator Layer	50,000 Cr.
TL14	Laser Absorption Layer	50,000 Cr.

Isolator Layer

An isolator layer increases protection by subdermal armor against stunners based on electric shocks (stunners and stunsticks). The weapon's damage, which is added as negative DM to the Endurance roll to avoid unconsciousness, is halved (rounded up).

Laser Absorption Layer

An additional layer made from reflecting material and heat-absorbing gel packs leaves subdermal armor more resistant to laser weapons (protection +2 against laser weapons).

Armor Plates

This option adds extra armor plates made from hard plastic to subdermal armor, giving the armor extra protection against melee attacks (protection +1 against melee attacks). The implanted plates can be seen and felt.

10.9 SKULL IMPLANTS

Bioscanner (TL15+): The implanted version of the bioscanner (Core Rulebook p. 96) "sniffs" for organic molecules, checks chemical samples and analyzes its composition. The scanner can be used to discover poison and bacteria, to analyze organic material, to search for signs of life and classify unknown organisms. The bioscanner's data can be interpreted with Sensors or Life Sciences (biology) skills. Early implants can only gather information by "tasting" in short distances due to their limited size and resulting restrictions. Their low performance also influences the respective skill roles negatively.

Bioscanners can also be implanted as an option for cybernetic noses, but the bioscanner's TL may not be higher than that of the cybernetic nose.

TL15	Bioscanner (-4 DM, under 1 meter)	700,000 Cr.
TL16	Bioscanner (-2 DM, 2 meters)	500,000 Cr.
TL17	Bioscanner (-1 DM, 5 meters)	350,000 Cr.
TL18	Bioscanner (+0 DM, 10 meters)	250,000 Cr.

BIOLOGICAL EYE REPLACEMENT (TL12+)

From TL 12, eyes can be regrown from genetic material. Their function matches that of the receiver's natural eyes, and at higher TL they can also be equipped with additional features. Each addition has to be chosen when growing the eye replacement, and a subsequent improvement is not possible. Each option only grants stereoscopic vision if both eyes are equipped with the same option.

TL12	Biological Eye Replacement (max. 1 option)	30,000 Cr. per eye
TL13	Biological Eye Replacement (max. 2 options)	20,000 Cr. per eye
TL14	Biological Eye Replacement (max. 3 options)	10,000 Cr. per eye
TL15	Biological Eye Replacement (max. 4 options)	10,000 Cr. per eye

Options		
TL12	Cosmetic Modification	500 per modification and eye
TL12	Special Retina Pattern	50,000+ Cr. per eye
TL13	Nictitating Membrane	250 Cr. per eye
TL13	Light Amplification	2,500 Cr. per eye
TL14	Infrared Vision	5,000 Cr. per eye
TL14	Telescope Vision	10,000 Cr. per eye
TL15	Reaction Improvement	25,000 Cr. per eye

Cosmetic Modification

Cosmetic modifications include eye color, iris shape or any other patterns. Cosmetic modifications do not count towards the maximum of installable options.

Nictitating Membrane

A nictitating membrane is the natural counterpart of cybernetic eye protection.

Reaction Improvement

The artificial eye's reaction speed is improved to enable it to close within milliseconds (just like nictitating membrane). Data transfer is also increased, so that the wearer can see and react to fast movements better (+1 DM to all rolls with a focus on reaction and vision). In addition, reaction improvement allows for perceiving all movements in the field of vision as if using a TL7 motion sensor (Core Rulebook p. 96).

Special Retina Pattern
As long as it is not one's own natural retina pattern, buying and using retina patterns is illegal.

Telescope Vision
Telescope vision equals the zoom function of a camera or binoculars.

BIOLOGICAL NOSE REPLACEMENT (TL12+)
A biological nose replacement in its most basic version merely models the usual range of a human nose. Primarily, it serves as replacement if the natural nose or its sense of smell was lost. On higher TL, the implant can also be equipped with improved sense of smell that can even rival a dog's nose.

TL12	Biological Nose Replacement	10,000 Cr.
TL13	Biological Nose Replacement	5,000 Cr.
TL14	Improved Sense of Smell	10,000 Cr.
TL15	Biological Nose Replacement	2,000 Cr.
TL15	Improved Sense of Smell	5,000 Cr.

BIOLOGICAL EAR IMPLANT (TL12+)
Biological replacement for the natural ear is available from TL12. From TL13, several options to improve the implant's performance substantially are available.

TL12	Biological Ear Implant (no option)	15,000 Cr. per ear
TL13	Biological Ear Implant (max. 1 option)	8,000 Cr. per ear
TL14	Biological Ear Implant (Sound Absorber, 1 option)	10,000 Cr. per ear
TL15	Biological Ear Implant (Sound Absorber, 2 options)	8,000 Cr. per ear
TL16	Biological Ear Implant (Sound Absorber, 3 options)	5,000 Cr. per ear

Options		
TL13	Sound Absorber	500 Cr. per ear
TL13	Infrasonic Hearing	5,000 Cr. per ear
TL13	Ultrasonic Hearing	5,000 Cr. per ear
TL13	High-performance Hearing	10,000 Cr. per ear
TL15	Infrasonic Hearing	2,500 Cr. per ear
TL15	Ultrasonic Hearing	2,500 Cr. per ear
TL15	High-performance Hearing	5,000 Cr. per ear

CYBERNETIC EYES (TL10+)
Simple cybernetic eye replacements are available from TL10 but with less performance than on higher TL. If both (respectively all) eyes are replaced with TL10 versions of cybernetic eyes, the wearer receives a -1 DM on all skill rolls based on sight. This restriction vanishes at TL11. From TL12, cybernetic eyes are not distinguishable from natural ones. From TL13, eye protection is a basic option. From TL14, a data display is integrated by default. Each option grants stereoscopic vision only if both eyes have been equipped with the same option.

TL10	Cybernetic Eye (max. 1 option)	15,000 Cr. per eye
TL11	Cybernetic Eye (max. 2 options)	10,000 Cr. per eye
TL12	Cybernetic Eye (2 options)	5,000 Cr. per eye
TL13	Cybernetic Eye (Eye Protection, 3 options)	5,000 Cr. per eye
TL14	Cybernetic Eye (Eye Protection, Data Display, 4 options)	5,000 Cr. per eye
TL15	Cybernetic Eye (like TL14, 5 options)	5,000 Cr. per eye
TL16	Cybernetic Eye (like TL14, 6 options)	5,000 Cr. per eye

Options		
TL10	Eye Protection	100 Cr. per eye
TL10	Laser Emitter	100 Cr. per eye
TL10	Telescope Sight	2,500 Cr. per eye
TL10	Light Amplification	2,500 Cr. per eye
TL10	Video Recorder	1,000 Cr. per eye
TL11	Infrared Sight	2,500 Cr. per eye
TL11	Microscopic Sight	2,500 Cr. per eye
TL11	Target System Connection (+1)	2,500 Cr. (only one eye)
TL11	Motion Sensor	2,500 Cr. per eye
TL12	Cosmetic Modification	250 Cr. (per modification and eye)
TL12	Detachable Eye	(price) × 2
TL12	Adaptive Retina	25,000 Cr. per eye
TL12	Retina Pattern f or Adaptive Retina	50,000+ Cr. (per pattern)
TL13	Motion Sensor	5,000 Cr. per eye
TL13	Data Display	1,000 Cr. per eye
TL13	Adaptive Cosmetic Modification	2,500 Cr. per eye
TL13	Target System Connection (+2)	5,000 Cr. per eye
TL14	EM Sensor	5,000 Cr. per eye
TL15	Holographic Recorder	10,000 Cr. (two eyes required)
TL15	Holographic Projector	10,000 Cr. (two eyes required)
TL15	Radiation Imaging System	15,000 Cr. per eye

Adaptive Cosmetic Modification

An adaptive cosmetic modification enables the wearer to change eye color or iris shape at will, via an external programming (price: 100 Cr.) or parameters saved onto a wafer jack.

Adaptive Retina

This option enables programming the cybernetic eye with a duplicate of a real retina. For this, a retina pattern is required, which can be very expensive depending on the owner, and must usually be bought illegally. Only using your own retina pattern on your own cybernetic eye is legal.

Motion Sensor

The TL11 implant version of a motion sensor is equal to the portable TL7 sensor (Core Rulebook p. 96). Movements are projected onto the visual nerves. From TL13, additional features are available, equaling the TL9 portable motion sensor.

Sensors skill is not needed to use a motion sensor for detecting movements. However, if data from a TL13 motion sensor are to be interpreted, a roll is necessary.

Data Display

This option enables integrating data from different sources (computer, implants, sensors, transmissions) into the wearer's direct field of vision.

EM Sensor

An EM sensor gives a cybernetic eye the additional features of an electromagnetic probe (Core Rulebook p. 96). Apart from using it as a diagnosis tool (+1 DM for a roll to find out where the problem is), the EM sensor can also be used to search for hidden surveillance devices (Sensors or Investigate skills).

Detachable Eye

This option is only available for cybernetic eyes with a wireless connection. It allows for the character to extract the eye from its specially prepared socket and use it as an external camera. Its maximum range is 100m.

Laser Emitter

Besides being used as a transceiver, the emitter can also be used to determine distances.

A laser emitter is already included in the costs for a neural laser transceiver.

Radiation Imaging System

Available from TL15, the optional radiation imaging system equals the functions of a TL12 PRIS (portable radiation imaging system) and enables the user to see wide parts of the electromagnetic spectrum (from infrared to gamma rays).

Target System Connection

A target system connection is a simpler version of Ballistic Tracking Lenses (Mercenary p. 94). It only allows for a DM to all ranged attacks if the respective weapon is equipped with the intelligent weapon option of the same TL.

At TL11 this DM is +1, at TL13 even +2 owing to improved computer assistance. If the target system connection and the intelligent weapon option have different TL, the system is treated as TL11.

A target system is only integrated into one cybernetic eye on TL11. From TL13, both eyes are usually equipped with a target system connection, and firing two weapons simultaneously is supported as well. The DM decreases from +2 to +1 when firing simultaneously, though. A TL11 target system connection always grants an attack bonus to only one weapon.

CYBERNETIC TUSKS (TL10+)

A rather exotic skull implant from a human point of view. On lower TL, the implant consists only of inserting a false tooth made from titanium or other materials. On higher TL, a hydraulic jawbone strengthening is also implanted so that the tusks can be used even more efficiently. The Melee (unarmed) or Melee (natural weapons) skill is used for an attack with cybernetic tusks.

Simple cybernetic tusks can always be identified as such. However, there are more sophisticated versions that can also be retracted and extracted via a nerve impulse.

TL10	Cybernetic Tusks (1d6)	2,000 Cr.
TL11	Cybernetic Tusks with Jawbone Strengthening, small (1d6+1)	5,000 Cr.
TL12	Cybernetic Tusks with Jawbone Strengthening, large (1d6+2)	10,000 Cr.
TL13	Cybernetic Tusks with Jawbone Strengthening, retractable (1d6+1)	20,000 Cr.

CYBERNETIC NOSE (TL11+)

A cybernetic nose in its most basic version merely models the usual range of a human nose. Primarily, it serves as replacement if the natural nose or its sense of smell was lost. If possible, the implant is disguised beneath remaining natural skin. A cybernetic nose is seldom displayed openly. From TL8, an external cover made from pseudo-biological tissue is available and from TL10 noses with biological skin are available. This external cover does not count toward the maximum number of options and can be adjusted to any shape.

On higher TL (13+), the implant can also be equipped with further options that can enable the nose to rival that of a dog, or to carry out a chemical analysis.

TL11	Cybernetic Nose (no option)	15,000 Cr.
TL12	Cybernetic Nose (no option)	10,000 Cr.
TL13	Cybernetic Nose (1 option)	10,000 Cr.
TL14	Cybernetic Nose (2 options)	10,000 Cr.
TL15	Cybernetic Nose (3 options)	5,000 Cr.
TL16	Cybernetic Nose (4 options)	5,000 Cr.

