

CHAPTER 34 RESEARCH

REVISED

Technological research has two components, the Research Areas and Technologies. Research Areas govern which Technologies advance. The Research Areas are Energy Systems, Defensive Systems, Electronics, Biotech, Construction, Communications, and Weapons.

- **Energy Systems** – Propulsion and energy generation.
- **Defense** – Armor and shields.
- **Electronics** – Sensors, scanners, computers, ECM/ECCM, and stealth.
- **Biotech** – Population and health.
- **Construction** – Hulls, industry, and ground combat.
- **Weapons** – Weapon systems.
- **Communications** – Communications.

Research points are assigned to one of the seven areas of research. Points do not have to be all assigned to one area.

Each point assigned to a Research Area applies to all available Technologies in that area. Each technology starts at level zero which grants some basic technologies. Advanced techs follow at levels 1+ and must be advanced prior to be available. Each tech increases at a rate of 1 point = 1%. Once the percentage reaches 100%, a roll is made.

d100	