Options		
TL8	Pseudo-biological Nose Skin	50 Cr.
TL10	Biological Nose Skin	100 Cr.
TL13	High-performance Sensor	15,000 Cr.
TL14	Odor Filter	10,000 Cr.
TL15	Gas Analysis Sensor	100,000 Cr.
TL15	Bioscanner (-4 DM, under 1 meter)	700,000 Cr.
TL16	Bioscanner (-2 DM, 2 meters)	500,000 Cr.

Gas Analysis Sensor and High-performance Sensor
see Chapter 6.3

Bioscanner
This is the implant option of the augment of the same name.

Odor Filter
The odor filter allows for selective perception of different smells. This option is especially popular among crime scene investigators.

CYBERNETIC EAR IMPLANT (TL10+)
Cybernetic replacement for the natural ear is available from TL10. From TL11, a sound absorber is basic standard. From TL8, pseudo-biological ear laps are available, from TL10 they can be made from biological tissue. Ear laps do not count toward the maximum number of options. They can be adjusted to any desired shape.

TL10	Cybernetic Ear Implant (max. 1 option)	10,000 Cr. per ear
TL11	Cybernetic Ear Implant (sound absorber, 1 option)	5,000 Cr. per ear
TL12	Cybernetic Ear Implant (sound absorber, 2 options)	5,000 Cr. per ear
TL13	Cybernetic Ear Implant (sound absorber, 3 options)	5,000 Cr. per ear
TL14	Cybernetic Ear Implant (sound absorber, 4 options)	5,000 Cr. per ear
TL15	Cybernetic Ear Implant (sound absorber, 5 options)	5,000 Cr. per ear

Options		
TL8	Pseudo-biological Earlap	50 Cr. per ear
TL10	Biological Earlap	100 Cr. per ear
TL10	Sound Absorber	500 Cr. per ear
TL10	Audio Recorder	500 Cr. per ear
TL11	Infrasonic Hearing	5,000 Cr. per ear
TL11	Ultrasonic Hearing	5,000 Cr. per ear
TL12	High-performance Hearing	10,000 Cr. per ear
TL12	Sound Filter	15,000 Cr. per ear
TL13	Mechanostatic Scanner	10,000 Cr. per ear

MECHANOSTATIC SCANNER (TL13)
Especially made to fit cybernetic ear implants, this is a version of the mechanostatic scanner also available individually (Mercenary, p. 94).

PSIONIC SHIELD (TL13)
From TL13, a psionic shield can also be installed as a skull implant. It blocks telepathy (including sending thoughts) reliably and is immune to assault, in contrast to the (psionic) shield ability. A psionic shield can be lowered at any time with a neural impulse of the user. 100,000 Cr.

WAFER JACK (TL12+)
A wafer jack is a computer system implanted into the base of the skull, consisting of an external data jack and a processor running an interface program. A character with a wafer jack can use expert programs for any Intelligence- or Education-based tasks. The jack's main advantage is its smaller and thus more discreet size compared to a hand-held computer, and that the user can access the expert program with his thoughts alone.
A wafer jack is a computer and can run only expert programs (including Translation software). It always runs intelligent interface without extra costs.

TL12	Wafer Jack (Computer/2, 1 option)	10,000 Cr.
TL13	Wafer Jack (Computer/4, 2 options)	15,000 Cr.
TL14	Wafer Jack (Computer/4, 3 options)	20,000 Cr.
TL15	Wafer Jack (Computer/5, 4 options)	25,000 Cr.
TL16	Wafer Jack (Computer/6, 4 options)	30,000 Cr.

Options		
TL12	Drone Control	5,000 Cr.
TL12	Hacker Jack	price × 2
TL12	Navigation System	1,500 Cr.
TL12	Neural Comm (Audio, Data)	2,500 Cr.
TL12	Tactical Communication Network Interface	500 Cr
TL13	Neural Comm (Audio, Visual, Data)	5,000 Cr.
TL13	Wireless Interface	2,500 Cr.
TL15	Neural Comm (several data types, Computer +1)	20,000 Cr.

Drone Control

A drone control enhances wafer jacks with a co-processor and software made especially to control drones. The wafer jack's computer can control a number of drones equal to twice its computer rating (see Chapter 6.1) with this option.

Hacker Jack

The so-called hacker jack is a specialized and high-performance version of the wafer jack, especially popular amongst hackers. The hacker jack also features an intelligent interface that is always run without extra costs. Due to its improved security structure, difficulty for bypassing the hacker jack's security software increases by 1. When using an intrusion program the DM to hack systems also increases by 1. For all other purposes, the hacker jack is identical to a wafer jack. Using hacker jacks outside governmental organizations or licensed security companies is illegal in many worlds.

Each wafer jack can be turned into a hacker jack optionally, for double costs.

Navigation System

An integrated navigation system equips the user with a specialized navigation computer, which can also transfer maps directly into a user's field of vision with a data display or present it as a three-dimensional image with a holographic projector if necessary. This option grants a +1 DM to all Navigation skill rolls.

Neural Comm

A wafer jack cannot be installed parallel to a neural comm, but the latter can be included as an option. In contrast to the TL10 cybernetic augment, audio messages do not have to be spoken out loud with this improved version; they can just be thought. Furthermore, this option can also send and receive data via a local network. The TL15 neural comm can transfer many different data types as well as enhance the wafer jack's computer rating by 1 due to its integrated computer.

Tactical Communication Network Interface

This option integrates a wafer jack and every other relevant cybernetic augment into an existing tactical communication network. The tactical rating available for the wearer equals the wafer jack's computer rating.

Wireless Interface

This interface is a specialized version of a neural radio transceiver (range 5km), which is only used for sending and receiving data. To establish a wireless connection, the remote station also has to have a wireless interface. A link box (TL13, 0.5kg, 500 Cr.) can be bought as external enhancement to equip almost every known computer system with a wireless interface. To install a link box physical access is necessary, as well as an average Engineer (electronic) skill roll.

Installation of a link box: Engineer (electronic), 1 to 6 minutes, Education, average (+0)

Without a wireless interface, a direct cable connection or a local network (with cables via an access point or via a neural comm) is necessary to gain access to a computer system.

10.10 BODY IMPLANTS

Auto Injector (TL9+): From TL9, simple implants can also be used to administer different drugs. From TL12, choice and dosage can be determined by the wearer with a wafer jack. From TL14, the auto injector can also be controlled by a medikit implant. Without a wafer jack, the implant can be controlled only with a direct push switch or set to a certain dosage interval. If necessary, several auto injectors can be implanted, but more than two are uncommon.

Drugs can be restocked easily via an external access.

TL9	Auto Injector (supply: 2)	500 Cr.
TL10	Auto Injector (supply: 3)	750 Cr.
TL11	Auto Injector (supply: 4)	1,000 Cr.
TL12	Auto Injector (Wafer Jack Interface, supply: 4)	1,500 Cr.
TL14	Auto Injector (Wafer Jack Interface, Medikit Link, supply: 6)	2,500 Cr.

Supplies (drugs)		
TL8	Panacea Drugs	200 Cr. per dose
TL8	Anti-rad Drugs	1.000 Cr. per dose
TL8	Psionic Drug (standard)	1.000 Cr. per dose
TL8	Stim Drug	50 Cr. per dose
TL9	Clotting Aid	200 Cr. per bottle
TL9	Nervous Response Dampeners	100 Cr. per dose
TL9	Psionic Drug (double)	4.000 Cr. per dose
TL10	Adrenaliser	150 Cr. per dose
TL8	Combat Drug	1.000 Cr. per dose
TL10	Meta-Performance Enhancer	600 Cr. per dose
TL10	Psionic Drug (special)	10.000 Cr. per dose
TL10	Metabolism Accelerator	500 Cr. per dose
TL10	Fast Drug	200 Cr. per dose
TL11	Medicinal Slow	500 Cr. per dose
TL15	Anagathics	2.000 Cr. per dose

Panacea drugs, anagathics, anti-rad drugs, combat drug, medicinal slow, stim drugs, metabolism accelerator and fast drug are described in the Core Rulebook, pp. 93–94. Adrenaliser, meta-performance enhancer and nervous response dampeners are described in detail in Mercenary, p. 96.

Clotting Aid
This drug, described in detail in Mercenary (p. 96), has to be taken once a day. One bottle includes 30 doses.

Psionic Drug (various)
Psionic drugs are described on p. 157 of the Core Rulebook. Taking psionic drugs is illegal inside the Imperium.

AIR COMPRESSOR (TL10)
From TL10, breathing apparatuses have become so small they can be implanted directly into a lung. The implant's function equals that of a breathing apparatus. 6,000 Cr.

AIR FILTER (TL10)
From TL10, filter masks have become so small they can be implanted directly into a lung. The implant's function equals that of a filter. 6,000 Cr.

FILTER-COMPRESSOR IMPLANT (TL12)
The filter-compressor implant combines the advantages of an air compressor and an air filter. 15,000 Cr.

ARTIFICIAL GILLS (TL11+)
Artificial gills are available from TL8 as external devices, and can also be purchased as cybernetic implants from TL11. From TL13, biological artificial gills are available as well. Artificial gills of any type work only in worlds with a breathable atmosphere (type 4-9) and are not compatible with other lung implants.

TL11	Cybernetic Artificial Gills	12,000 Cr.
TL13	Biological Artificial Gills	25,000 Cr.

MEDIKIT IMPLANT (TL14+)
This implant is identical to the medikit that can be integrated into a vacc suit, combat armor or battle dress from TL10. It is a combination of a medical scanner and a drug injector that can automatically provide first aid if the user's Endurance is reduced to 0. In addition, the device can inject a fast drug either on the wearer's command (requires wafer jack) or if vital signs are on the brink of collapse, thus turning minutes into hours. A medikit can also inject different drugs on command. Medicinal supplies can be restocked easily through an external access.

TL14	Medikit Implant (Medic 1, supply: 4)	20,000 Cr.
TL15	Medikit Implant (Medic 2, supply: 5)	30,000 Cr.
TL16	Medikit Implant (Medic 3, supply: 6)	40,000 Cr.

Supplies		
TL14	Drugs (various)	price depends on drug
TL14	Medikit Application	100 Cr.
TL14	Trauma Pack	7,500 Cr.

Drugs
See auto injector

Medikit Application
All materials necessary to carry out a Medic (first aid) skill roll are provided for by the medikit application. The application is gone after use.

Trauma Pack
The trauma pack is described on p. 96 of Mercenary.

10.11 LIMB AUGMENTS

Usually, a whole arm is replaced, but partial replacement is possible for 60 percent of the price. Costs for biological hand replacements are 40 percent. Strengthened arms can only be realized as complete prostheses.

Prices for biological and cybernetic limbs depend on the sum of physical characteristics values. Biological limbs add Strength, Dexterity and Endurance, cybernetic ones only Strength and Dexterity. Usually, artificial limbs have the same characteristics as their natural counterparts, but Strength and Dexterity can also be higher or lower. If a character already has a physical characteristics adjustment, the enhanced value counts toward the costs for an implant.

Example: A character with Strength 8, Dexterity 7 and Endurance 9 loses an arm in an accident. He decides on a biological replacement equal to his lost arm. The costs sum up to 60,000 Cr., and a TL9 cybernetic arm would cost him only 22,500 Cr. The price for a TL13 improved cybernetic version would already amount to 80,000 Cr., only for raising Strength to 9, or 100,000 Cr. for raising Strength to 9 (+1) and Dexterity by 2 to 9. The biological version of this improved arm costs only 90,000 Cr. but lacks integrated protection and flexible improvement options.

However, the implant's improved (or declined) characteristics compared to the natural ones apply only when they are relevant. In personal combat, for example, an improved arm's increased strength matters when striking a blow, but not when jumping. A universal increase of physical characteristics is only possible with respective adjustments. Situations that require both use of legs and arms relate to the lower characteristic. A character with a natural Strength of 8 with improved arms (Str 10) and legs (Str 9) would be able to use Strength 9 when rolling on Athletics (strength). If a task requires two limbs of which only one is improved, only half the difference (rounded down) between the improved and the natural characteristic is applicable. For the above-mentioned example, this would also result in an effective strength of 9 (10-8=2, 2/2=1).

Biological Arm/Leg (TL12+): From TL12, biological arm and leg prostheses can be grown, on higher TL they can also be equipped with increased performance and other options. Popular options include webs, but also cosmetic modifications.

TL12	Biological Arm/Leg	(characteristic value) × 2,500 Cr.
TL13	Biological Arm/Leg (max. +1)	(characteristic value) × 2,500 Cr.
TL14	Biological Arm/Leg (max. +2)	(characteristic value) × 2,500 Cr.
TL15	Biological Arm/Leg (max. +3)	(characteristic value) × 2,500 Cr.

Options		
TL12	Webs	5,000 Cr.
TL13	Simple Cosmetic Modifications (color, pattern)	5,000 Cr.
TL13	Improved Strength	10,000 Cr. per point
TL13	Improved Dexterity	10,000 Cr. per point
TL14	Complex Cosmetic Modification (shape)	10,000 Cr.

Cosmetic Modification

Simple cosmetic modifications include changing the skin tone or texture (scales, hair), while complex modifications can also achieve a change of shape. Each modification has to be bought separately.

Improved Strength/Dexterity

Biological arms and legs can also be improved beyond the natural maximum. The maximum improvement depends on the replacement's TL.

SHI5 FOREARM ADAPTER (TL15)

This forearm prosthesis is used to accommodate the semi-autonomous hand implant infiltrator Mk 5 (see Chapter 7). As long as this small robot, modeled to look like a human hand, is placed in this mount it can recharge its batteries as well as serve his wearer like a regular cybernetic hand (Strength 6). Once freed from its mount, the SHI5 can either carry out semi-autonomous tasks or be monitored and controlled with control and communication equipment fitted into the prosthesis. Its effective range is only about 100 meters, though. In combination with a wafer jack and matching driver (rating 1), which is included in the adapter's price, all programs with a maximum rating of 0 that run by the wafer jack can also be used via the SHI5, within its limited capacities.

The price of 50,000 Cr. includes only the cybernetic adapter and matching driver software, but not the actual robot. This has to be bought separately. The adapter is not compatible with cybernetic arm prostheses, but there are cost-effective enhancement options. The SHI5 forearm adapter comes with an integrated protection of 6.

CYBERNETIC ARM (TL9+)

Simple cybernetic arm prostheses are available for everybody from TL9. They can be equipped with diverse options. Sensors are generally fitted into a hand, while weapons usually only fit into forearms. Cybernetic arms can be equipped with artificial skin on demand and come with an integrated protection equal to half the prosthesis' TL (rounded up).

TL9	Cybernetic Arm (no option)	(characteristics) × 1,500 Cr.
TL10	Cybernetic Arm (1 option)	(characteristics) × 2,500 Cr.
TL11	Improved Cybernetic Arm (max. +1, 1 option)	(characteristics) × 5,000 Cr.
TL12	Cybernetic Arm (2 options)	(characteristics) × 5,000 Cr.
TL13	Improved Cybernetic Arm (max. +2, 2 options)	(characteristics) × 5,000 Cr.
TL14	Cybernetic Arm (3 options)	(characteristics) × 5,000 Cr.
TL15	Improved Cybernetic Arm (max. +3, 3 options)	(characteristics) × 5,000 Cr.
TL16	Cybernetic Arm (max. +3, 4 options)	(characteristics) × 5,000 Cr.

Options		
TL10	Rescue Transponder (200 km)	200 Cr.
TL10	Webs	300 Cr. per arm (hand)
TL10	Sensor (Geiger counter)	250 Cr.
TL10	Transport Container	500 Cr.
TL10	Additional Armor	5,000 Cr. per point
TL11	Weapon (various)	variable
TL11	Tools (various)	1,000 Cr.
TL12	Sensor (electromagnetic probe)	1,000 Cr.
TL13	Rescue Transponder (1,000 km)	750 Cr.
TL15	SHI5 Forearm Adapter	30,000 Cr. (without SHI5)

SHI5 Forearm Adapter

This is a version of the adapter of the same name, especially developed as an option for cybernetic arm prostheses. Because of to its size it takes up two option slots and is not compatible with the improved arm option. The arm's maximum Strength is limited by the robot's Strength (6).

Rescue Transponder

This is the implant option of the correspondent device described in Mercenary (p. 95). From TL13, the transponder has become so small it does not require a free options slot.

Sensor (various)

Optional sensors comply with the respective equipment described in the Core Rulebook (p. 96).

Transport Container

Objects up to pistol size can be transported inside this sealed and shielded container. Any attempt of detecting the content suffers from a -4 DM, the container itself can be discovered with average (+0) difficulty.

Improved Arm

From TL11, improved versions of cybernetic arms are available. The maximum improvement of Strength and/or Dexterity depends on the arm's TL. Both or only one of the characteristics can be increased up to the prosthesis' stated maximum. Costs for an arm are based on the improved characteristics. From TL16, cybernetic arms can also be purchased with improved characteristics by default.

Weapon

A cybernetic arm can be equipped with different weapons, which stay hidden inside the prosthesis until used. With the exception of claws and the implant version of a stunstick, all weapons are fitted into the forearm. Due to limited space, only pistol-sized weapons can be used. These weapons are special versions constructed in a more compact way than regular weapons and can thus not be used outside the arm without modifications. The weapons' magazines are not compatible with standard magazines. Weapons can be equipped with laser telescope, sound absorber, gyrostabilizer, secure weapon and intelligent weapon options without extra charge.

A cybernetic arm can also be used without hidden weapons, as a weapon using the Melee (unarmed) skill (damage: 2d6-2). Cybernetic claws use the same skill, or alternatively Melee (natural weapons). If both arms are equipped with this option, the character receives an additional +1 DM to all Athletics (climbing) skill rolls, unless a surface is too smooth to even hold on to with claws. The bonus is cumulative with cybernetic climbing aid.

Melee Weapons		
TL10	Claws (1W6+1)	500 Cr.
TL10	Dagger (1W6+2)	500 Cr.
TL10	Blade (2W6)	500 Cr.
TL10	Stunstick (1W6)	1,000 Cr.

Slug Throwers		
TL10	Automatic Pistol (mag. 40)	600 Cr./30 Cr.
TL10	Snub Pistol (mag. 20)	450 Cr./20 Cr.
TL10	Body Pistol (mag. 20)	1,500 Cr./60 Cr.
TL10	Stunner (2d6, mag. 20)	1,500 Cr./200 Cr.
TL12	Stunner (2d6+3, mag. 20)	2,200 Cr./200 Cr.
TL13	Laser Pistol (3d6, mag. 20)	6,000 Cr./500 Cr.
TL14	Stunner (3d6, mag. 20)	3,000 Cr./200 Cr.
TL14	Gauss Pistol (mag. 40)	1,500 Cr./20 Cr.
TL15	Laser Pistol (3d6+3, mag. 20)	8,000 Cr./500 Cr.

Tools

Besides weapons, tools can also be fitted into a cybernetic arm. These match the tool sets described in the Core Rulebook on p. 97 but contain only a basic set of tools. However, this basic set enables the character to carry out almost every repair (-2 DM). Each toolkit has to be purchased as separate option.

Additional Armor

A cybernetic arm's integrated armor can also be enhanced with additional armor. The maximum armor level may not be higher than the prosthesis's TL. Additional armor of up to 3 points does not require a free option, only 4 or more points take up an option when fitted.

CYBERNETIC LEG (TL9+)

Simple cybernetic leg prostheses are available for everybody from TL9. They can be equipped with several options. Cybernetic legs can be covered with artificial skin if desired, and come with integrated protection equaling half the prosthesis' TL (rounded up).

TL9	Cybernetic Leg (no option)	(characteristics) × 1,500 Cr.
TL10	Cybernetic Leg (1 option)	(characteristics) × 2,500 Cr.
TL11	Improved Cybernetic Leg (max. +1, 1 option)	(characteristics) × 5,000 Cr.
TL12	Cybernetic Leg (2 options)	(characteristics) × 5,000 Cr.
TL13	Improved Cybernetic Leg (max. +2, 2 options)	(characteristics) × 5,000 Cr.
TL14	Cybernetic Leg (3 options)	(characteristics) × 5,000 Cr.
TL15	Improved Cybernetic Leg (max. +3, 3 options)	(characteristics) × 5,000 Cr.
TL16	Cybernetic Leg max. +3, 4 options)	(characteristics) × 5,000 Cr.

Options		
TL10	Climbing Aid	200 Cr. per leg (foot)
TL10	Magnetic Grapples	200 Cr. per leg (foot)
TL10	Rescue Transponder (200 km)	200 Cr.
TL10	Webs	300 Cr. per leg (foot)
TL10	Additional Armor	5,000 Cr. per point
TL11	Hidden Weapon Mount	500 Cr.
TL11	Tools (various)	1,000 Cr.
TL12	Automatic Reloading Mechanism	1,000 Cr.
TL12	Hypervelocity Prosthesis	price × 1.5
TL12	Jump Booster	price × 1.5
TL13	Rescue Transponder (1.000 km)	750 Cr.

Hypervelocity Prosthesis

A character whose legs have been replaced with hypervelocity prostheses enjoys two advantages: first of all, his movement rate increases by 50 percent; in addition, he receives a +1 DM to all Athletics (sprint) skill rolls.

Hypervelocity prostheses can be equipped with additional jump boosters. The price for this combination amounts to twice the price for the cybernetic leg.

Climbing Aid

This option equips a cybernetic leg with climbing aids consisting of retractable climbing irons. If both legs have been fitted with climbing aids, the character receives a +1 DM to all Athletics (climbing) skill rolls, with the exception of extremely smooth surfaces that do not even afford hold to a climbing aid. The bonus is cumulative with that of cybernetic claws.

Magnetic Grapples

This option is identical to the TL8 armor option (Core Rulebook p. 88). For reasonable use, two magnetic grapples are required.

Rescue Transponder

This is the implant option of the corresponding device described in Mercenary (p. 95). From TL13, transponders have become so small they do not require a free option.

Jump Booster

When all of a character's legs have been equipped with jump boosters, he enjoys two advantages: His movement rate increases by 2 meters, and he receives a +1 DM to all Athletics (high and broad jump) skill rolls.

Jump boosters can be combined with hypervelocity prostheses. The price for this combination is twice as high as that of the cybernetic leg. The jump booster's speed enhancement is taken into account after that of the hypervelocity prosthesis.

Improved Leg

From TL11, improved versions of cybernetic legs are available. The maximum improvement of Strength and/or Dexterity depends on the leg's TL. Both or only one characteristics can be raised up to the prosthesis' maximum. Prices for the leg are based on the improved characteristics. From TL16, improved characteristics are standard for cybernetic legs.

Hidden Weapon Mount

Hidden weapon mounts are used to hold a pistol-sized standard weapon. If the weapon is needed, the mount can be opened with a neural impulse to take out the weapon. Usually, a weapon mount is fitted into the lower leg, as it offers easy access if necessary. However, it can also be fitted into the thigh. The weapon can be pulled as if wearing a belt holster. The leg has to be accessible in that case or clothes have to be prepared especially.

From TL12, a hidden weapon mount can be equipped with an automatic reloading mechanism, which reloads the weapon within one combat round after the weapon has been put back into the holster.

Tools

Besides weapons, tools can also be fitted into a cybernetic leg. These match the tool sets described in the Core Rulebook on p. 97, but only contain a basic set of tools. However, this basic set enables the character to carry out almost every repair (-2 DM). Each toolkit has to be purchased as separate option.

Additional Armor

A cybernetic leg's integrated armor can also be enhanced with additional armor. Maximum armor level may not be higher than the prosthesis' TL. Additional armor of up to 3 points does not require a free option, only 4 or more points take up an option when fitted.

WEBS (TL10+)

from TL10, cybernetic hands and feet can be equipped with webs, increasing speed in the water by 50 percent as well as giving a +1 DM to all Swimming skill rolls. From TL12, biologically made limbs can also be equipped with webs. A character only benefits from this option if both hands and legs have this option. Aquatic life forms receive no bonuses, as their anatomy usually includes webs.

TL10	Cybernetic Webs	1,200 Cr.
TL12	Biological Webs	5,000 Cr.

10.12 AUGMENTS FROM OTHER BOOKS

The following chapter lists a number of augments that were already presented in other Traveller Rulebooks.

ASSISTED AMBULATION AUGMENTATION
(TL13, MERCENARY P. 94)

This cybernetic augment is compatible to all types of biological and cybernetic augments.

ASLAN CYBER-CLAW
(TL10, MERCENARY P. 94)

This weapon implant cannot be used in combination with cybernetic arms.

MECHANOSTATIC SCANNER
(TL12, MERCENARY P. 94)

This device, counting as cybernetic augment, is not compatible with other cybernetic ear implants. However, cybernetic ears can be equipped with the scanner optionally.

SMUGGLING CONTAINER
(TL9, MERCENARY P. 94)

The smuggling container is a cybernetic enhancement that cannot be fitted into cybernetic arms or legs.

ENHANCED VISION (TL13, CORE RULEBOOK P. 90)
These cybernetic eyes, available at TL13, are a typical example for a combination of options. They can be modified and enhanced within the limits of the rules.

ADVANCED SUBDERMAL ARMOR
(TL12, MERCENARY P. 94)

The improved version of subdermal armor counts as cybernetic augment and is handled like the standard version in every matter.

WEAPON IMPLANT
(TL10, MERCENARY P. 94)

A weapon implant is a simpler and specialized version of a cybernetic arm. It is not compatible with other cybernetic arm prostheses.

BALLISTIC TRACKING LENSES
(TL12, MERCENARY P. 94)

This cybernetic augment is not compatible with cybernetic arms and eyes, but can be used in combination with biological replacements. Because of its versatile use and complex implantation, prices are substantially higher than for a cybernetic eye option.

There are further augments in the following books:

- Alien Module 1: Aslan (p. 68)
- Alien Module 2: Vargr (pp. 58–59)
- Book 5: Agent (p. 98)
- Book 6: Scoundrel (p. 83)
- Book 7: Merchant Prince (pp. 112–113)
- Supplement 4: Central Supply Catalog (pp. 183–188)
- Supplement 8: Cybernetics

11. DESIGNING ROBOTS & COMPUTERS

When a character wants to develop a robot or drone in the game, he needs a rough idea of the tasks the robot is to carry out later on. The following list should give some suggestions about the possibilities, without being exhaustive.

AGROROBOT
An agrorobot deals with raising, caring and (if applicable) harvesting plants. It comes in all varieties: from domestic use size to robots weighing several tons and are able to work entire fields on their own.

ASSASSIN ROBOT
An assassin robot is deadly. In addition, all components used to build the robot usually have no serial numbers, and can thus not be traced.

BABYSITTER ROBOT
A robot designed to look after toddlers and children.

CONSTRUCTION ROBOT
Construction robots are used in the industry to assemble or repair industrial goods, or on building sites to erect buildings.

LIBRARY ROBOT
Computerized book search is a huge advantage especially in large libraries. A robot not only knows where a book is, it can also fetch it and take it back afterwards.

GUNNER ROBOT
A gunner robot takes over the role of the gunner in spacecrafts, often with deadly efficiency.

OFFICE ASSISTANCE ROBOT
Simple office tasks can also be carried out by robots: sorting through stacks of files, maintenance of data or making coffee.

INTERPRETER ROBOT

The galaxy is huge and you will often meet creatures whose language you don't understand. In these cases, an interpreter robot can be very useful. New languages can easily be added, in contrast to a human interpreter.

PROSPECTOR ROBOT

Ore-seeking robots are often dropped off in asteroid fields and mark potentially interesting candidates for ore mining.

EXPERT ROBOTS

Expert systems are usually stationary, but possess much knowledge (skill level 3 or more) about one or more special areas such as architecture, robot design, etc.

FREIGHT ROBOT

Freight robots come in almost all sizes. Of course, there are certain standard models with a wide extension in most worlds, but often freight robots will also need special abilities.

TOURIST GUIDE ROBOT

Robot tourist guides are ideal for well-frequented touristy attractions. They never tire and stay patient constantly.

HOUSEKEEPING ROBOT

Housekeeping robots are usually used in the kitchen for cooking and washing or to do other housework.

INFORMATION ROBOT

Information robots are usually found in central places such as starports or in lobbies of larger buildings.

HUNTING ROBOT

They are used for controlling and/or wiping out vermin such as rats rather than for hunting parties.

COMBAT ROBOT

Combat robots are probably the most variable robots of the galaxy. There is a highly specialized model for just about every purpose, and another one to counter it.

LAB ASSISTANCE ROBOT

Mixing dangerous and explosive agents is usually done by a robotic lab assistant. They work more accurately.

POLICE ROBOTS

Police robots are used sparsely. They are not shown the same respect as a human being.

CLEANING ROBOT

Cleaning robots can be found in starports, large buildings and public places. They are also available for domestic use.

RESCUE ROBOT

escue robots are usually specialized to a certain type of rescue, such as earthquakes, naval rescue or fire.

ROBOT DOCTOR

Autodocs, a type of robot doctors, are among the most popular robots in the galaxy.

ROBOT SERVANT

A personal, often humanoid-looking (or adapted to the owner's species) robot used for housework, errands and occasionally also interpreting.

ROBOT DRIVER

A robot driver can handle most ground cars and gravitic speeders, and has a good knowledge of places. You give him an address, and it will take you there as quickly and safely as possible.

ROBOT PET

Robot pets are also very popular, especially in spacecrafts and space stations, as they leave no excrement.

ROBOT ENGINEER

Robot engineers can repair damaged locomotion, reactors or simply telephone main lines.

ROBOT WAITER

In high society bars on underdeveloped worlds and shabby bars on highly developed planets, you will often find robot waiters. In one world, people want to brag with their engineering marvel, in the other, they want to experience the luxury of being serviced by a human being.

ROBOT COURIER

Robot couriers are used on planets as well as in space. Thus, their build varies, depending on what kind of freight they carry as well.

ROBOT PILOT

A spacecraft's pilot seat should always be occupied during a flight. Many spacecrafts will thus rely on a three-shift pattern. Others get a robot pilot.

ROBOT ENTERTAINER

Robot entertainers can play instruments, usually feature a humanoid look (or that of the species they were built for) and are able to sing, paint or perform other art forms.

PARAMEDIC ROBOT

Paramedic robots often lack the instruments of a robot doctor, but are built for speed and are thus more agile. They provide first aid or take patients to a hospital.

ROBOT TEACHER

Robots can also be used to teach other living beings (or even robots). Thus, they are often found in schools.

AMUSEMENT ROBOTS

These can often be found in amusement parks, where they portray well-known characters from books, comics or movies. Some will simply handle an attraction or ride. Although the production of pseudo-biological tissue, another type of amusement robots became popular.

TRAFFIC CONTROL ROBOT

Traffic control robots can manage traffic locally, similar to a traffic policeman. But there are other types as well, which can handle traffic for an entire block, sector, city or planet.

ADMINISTRATION ROBOT

Administration robots can be used to manage large and complex systems, for example inner-city traffic, air/space control or a factory's assembly line.

SECURITY ROBOT

Security robots have a highly developed sensor pack to detect intruders. They are usually armed sparsely, if law allows them to carry weapons at all.

Once the overall purpose of a robot has been defined, there are certain general conditions the character should take into account when developing a new robot or drone. These affect his DM.

DIFFERING TECH LEVELS

Usually, robots are built at a certain TL and all components have the same TL, even though some components were available at lower levels as well (e.g., a TL7 transceiver in a TL10 robot). The TL of these components is implemented in form of retrotech or prototech. According to the Core Rulebook, this can lead to changes of mass and price of the components. To avoid making robot production even more complex, we advise to stick to list prices, though.

However, it might happen that a robot is put together from several components with different TL (e.g., tubular transistors and microchips), either on purpose or out of necessity.

Developing a robot with components from several tech levels is more difficult than developing a robot with only one tech level. Thus the number of different tech levels matters, as they have to be synchronized with each other. The main criterion is the difference between the highest and lowest TL of the components. The skill roll gets more difficult as the difference increases.

Difference between highest and lowest TL	DM
0	+0
1-2	-1
2-5	-2
6+	-3

COMPLEXITY (PRICE)

A robot's complexity also matters, of course. It is by far easier to develop a simple cleaning robot than to develop a pseudo-biological robot that should not be identified as one by human beings. The general criterion for a robot's complexity is its building price, put together according to the rules in Chapters 5 and 6.

Price (Cr.)	DM
0 to 1,000	+1
1,001 to 20,000	0
20,001 to 100,000	-1
100,001 to 1,000,000	-2
1,000,001+	-3

EQUIPMENT

A lab and its TL are vital to designing and building a robot. Designing a highly developed robot with antiquated means proves difficult, whereas a highly developed lab offers a bonus.

TL Lab minus highest robot TL	DM
4+	+3
2 to 3	+2
0 to 1	+1
For each robot TL above lab TL	-2

REQUIRED TIME FOR DEVELOPMENT

On average, development of a robot takes 1 to 6 months. The process can be sped up by up to two levels (weeks, days). This results in a -2 to -4 DM. Extending the period does not give any advantages.

Time for development	DM
1–6 months	+0
1–6 weeks	-2
1–6 days	-4

PRICES FOR DEVELOPMENT

Development prices are five times as high as regular prices for the robot. This includes material for prototypes and failures. Cheaper materials can be used, but these add difficulty to development as well. Higher development prices can help to ease development.

Development prices	DM
Price × 10	+2
Price × 5	0
Price × 3	-1
Price × 1	-2
Price × 0.5	-4
Price × 0.1	-8

In the end, all these general conditions add up to state the difficulty for development and construction of a new robot. The developer carries out an Engineer (robotic) skill roll including all dice modifiers.

Effect	Type of effect
Exceptional success (6+)	The robot costs 25% less than stated.
Average success (1–5)	The robot is completed as expected.
Marginal success (0)	The robot costs 10% more than planned.
Marginal failure (-1)	The robot has a design flaw and is not working.
Average failure (1–5)	The robot has design flaws equal to effect × d6.
Exceptional failure (less than -6)	Congratulations, you made one of those robots they talk about in the evening news. Unfortunately, not in a positive way. The precise type of failure should be determined by the game master, but it should be adequate to the current situation. However, the failure does not have to show at once. It can also become apparent much later, e.g., during production.

DESIGN FLAW

As long as a computer or robot has design flaws, it cannot work. Discovering a flaw in the design is a long and stressful task: 1 to 6 days, Intelligence, difficult (-2).

The price for eliminating a flaw is 1 percent of the finished robot's total price.

All flaws have to be eliminated before the developer can roll another test on Engineer (robotic) to finish development, with the same DM that applied to the first roll. If this roll fails again, further design flaws have come up and have to be eliminated.

Example
Robotic specialist Sue Kelvin has Engineer (robotic) 4. She develops a robot butler at TL13, whose price will be 200,000 Cr. (-2DM). She has a TL13 lab (+1 DM). Her employer gives her half a year (+0 DM), but he is not willing to pay high development prices and only wants to invest 600,000 Cr. into development (-1 DM). Thus, her overall modifier (without characteristics) is 4-2+1+0-1=+2

12. ROBOTS AS CHARACTERS

Some players might surely want to play a robot as a character, and the game master should not discourage them. Still, there are some aspects players and game masters should agree on, so that both know what they are dealing with. Some, if not all, issues are also connected to one another somehow:

Highly specialized, but not multitalented: Computers and robots are experts in one field, but usually fail to grasp concepts exceeding their programming. A robot designed for piloting small space shuttles but without the required programming for large spacecrafts (i.e., the skills) will not be able to fly a large spacecraft. Human characters (or living beings in general) suffer from a -3 penalty to their skill rolls if they don't have at least level 0 of the respective skill. Robots may not roll for unknown skills at all. They simply cannot do it. Of course this rule softens as robots get more intelligent, and it also depends on the robot's ability to learn and improve its programming autonomously. Player and game master should agree on a mode for the player's robot. Should the robot be an AI, one can assume for it to react like a human being.

Limited creativity and ability to act: If the robot is not an AI with a respective personality, it will usually not take the initiative. On the contrary, as long as nobody expects it to do anything, it will usually stay passive. Nevertheless, robots are masters of reaction. If any event occurs within their area of expertise, that is, for which they have a program, they are likely to offer several solutions and choose the best among them. However, this also means that robots have no ideas of their own if they have no personality or are classified as AI. Their solutions correspond to what another person already programmed. Thus, they can react well to predictable events, but are almost completely helpless when confronted with an unexpected event. If you seek ideas, don't ask the robot. Player and game master should decide on the robot's boundaries. AI classification is the parting line.

Reactions of society: Few societies tolerate robots acting freely. If a robot is included in a crime investigation, it may secure evidence, but never question witnesses. Few living beings would cooperate with a robot to the same extent they would cooperate with a living being. Furthermore, many worlds have different laws and views about a robot's freedom of movement. On some worlds they are allowed to move freely, while on others they are forbidden completely. Many worlds limit their freedom of movement; for example, robots may only stay in certain areas or are forbidden to enter other areas. Other worlds imply prohibitions and restrictions depending on the robot type. In general, most worlds have two things in common:

1. If a robot is armed or classified as combat robot, it is rarely allowed to leave the starport or spacecraft, usually only with a special permit and in a deactivated state.
2. The robot's owner is liable for all intended or unintended actions of the robot. If it causes an accident, this is the owner's fault, and he can be sued for homicide even if he wasn't there. A robot without owner is hardly ever tolerated and is seized for deactivation or sale.

Learning and developing: If (and how) a computer/robot can develop depends on its Logic software. A computer with Low Data Logic software cannot develop or learn from its mistakes. A computer with High Data Logic software can improve just like a character, but it needs ten times as long. Low Autonomous computers require five times as much and High Autonomous systems need just as long as a character. A Low AI learns new skills at double speed, while a High AI learns five times faster than a human being.

Thus, players might consider choosing highly developed and very intelligent robots. They will still have to cut back if they refrain from choosing AI or if the game master rejects such a character. And even once all physical and mental problems have been solved, the social stigma remains.

13. INTERESTING NPC S

The following chapter lists some interesting NPCs. Statistics noted here are not complete and can be enhanced or modified by the game master if necessary.

JONAH BENTLEY

Until recently, Jonah Bentley worked as a technician for a supplier of the local star port, leading a rather drab life. In his free time he was known as "R@W1": a hacker making his mark in the local scene with some more or less spectacular hacks into computer networks of larger companies and even some regional offices of megacorporations. However, this always concerned low to moderate quality data. Jonah is an expert for security systems and so far had little problems concealing his traces. His latest job promised to be harmless and bland as well. Jonah's regular contacts teamed him with a new customer that paid well for a seemingly easy hack. Data was supposed to be given to the customer on data storage directly, not transferred via internet, but Jonah was not suspicious. On the contrary, in this business it is essential to leave as few traces as possible. His task was simple, really: He was to hack into the local subsidiary of Ling Standard Products' (LSP) payroll accounting and copy all data from the past 6 months. It was a standard job for Jonah as payroll accounting is rarely among the best-protected systems. The hack went smoothly, and Jonah transferred the data into external data storage. But when he went to meet his customer, his little world was turned upside down. By a fluke he was late for the meeting, but just in time to see his customer being run over and killed by an LSP transport vehicle. It might have looked like a traffic accident, but Jonah, having spent some time amongst hackers, was paranoid enough to run away. He did not go home but checked into a hotel using a false name. He skimmed news channels for any signs of the incident, but even two days afterward there was nothing. He came across another headline, though: his contact, the one who got him the job, had been found dead. Apparently he had been shot and robbed by a few petty criminals. Jonah knew that this was no coincidence. There was something going on, and it had to do with the accountancy data on the storage he carried with him. Whoever was behind it had more to fear than wage fraud and embezzlement. It was something that should never go public, something big. Jonah knew that he needed help, that he couldn't do it alone – maybe he should approach an old friend he hasn't seen in a while, or even mercenaries from abroad, because he couldn't really trust anybody around here. He also has to be quick; even if he wiped his traces fairly well, he does see the increased presence of LSP transporters in this part of town.

Age: 28
Str 11 (+1), Dex 7 (+0), End 6 (+0), Int 8 (+0), Edu 11 (+1), Soc 7 (+0)
Skills: Computer 2, Engineer (Robotic) 0, Space Sciences (Robotic) 1, Physical Sciences (electronic) 1, Engineer (electronic) 0, Mechanic 0, Sensors 1, Deception 1

DOUTZEN WENDI

Doutzen Wendi is an analyst for Scout Service and charts data the scouts brought back from their many missions to unknown (and known) worlds. She compares new data with existing one, registers changes and writes important articles for Scout Service's x-boat network. Doutzen is very popular among her colleagues and superiors but is especially praised for her accuracy and the fact that she never seems to forget anything. She always has matching data ready at hand. She was offered promotion several times, but refused every time. Her colleagues were puzzled at first, but she explained that she was very happy with data analysis, and that it would make her sad to be taken away from that work. Her superiors were glad to hear that, of course, as she does an excellent job, replacing two to three analysts. The only thing Doutzen really asked for was a larger holiday entitlement. Nowadays, she can take more vacation than any other member of the Scout Service.

This is one side of Doutzen Wendi. Her other side is older, much older. Several thousand years, to be exact. Doutzen is a (pseudo-)biological robot from a highly developed species. Her builders have given her several tasks. One of the most important ones is checking for remains or even signs of life of the Ancients not known to her builders. Another task is analyzing foreign signals and detecting new civilizations. Maybe even ones that are equal to the Ancients. Her Scout Service work is perfect for these tasks. Doutzen can easily manipulate any computer in her surrounding, which is why she never had a problem with medical examinations or metal detectors. But as a real AI, she also has enough creativity and other means to avoid being discovered.

But a few months ago, Doutzen started to get nervous, if a robot can be called nervous. She detected signals in data brought back from unknown depths of space by some scout ships. These signals were not detected by human beings as they were hidden too deep to be detected with their technological level. Something lurks out there. Doutzen has to fulfill her task and find out more. She will take a long holiday soon. She'll probably need help and a place on a spacecraft into remote areas as well.

Age: unknown

Str 20 (+4), Dex 15 (+3), End 21 (+5), Int 15 (+3), Edu 16 (+3), Per/Soc 7 (+0)

Skills: Computer 4, Space Sciences (Xenology) 1, Physical Sciences (Electronic) 3, Engineer (Electronic) 2, Mechanic 0, Sensors 4, Deception 2, Recon 1, Investigate 3, Comms 3, Persuade 2, Stealth 2

ALEXANDER STOR

Alexander Stor is a brilliant scientist, well known for his robotics work. He alone holds several dozen important patents in robotics. This may not sound much, but considering that the Imperium has quadrillions of inhabitants in more than 10,000 systems, which have carried out robotics research for several thousand years now, it is an extraordinary number. Of course, these patents provide him with quite a lot of money, which he mostly uses for even more robotics research. To many, Alexander might seem obsessed with robots. He is one of those geniuses who can handle a computer much better than a human being. He owns several asteroids that he had equipped with research labs. There he follows his own plans far away from any planetary jurisdiction. Some of these asteroids are even said to be jump capable. His latest project is a new generation of combat robots that really need to be tested in the field. Thus, he seeks mercenaries willing to battle his machines for a good pay. He has several testing grounds on his asteroid bases and on moons, but also on planets with lax legal authorities willing to look away for a little "tip". These testing grounds include urban combat areas, forests, jungles and deserts. He even owns an old freighter and an underwater combat area.

All these places far from jurisdiction were not picked by accident. Alexander Stor really wants to put his robots to a test, without being held back by laws and regulations. Whoever takes part in that test enters a battle of life and death, which Stor tells the mercenaries freely. What they don't know is what Alexander wants to use his robots for. If they pass the test, they will be cleared for mass production, and potential customers are already there to watch the tests. Many things can be said about Alexander Stor, but not that he has any kind of conscience. The choice of potential buyers already smells like trouble. Judging from the quality of these combat robots, big trouble. Hopefully, someone will manage to prevent one or even several planetary wars.

Age: 54
Str 8 (+0), Dex 10 (+1), End 8 (+0), Int 15 (+3), Edu 14 (+2), Soc 10 (+1)
Skills: Computer 2, Engineer (robotic) 3, Space Sciences (robotic) 3, Physical Sciences (electronic) 3, Engineer (electronic) 2, Mechanic 0, Vacc Suit 0, Sensors 1, Leadership 1

JACINTA BOMIAN

Jacinta Bomian became rich thanks to his parents' company. He only has moderate knowledge about computer security, but the company he inherited from his parents, and which he now runs at least nominally, deals with computer security. For years, Bomian Security has had a lucrative contract with the foreign ministry to protect their computer network. Business is going well, and up to now no larger security problems have occurred. However, there will be a new bid for tenders next year, and several other companies besides Bomian Security will bid as well. So, for Jacinta this is a really bad time to discover that his own company was hacked recently—with success. Few piece of data were stolen and nothing important, but according to the contract, the company has to report all security breaches to the foreign ministry within 4 days. This could diminish chances to renew the contract. Jacinta is doubtful about who hacked into his company. Up to now, he knows only that the intruder used a modified version of the RV120 virus, a virus more

than 30 years old that should not be able to counter modern computer systems at all. But it did. Was it an external attack? Security measures on the computers would suggest otherwise. On the other hand, nothing is 100 percent safe, Jacinta knows that. He cannot rule out an inside job, either. He set internal security on the case and expects quick results, but he also knows that it might take more than 4 days. If he has to report the case, he wants to deliver results as well. Jacinta is a bon vivant and does not understand day-to-day security business, but he regularly meets people who call for such tenders. But if word leaks out that Bomian Security is not able to close their own security leaks satisfactorily, these contacts would be useless; he'd be pushed out of business. Thus he has decided to seek help from outside from somebody with no connection to the company.

Age: 28
Str 7 (+0), Dex 8 (+0), End 9 (+1), Int 9 (+1), Edu 9 (+1), Soc 13 (+2)
Skills: Admin 0, Advocate 0, Comms 1, Diplomat 2, Investigate 0, Leadership 2, Carouse 2, Computer 1

TUM'BOLEK

Local authorities and the Imperium have a problem. An annoyance only, regarding the Imperium's huge size, but for local authorities it is a real problem. For some time now, pirate attacks have been carried out by robots. The robots are mere standard robots for domestic use that have been altered partially. They were equipped with weapon systems and, so it seems, very complex program logic with tactical components. Some of them are even built from old parts of several other robots. But still they succeed in capturing spacecrafts and even survive battles with the Imperial navy. Nobody has ever seen any living beings controlling the attacks, and the authorities are thus at a loss about whom to blame if they actually manage to catch one of the robots. Legally, robots are only things and cannot be put to trial. There is not a single hint about their builder or builders in the robots' databases. Thus, the people behind the attacks are called "the puppeteers."

The genius behind these pirate attacks is, in fact, a Hiver. Far from his nation's domain he uses the Imperium's borderland to add to his fortune. Tum'bolek used to be a respected roboticist in his nation. However, some excessive use of robots resulting in the deaths of several Hivers made him a social outcast. He roamed the universe's parts dominated by humans for some time until he was attacked by pirates. He was taken hostage, but nobody wanted to pay a ransom for him. The pirates were about to kill their useless prisoner, but he showed his talent by repairing the pirate leader's service robot. He stayed with the pirates for many years, carried out their menial tasks and was left alive as a "reward." This treatment changed his general attitude toward humans. One day the pirates came back with a large number of Naasirka household robots, and Tum'bolek developed a plan. It took him almost a year to carry it out, but after that time not a single pirate he had learned to hate was alive. Since then his pirate robots have destabilized several systems, and they grow in numbers each month. Several planetary governments have already set out a bounty for the "puppeteers," but nobody was ever able to catch them.

Age: 50

Str 5 (-1), Dex 9 (+1), End 8 (+0), Int 14 (+2), Edu 12 (+2), Soc 5 (-1)

Skills: Computer 2, Engineer (robotic) 3, Space Sciences (robotic) 3, Physical Sciences (electronic) 2, Engineer (electronic) 2, Mechanic 1, Vac Suit 0, Remote Operations 1

NORA REGNIS

Nora Regnis is the heir of Regnis Robotic LIC, a more or less successful regional producer of industrial and mining robots. Her father was assassinated recently and now everyone fears for her safety as well. Even worse, some people assume that the assassin has access to Nora's closest circle of friends or even is one of them. Pierce Palmer, former assistant and good friend of her father looks for someone who can protect her, someone from outside this circle of friends. Nora is not too happy about this watchdog, but she does not want to affront Pierce Palmer. Carlo Tremonit, an infamous terrorist, provides additional uproar. He has preached human supremacy over robots for years, demanding the abolition of robots. He carried out several assaults on robot production factories and has also attacked defenders of robotics. He is hunted by several intelligence services and is regarded as one of the most dangerous terrorists of the anti-robot movement. If rumors are true, he is behind the assassination of Nora's father and wants to finish his work now.

This is only half the truth, though. In fact, Nora is behind the attack on her father and only used Carlo as a tool. Regnis Robotics LIC is in substantial financial difficulties and Nora hated to see her father ruining their venerable family business. She is a power-hungry egomaniac and will do anything to reach her goals. She took crossing Carlo's path as a fortunate coincidence. By well-directed use of drugs and psychological manipulation she was able to turn him into her slave. She set him on her father. The iridium mines of her native world are the next part of her criminal plan: test drills showed huge amounts of iridium, which are to be mined now. Mining is to be carried out by human personnel, though. She plans on having Carlo carry out an attack on the mine's nuclear fission reactor to expose the entire area to radioactive radiation. Thus human beings could no longer enter the mine, and mining robots would have to be used. Her mining robots . . .

Age: 30
Str 6 (+0), Dex 7 (+0), End 9 (+1), Int 13 (+2), Edu 11 (+1), Soc 12 (+2)
Skills: Admin 1, Advocate 0, Comms 0, Diplomat 1, Investigate 0, Persuade 2, Deception 2

APPENDIX

COMPUTER AND ROBOT TABLES

MAXIMUM CHARACTERISTICS FOR COMPUTERS ACCORDING TO TL

	Maximum Characteristics		
TL	Int	Edu	Per
5	0	0	0
6	0	2	0
7	0	5	0
8	2	8	0
9	4	14	0
10	6	17	0
11	8	20	1
12	10	23	1
13	12	26	2
14	14	29	4
15	16	32	6
16	18	35	8
17	20	40	12
18	22	60	15

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PRICE PER CHARACTERISTIC ACCORDING TO TL

	Price per Characteristic according to TL (Computer)		
TL	Int	Edu	Per
5	-	-	-
6	-	33,600	-
7	-	28,000	-
8	22,400	14,000	-
9	16,800	10,080	-
10	11,200	6,720	-
11	5,600	3,360	5,000,000
12	4,480	2,800	4,000,000
13	3,360	1,960	3,000,000
14	2,240	1,400	2,000,000
15	1,120	672	1,500,000
16	896	560	800,000
17	672	420	400,000
18	448	280	200,000

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Price per Characteristic according to TL (Robot & Drone)

	Price per Characteristic according to TL (Robot & Drone)			
TL	Str	Dex	Hull	Structure
5	2,100	7,000	1,000	5,000
6	1,050	2,800	1,000	5,000
7	630	1,400	1,000	5,000
8	567	1,274	1,000	5,000
9	504	1,148	1,000	5,000
10	441	1,022	1,000	5,000
11	378	896	1,000	5,000
12	315	770	1,000	5,000
13	252	644	1,000	5,000
14	189	518	1,000	5,000
15	126	420	1,000	5,000
16	84	280	1,000	5,000
17	42	210	1,000	5,000
18	21	140	1,000	5,000

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COMPUTER RATING ACCORDING TO TL

Ideal TL	Computer Rating	Mass (kg)	Price (Cr.)
7	Computer/0	10	2,000
8	Computer/1	5	1,900
9	Computer/2	5	1,800
10	Computer/3	1	1,700
11	Computer/4	1	1,600
12	Computer/5	0.5	1,500
13	Computer/6	0.5	1,400
14	Computer/7	0.5	1,300
15	Computer/8	0.1	1,200
16	Computer/9	0.1	1,100
17	Computer/10	0.1	1,000
18	Computer/11	0.1	900

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COMPUTER PRICES (CR.) ACCORDING TO TL

Computer Rating	Computer Price at TL					
	7	8	9	10	11	12
0	2,000	1,000	500	250	125	63
1	10,000	1,900	950	475	238	119
2	50,000	9,500	1,800	900	450	225
3		47,500	9,000	1,700	850	425
4			45,000	8,500	1,600	800
5				42,500	8,000	1,500
6					40,000	7,500
7						37,500
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						

Computer Rating	Computer Price at TL					
	13	14	15	16	17	18
0	31	16	8	4	2	1
1	59	30	15	7	4	2
2	113	56	28	14	7	4
3	213	106	53	27	13	7
4	400	200	100	50	25	13
5	750	375	188	94	47	23
6	1,400	700	350	175	88	44
7	7,000	1,300	650	325	163	81
8	35,000	6,500	1,200	600	300	150
9		32,500	6,000	1,100	550	275
10			30,000	5,500	1,000	500
11				27,500	5,000	900
12					25,000	4,500
13						22,500
14						
15						
16						
17						
18						
19						

SOFTWARE

Software	Computer Rating	Price (Cr.)	TL	Specifics
Jump Control				
Jump Control/1	5	100,000	9	
Jump Control/2	10	200,000	11	
Jump Control/3	15	300,000	12	
Jump Control/4	20	400,000	13	
Jump Control/5	25	500,000	14	
Jump Control/6	30	600,000	15	
Miscellaneous				
Interface/0	0	-	7	Integrated
Network/0	0	500	7	
Civil Software				
Program/0	0	500	7	
Program/1	1	1,000	8	
Program/2	2	10,000	9	
Program/3	3	100,000	10	
Program/4	4	1,000,000	11	
Security Software				
Security/0	0	-	7	Integrated
Security/1	1	200	8	
Security/2	2	1,000	9	
Security/3	3	20,000	10	
Hacking/1	1	1,000	8	
Hacking/2	2	10,000	9	
Hacking/3	3	100,000	10	
Hacking/4	4	1,000,000	11	
Battle Software				
Program/0	0	2,500	8	
Program/1	1	5,000	10	
Program/2	2	50,000	12	
Program/3	3	500,000	14	
Program/4	4	5,000,000	16	
Logic Software				
Low Data	0	-	7	Integrated
High Data	1	3,000	9	Requires Int 3+
Low Autonomous	2	7,000	12	Requires Basic Command and Int 5+
High Autonomous	3	10,000	13	Requires Basic Command and Int 9+
Low AI	5	20,000	17	Requires Full Command, Int 9+, Per 6+
High AI	8	50,000	18	Requires Full Command, Int 12+, Per 8+
Command Software				
Manual Input	0	-	7	Integrated
Limited Basic Command	0	500	7	
Basic Command	0	1,000	8	
Full Command	1	5,000	10	

Software	Computer Rating	Price (Cr.)	TL	Specifics
Agent				
Agent/0	0	500	11	
Agent/1	1	2,000	12	
Agent/2	2	100,000	13	
Agent/3	3	250,000	14	
Agent/4	4	2,500,000	15	
Emotion S+imulation				
Emotion Simulation/1	1	5,000	12	Requires Full Command
Emotion Simulation/2	2	50,000	13	Requires Full Command
Emotion Simulation/3	3	500,000	14	Requires Full Command
Digital Personalities				
	MAX (Int, Edu, Soc)	10,000,000	15	Computer network has to be able to carry out all skills at once.

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COMMAND SOFTWARE

Required Command software		
Tons	Rating	Price (Cr.)
<0.1	0	100
0.1 to under 5	1	500
5 to under 12	2	1,500
12 to under 30	3	4,500
30 to under 90	4	13,500
90 to under 250	5	40,500
250 to under 650	6	121,500
650 to under 1,800	7	364,500
1,800 to under 5,000	8	1,093,500
5,000 to under 12,500	9	3,280,500
12,500 to under 36,000	10	9,841,500
36,000 to under 100,000	11	29,524,500
100,000 to under 250,000	12	88,573,500
250,000 to under 750,000	13	265,720,500
750,000 to under 1 million	14	797,161,500
1 million+	15	2,391,484,500

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CONSTRUCTION TYPE FOR ROBOTS AND DRONES

Construction type	Mass	Price
Large	Str × 20 kg + Dex × 10 kg + hull × 15 kg + strc × 30 kg	×0.5
Normal	Str × 10 kg + Dex × 3 kg + hull × 5 kg + strc × 10 kg	×1
Compact	Str × 6 kg + Dex × 2 kg + hull × 2 kg + strc × 5 kg	×8
Super Compact	Str × 0.5 kg + Dex × 0.1 kg + hull × 0.1 kg + strc × 0.3 kg	×20
Automatons	Str × 0.1 kg + Dex × 0.05 kg	×0.05

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PROTECTION FOR ROBOTS AND DRONES

Protection	Titanium Steel		Crystaliron		Bonded Superdense	
	Mass	Price	Mass	Price	Mass	Price
1	×1.1	×1.02	×1.07	×1.05	×1.05	×1.1
2	×1.21	×1.04	×1.14	×1.10	×1.1	×1.21
3	×1.33	×1.06	×1.23	×1.16	×1.16	×1.33
4	×1.46	×1.08	×1.31	×1.22	×1.22	×1.46
5	×1.61	×1.10	×1.40	×1.28	×1.28	×1.61
6	×1.77	×1.13	×1.50	×1.34	×1.34	×1.77
7	×1.95	×1.15	×1.61	×1.41	×1.41	×1.95
8	×2.14	×1.17	×1.72	×1.48	×1.48	×2.14
9	×2.36	×1.20	×1.84	×1.55	×1.55	×2.36
10	-	-	×1.97	×1.63	×1.63	×2.59
11	-	-	×2.10	×1.71	×1.71	×2.85
12	-	-	×2.25	×1.80	×1.8	×3.14
13	-	-	×2.41	×1.89	×1.89	×3.45
14	-	-	-	-	×1.98	×3.8
15	-	-	-	-	×2.08	×4.18
16	-	-	-	-	×2.18	×4.59
17	-	-	-	-	×2.29	×5.05
18	-	-	-	-	×2.41	×5.56

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RADIATION SHIELDING FOR ROBOTS AND DRONES

Radiation Shielding (rad)	Mass	Price
200	×1	×1
300	×1.1	×1.1
400	×1.1	×1.2
500	×1.2	×1.4
600	×1.2	×1.6
700	×1.4	×1.8
800	×1.5	×2

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CONFIGURATION

Configuration	Price	hull
Open Frame	×0.8	×0
Shaped	×1.5	×1
Functional	×1	×1

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LIFE EXPECTANCY

TL	Life Expectancy (Years)
5	1
6	5
7	10
8	20
9	30
10	35
11	40
12	45
13	50
14	55
15	60
16	75
17	90
18	150

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CASING

Casing	Price	TL	Mass
Pseudo-biological Tissue	×1.5	12	×1.2
Biological Tissue	×4	15	×1.2

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MATERIALS

Materials	Price	Life expectancy	Mass
Cheap	×0.5	×0.4	×1.5
Quality Materials	×2.5	×3	×0.75
Normal	×1	×1	×1

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SENSORS

	TL	Mass	Price (Cr.)
Optical Sensors			
Base Pack	5	0.1	100
Infrared	6	0.1	300
Ultraviolet	7	0.1	300
Terahertz	8	0.2	1,500
Microwaves	7	0.1	1,200
Zoom	6	0.1	200
Microscope	7	0.2	400
Night-vision Equipment	7	0.1	200
Circumferential Vision	5	×6	×6
Eye Replica	12	-	5,000
Glare Shield	8	0.1	250
Acoustic Sensors			
Base Pack	5	0.1	50
Ultrasonic	7	0.1	100
Noise Filter	8	0.1	500
High-performance Sensor	8	0.1	400
Infrasonic	7	0.1	100
Sound Absorber	8	0.1	150
Smell Sensors			
Base Pack	11	0.2	1,500
High-performance Sensor	11	0.2	12,000
Gas Analysis	14	0.1	400,000
Touch Sensors			
Base Pack	10	0.01 × Mass (Chassis)	150 × Mass (Chassis)
High-performance Sensor	10	0.01 × Mass (Chassis)	200 × Mass (Chassis)
Analysis Sensor	14	0.02 × Mass (Chassis)	4000 × Mass (Chassis)
Taste			
Base Pack	10	0.3	1,750
Analysis Sensor	14	0.2	400,000
Geiger counter	5	1	375
Motion Sensor	9	1	1,500
Bioscanner	15	5	525,000
NAS	15	8	52,500
Densitometer	14	5	30,000

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COMMS

	TL	Mass	Price (Cr.)
Comms			
Vocoder	6	3	250
Speaker	5	1	150
Ultrasonic Vocoder	7	3	300
Transceiver	5	20	75
Transceiver	9	2	150
Transceiver	8	1	375
Transceiver	12	1	750
Transceiver	13	1	1,500
Laser Transceiver	9	1.5	150
Laser Transceiver	11	0.5	375
Laser Transceiver	13	-	750
Scent Generator	8	2	500
Holographic Projector	11	10	1,500
Holographic Projector	12	10	3,000
Holographic Projector	13	10	15,000
Commdot	10	-	15
Comm	6	1.5	75
Comm	8	0.1	225
Comm	10	-	750

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ADDITIONAL EQUIPMENT

Additional Equipment	TL	Mass	Price (Cr.)
Cryoberth	10	200	75,000
Medikit	8	8	1,500
Medikit	10	8	2,250
Medikit	12	8	7,500
Medikit	14	8	15,000
Spotlight, small	5	2	50
Spotlight, large	5	20	200
Smoke Discharger	7	5	150
Video Recorder	6	4	600
Video Projector	6	2	500
Holographic Recorder	11	10	1,500
Holographic Recorder	12	10	3,000
Holographic Recorder	13	10	15,000
Toolkits:			
Engineer (Specialization)	7	12	1,500
Mechanic	7	12	1,500
Forensic	7	12	1,500
Science	7	12	1,500
Survey	7	12	1,500
Cleaning	7	12	1,500
Self-destruction	7	5	5,000
Integrated Weapon	6	1	10,000
Hidden Compartment	5	variable	mass × 100
Micro-manipulators	8	0.1	4,000
Energy Coupling (non-contact)	9	1	2,000
Energy Coupling (mechanical)	5	1	200
Cockpit	5	2,000	100,000
Miscellaneous Equipment	variable	variable	variable

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LOCOMOTION

Locomotion	TL	Top speed	Mass per km/h	Price (Cr.)/kg
Legs	7	80	1.0%	100
Wheels	5	300	0.5%	50
Tracks	5	100	0.8%	50
Grav	11	800	0.5%	200
Rotor	6	600	0.6%	150
Rocket	6	2000	0.2%	250
Underwater	6	50	0.8%	70
Propeller	5	30	0,5	50

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POWER SYSTEMS

Type	TL	Min. Mass	Price (Cr.)/kg
Battery	6	1.2%	800
Fuel Cell	7	0.8%	1,250
Nuclear Fission Reactor	8	1.0%	1,000
Fusion Reactor	10	0.5%	2,000
Bio Reactor	9	1.0%	2,000
Antimatter Reactor	18	0.2%	2,500

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AUGMENTS TABLES

PHYSICAL CHARACTERISTIC AUGMENTATION

Cybernetic Characteristic Augmentation		
TL11	Characteristic +1	500,000 Cr.
TL12	Characteristic +2	1,000,000 Cr.
TL15	Characteristic +3	5,000,000 Cr.

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Biological Characteristic Augmentation		
TL12	Characteristic +1	(natural characteristic value +1) x 75,000 Cr.
TL13	Characteristic +2	(natural characteristic value +2) x 100,000 Cr.
TL15	Characteristic +3	(natural characteristic value +3) x 500,000 Cr.

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INTELLIGENCE AUGMENTATION

Cybernetic Intelligence Augmentation		
TL12	Intelligence +1	500,000 Cr.
TL14	Intelligence +2	1,000,000 Cr.
TL16	Intelligence +3	5,000,000 Cr.

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Biological Intelligence Augmentation		
TL13	max. Intelligence +1	(natural characteristic value +1) x 75,000 Cr.
TL15	max. Intelligence +2	(natural characteristic value +2) x 100,000 Cr.
TL17	max. Intelligence +3	(natural characteristic value +3) x 500,000 Cr.

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SKILL AUGMENTATION

Cybernetic Skill Augmentation

TL12	max. 1 skill +1, max. skill value 2	50,000 Cr. per skill
TL13	max. 2 skills +1, max. skill value 3	50,000 Cr. per skill
TL14	max. 3 skills +1, max. skill value 4	50,000 Cr. per skill
TL15	max. 4 skills +1, max. skill value 5	50,000 Cr. per skill
TL16	max. 5 skills +1, max. skill value 6	50,000 Cr. per skill

Biological Skill Augmentation

max. 1 skill +1, max. skill value 2	75,000 Cr. per skill
max. 2 skills +1, max. skill value 3	75,000 Cr. per skill
max. 3 skills +1, max. skill value 4	75,000 Cr. per skill
max. 4 skills +1, max. skill value 5	75,000 Cr. per skill
max. 5 skills +1, max. skill value 6	75,000 Cr. per skill

Neurostimulator Network

TL10	Mono-functional Neurostimulator Network	(Str+Dex+End) x 3,000 Cr.
TL13	Multifunctional Neurostimulator Network	(Str+Dex+End x 10,000 Cr.
TL10	Reaction Improvement (Initiative +1)	50,000 Cr.
TL11	Coordination Improvement (+1)	150,000 Cr.
TL12	Reaction Improvement (Initiative +1, 1 add. reaction	100,000 Cr.
TL13	Reaction Improvement (Initiative +2, 1 add. reaction)	150,000 Cr.
TL14	Coordination Improvement (+2)	300,000 Cr.
TL15	Experience Implant Interface	(rating) x 30,000 Cr.
TL15	Experience Implant (Expert 1)	10,000 Cr.
TL15	Experience Implant (Expert 2)	100,000 Cr.
TL15	Experience Implant (Expert 3)	1,000,000 Cr.
TL16	Reaction Improvement (Initiative +2, 2 add. Reactions)	200,000 Cr.

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COMMUNICATION IMPLANTS

Neural Comm

TL10	Audio only	1,000 Cr.
TL12	Audio and Visual, Computer/0	5,000 Cr.
TL14	Several Data Types, Computer/1	20,000 Cr.

Neural Radio Transceiver

TL12	Distant (5 km)	2,000 Cr.
TL13	Computer/0, Very distant (50 km)	7,500 Cr.
TL15	Computer/0, Regional (500 km)	20,000 Cr.
TL16	Computer/1, Continental (5.000 km)	50,000 Cr.

Neural Laser Transceiver

TL13	Regional (500 km)	2,000 Cr.
TL15	Computer/0, Regional (500 km)	7,500 Cr.
TL17	Computer/1, Regional (500 km)	20,000 Cr.

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SKIN AUGMENTS

Pseudo-biological Artificial Skin

TL8	Hand/foot	350 Cr.
TL8	Arm	1,500 Cr.
TL8	Leg	2,000 Cr.

Biological Artificial Skin

TL10	Hand/foot	1,000 Cr.
TL10	Head	3,000 Cr.
TL10	Arm	4,500 Cr.
TL10	Leg	6,000 Cr.
TL10	Torso	12,000 Cr.
TL12	Cosmetic Modifications	(price) x 1.5

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Subdermal Armor

TL10	Armor 1	50,000 Cr.
TL11	Armor 2	75,000 Cr.
TL11	Armor 3	100,000 Cr.
TL10	Armor Plates	25,000 Cr.
TL12	Isolator Layer	50,000 Cr.
TL14	Laser Absorption Layer	50,000 Cr.

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SKULL IMPLANTS

Bioscanner

TL15	Bioscanner (-4 DM, under 1 meter)	700,000 Cr.
TL16	Bioscanner (-2 DM, 2 meters)	500,000 Cr.
TL17	Bioscanner (-1 DM, 5 meters)	350,000 Cr.
TL18	Bioscanner (+0 DM, 10 meters)	250,000 Cr.

Biological Eye Replacement

TL12	Biological Eye Replacement (max. 1 option)	30,000 Cr. per eye
TL13	Biological Eye Replacement (max. 2 options)	20,000 Cr. per eye
TL14	Biological Eye Replacement (max. 3 options)	10,000 Cr. per eye
TL15	Biological Eye Replacement (max. 4 options)	10,000 Cr. per eye
TL12	Cosmetic Modification	500 Cr. (per modification and eye)
TL12	Special Retina Pattern	50,000+ Cr. per eye
TL13	Nictitating Membrane	250 Cr. per eye
TL13	Light Amplification	2,500 Cr. per eye
TL14	Infrared Vision	5,000 Cr. per eye
TL14	Telescope Vision	10,000 Cr. per eye
TL15	Reaction Improvement	25,000 Cr. per eye

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Biological Nose Replacement

TL12	Biological Nose Replacement	10,000 Cr.
TL13	Biological Nose Replacement	5,000 Cr.
TL14	Improved Sense of Smell	10,000 Cr.
TL15	Biological Nose Replacement	2,000 Cr.
TL15	Improved Sense of Smell	5,000 Cr.

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Biological Ear Implant

TL12	Biological Ear Implant (no option)	15,000 Cr. per ear
TL13	Biological Ear Implant (max. 1 option)	8,000 Cr. per ear
TL14	Biological Ear Implant (Sound Absorber, 1 option)	10,000 Cr. per ear
TL15	Biological Ear Implant (Sound Absorber, 2 options)	8,000 Cr. per ear
TL16	Biological Ear Implant (Sound Absorber, 3 options)	5,000 Cr. per ear
TL13	Sound Absorber	500 Cr. per ear
TL13	Infrasonic Hearing	5,000 Cr. per ear
TL13	Ultrasonic Hearing	5,000 Cr. per ear
TL13	High-performance Hearing	10,000 Cr. per ear
TL15	Infrasonic Hearing	2,500 Cr. per ear
TL15	Ultrasonic Hearing	2,500 Cr. per ear
TL15	High-performance Hearing	5,000 Cr. per ear

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Cybernetic Eye

TL10	Cybernetic Eye (max. 1 option)	15,000 Cr. per eye
TL11	Cybernetic Eye (max. 2 options)	10,000 Cr. per eye
TL12	Cybernetic Eye(Eye Protection, 2 options)	5,000 Cr. per eye
TL13	Cybernetic Eye(Eye Protection, 3 options)	5,000 Cr. per eye
TL14	Cybernetic Eye(Eye Protection, Data Display, 4 options)	5,000 Cr. per eye
TL15	Cybernetic Eye(like TL14, 5 options)	5,000 Cr. per eye
TL16	Cybernetic Eye(like TL14, 6 options)	5,000 Cr. per eye
TL10	Eye Protection	100 Cr. per eye
TL10	Laser Emitter	100 Cr. per eye
TL10	Telescope Sight	2,500 Cr. per eye
TL10	Light Amplification	2,500 Cr. per eye
TL10	Video Recorder	1,000 Cr. per eye
TL11	Infrared Sight	2,500 Cr. per eye
TL11	Microscopic Sight	2,500 Cr. per eye
TL11	Target System Connection (+1)	2,500 Cr. (only one eye)
TL11	Motion Sensor	2,500 Cr. per eye
TL12	Cosmetic Modification	250 Cr. (per mod/eye)
TL12	Detachable Eye	(price) x 2
TL12	Adaptive Retina	25,000 Cr. per eye
TL12	Retina Pattern for Adaptive Retina	50,000+ Cr. (per pattern)
TL13	Motion Sensor	5,000 Cr. per eye
TL13	Data Display	1,000 Cr. per eye
TL13	Adaptive Cosmetic Modification	2,500 Cr. per eye
TL13	Target System Connection (+2)	5,000 Cr. per eye
TL14	EM Sensor	5,000 Cr. per eye
TL15	Holographic Recorder (two eyes required)	10,000 Cr. per eye
TL15	Holographic Projector (two eyes required)	10,000 Cr. per eye
TL15	Radiation Imaging System	15,000 Cr. per eye

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Cybernetic Tusks

TL10	Cybernetic Tusks (1d6)	2,000 Cr.
TL11	Cybernetic Tusks with Jawbone Strengthening, small (1d6+1)	5,000 Cr.
TL12	Cybernetic Tusks with Jawbone Strengthening, large (1d6+2)	10,000 Cr.
TL13	Cybernetic Tusks with Jawbone Strengthening, retractable (1d6+1)	20,000 Cr.

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Cybernetic Nose

TL11	Cybernetic Nose (no option)	15,000 Cr.
TL12	Cybernetic Nose (no option)	10,000 Cr.
TL13	Cybernetic Nose (1 option)	10,000 Cr.
TL14	Cybernetic Nose (2 options)	10,000 Cr.
TL15	Cybernetic Nose (3 options)	5,000 Cr.
TL16	Cybernetic Nose (4 options)	5,000 Cr.
TL8	Pseudo-biological Nose Skin	50 Cr.
TL10	Biological Nose Skin	100 Cr.
TL13	High-performance Sensor	15,000 Cr.
TL14	Odor Filter	10,000 Cr.
TL15	Gas Analysis Sensor	100,000 Cr.
TL15	Bioscanner (-4 DM, under 1 meter)	700,000 Cr.
TL16	Bioscanner (-2 DM, 2 meters)	500,000 Cr.

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Cybernetic Ear Implant

TL10	Cybernetic Ear Implant (max. 1 option)	10,000 Cr. per ear
TL11	Cybernetic Ear Implant (Sound Absorber, 1 option)	5,000 Cr. per ear
TL12	Cybernetic Ear Implant (Sound Absorber, 2 options)	5,000 Cr. per ear
TL13	Cybernetic Ear Implant (Sound Absorber, 3 options)	5,000 Cr. per ear
TL14	Cybernetic Ear Implant (Sound Absorber, 4 options)	5,000 Cr. per ear
TL15	Cybernetic Ear Implant (Sound Absorber, 5 options)	5,000 Cr. per ear
TL8	Pseudo-biological Earlap	50 Cr. per ear
TL10	Biological Earlap	100 Cr. per ear
TL10	Sound Absorber	500 Cr. per ear
TL10	Audio Recorder	500 Cr. per ear
TL11	Infrasonic Hearing	5,000 Cr. per ear
TL11	Ultrasonic Hearing	5,000 Cr. per ear
TL12	High-performance Hearing	10,000 Cr. per ear
TL12	Sound Absorber	15,000 Cr. per ear
TL13	Mechanostatic Scanner	10,000 Cr. per ear

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Wafer Jack

TL12	Wafer Jack (Computer/2, 1 option)	10,000 Cr.
TL13	Wafer Jack (Computer/4, 2 options)	15,000 Cr.
TL14	Wafer Jack (Computer/4, 3 options)	20,000 Cr.
TL15	Wafer Jack (Computer/5, 4 options)	25,000 Cr.
TL16	Wafer Jack (Computer/6, 4 options)	30,000 Cr.
TL12	Drone Control	5,000 Cr.
TL12	Hacker Jack	(price) x 2
TL12	Navigation System	1,500 Cr.
TL12	Neural Comm (Audio, Data)	2,500 Cr.
TL12	Tactical Communication Network Interface	500 Cr.
TL13	Neural Comm (Audio, Visual, Data)	5,000 Cr.
TL13	Wireless Interface	2,500 Cr.
TL13	Linkbox (0.5 kg)	500 Cr.
TL15	Neural Comm (several data types, Computer +1)	20,000 Cr.

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BODY IMPLANTS

Auto Injector

TL9	Auto Injector (supply: 2)	500 Cr.
TL10	Auto Injector (supply: 3)	750 Cr.
TL11	Auto Injector (supply: 4)	1,000 Cr.
TL12	Auto Injector (Wafer Jack Interface, supply: 4)	1,500 Cr.
TL14	Auto Injector (Wafer Jack Interface, Medikit Link, supply: 6)	2,500 Cr.
TL8	Panacea Drugs	200 Cr. per dose
TL8	Anti-rad Drugs	1,000 Cr. per dose
TL8	Psionic Drug (standard)	1,000 Cr. per dose
TL8	Stim Drug	50 Cr. per dose
TL9	Clotting Aid	200 Cr. per bottle
TL9	Nervous Response Dampeners	100 Cr. per dose
TL9	Psionic Drug (double)	4,000 Cr. per dose
TL10	Adrenaliser	150 Cr. per dose
TL8	Combat Drug	1,000 Cr. per dose
TL10	Meta-Performance Enhancer	600 Cr. per dose
TL10	Psionic Drug (special)	10,000 Cr. per dose
TL10	Metabolism Accelerator	500 Cr. per dose
TL10	Fast Drug	200 Cr. per dose
TL11	Medicinal Slow	500 Cr. per dose
TL15	Anagathics	2,000 Cr. per dose

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Lung Implants

TL10	Air Compressor	6,000 Cr.
TL10	Air Filter	6,000 Cr.
TL11	Cybernetic Artificial Gills	12,000 Cr.
TL12	Filter-compressor Implant	15,000 Cr.
TL13	Biological Artificial Gills	25,000 Cr.

Medikit Implant

TL14	Medikit Implant (Medic 1, supply: 4)	20,000 Cr.
TL15	Medikit Implant (Medic 2, supply: 5)	30,000 Cr.
TL16	Medikit Implant (Medic 3, supply: 6)	40,000 Cr.
TL14	Drugs (various)	Price depends on drug
TL14	Medikit Application	100 Cr.
TL14	Trauma Pack	7,500 Cr.

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LIMB AUGMENTS

Biological Arm/Leg

TL12	Biological Arm/Leg	(characteristics value) x 2,500 Cr.
TL13	Biological Arm/Leg (max. +1)	(characteristics value) x 2,500 Cr.
TL14	Biological Arm/Leg (max. +2)	(characteristics value) x 2,500 Cr.
TL15	Biological Arm/Leg (max. +3)	(characteristics value) x 2,500 Cr.
TL12	Webs	5,000 Cr.
TL13	Simple Cosmetic Modifications (color, pattern)	5,000 Cr.
TL13	Improved Strength	10,000 Cr. per point
TL13	Improved Dexterity	10,000 Cr. per point
TL14	Complex Cosmetic Modification (shape)	10,000 Cr.

SHI5 Forearm Adapter

TL15	SHI5 Forearm Adapter	50,000 Cr.

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Cybernetic Arm

TL9	Cybernetic Arm (no option)	(characteristics) x 1,500 Cr.
TL10	Cybernetic Arm (1 option)	(characteristics) x 2,500 Cr.
TL11	Improved Cybernetic Arm (max. +1, 1 option)	(characteristics) x 5,000 Cr.
TL12	Cybernetic Arm (2 options)	(characteristics) x 5,000 Cr.
TL13	Improved Cybernetic Arm (max. +2, 2 options)	(characteristics) x 5,000 Cr.
TL14	Cybernetic Arm (3 options)	(characteristics) x 5,000 Cr.
TL15	Improved Cybernetic Arm (max. +3, 3 options)	(characteristics) x 5,000 Cr.
TL16	Cybernetic Arm (max. +3, 4 options)	(characteristics) x 5,000 Cr.
TL10	Rescue Transponder (200 km)	200 Cr.
TL10	Webs	300 Cr. per arm (hand)
TL10	Sensor (Geiger counter)	250 Cr.
TL10	Transport Container	500 Cr.
TL10	Additional armor	5,000 Cr. per point
TL11	Weapon (various)	variable
TL11	Tools (various)	1,000 Cr.
TL12	Sensor (electromagnetic probe)	1,000 Cr.
TL13	Rescue Transponder (1,000 km)	750 Cr.
TL15	SHI5 Forearm Adapter	30,000 Cr. (without SHI5)
	Melee Weapons	
TL10	Claws (1d6+1)	500 Cr.
TL10	Dagger (1d6+2)	500 Cr.
TL10	Blade (2d6)	500 Cr.
TL10	Stunstick (1d6)	1,000 Cr.
	Slug Throwers	
TL10	Automatic Pistol (Mag. 40)	600 Cr. / 30 Cr.
TL10	Snub Pistol (Mag. 20)	450 Cr. / 20 Cr.
TL10	Body Pistol (Mag. 20)	1,500 Cr. / 60 Cr.
TL10	Stunner (2d6, Mag. 20)	1,500 Cr. / 200 Cr.
TL12	Stunner (2d6+3, Mag. 20)	2,200 Cr. / 200 Cr.
TL13	Laser Pistol (3d6, Mag. 20)	6,000 Cr. / 500 Cr.
TL14	Stunner (3d6, Mag. 20)	3,000 Cr. / 200 Cr.
TL14	Gauss Pistol (Mag. 40)	1,500 Cr. / 20 Cr.
TL15	Laser Pistol (3d6+3, Mag. 20)	8,000 Cr. / 500 Cr.

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Cybernetic Leg		
TL9	Cybernetic Leg (no option)	(Attribute) x 1,500 Cr.
TL10	Cybernetic Leg (1 option)	(Attribute) x 2,500 Cr.
TL11	Improved Cybernetic Leg (max. +1, 1 option)	(Attribute) x 5,000 Cr.
TL12	Cybernetic Leg (2 options)	(Attribute) x 5,000 Cr.
TL13	Improved Cybernetic Leg (max. +2, 2 options)	(Attribute) x 5,000 Cr.
TL14	Cybernetic Leg (3 options)	(Attribute) x 5,000 Cr.
TL15	Improved Cybernetic Leg (max. +3, 3 options)	(Attribute) x 5,000 Cr.
TL16	Cybernetic Leg (max. +3, 4 options)	(Attribute) x 5,000 Cr.
TL10	Climbing Aid	200 Cr. per leg (foot)
TL10	Magnetic Grapples	200 Cr. per leg (foot)
TL10	Rescue Transponder (200 km)	200 Cr.
TL10	Webs	300 Cr. per leg (foot)
TL10	Additional Armor	5,000 Cr. per point
TL11	Hidden Weapon Mount	500 Cr.
TL12	Automatic Reloading Mechanism	1,000 Cr.
TL12	Hypervelocity Prosthesis	(price) x 1.5
TL12	Jump Booster	(price) x 1.5
TL13	Rescue Transponder (1.000 km)	750 Cr.

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ROBOTS

Someone yelled „That armor's too strong! Our weapons won't dent it!"

Fea peeked through a hole in the wall. The massive war robot tore down the remaining pieces of that last block of buildings and was closing in on their position. She gave her comrades an inquisitive look before replying: "We don't have to bring it down, just stall it long enough for our transports to escape."

All eyes were on her. Everyone knew what that meant. If she couldn't think of something quickly that fight will not go too many rounds.

Robots and computers: no science fiction is complete without them. Be they small nanites or giant machines, driven by Artificial Intelligence or just dumb automatons. This book gives you guidelines to build robots and computers, new careers, benefits and the possibility to play a robot as character. It also contains dozens of sample robots ready to deploy.

This book is a must-have for every Traveller campaign.

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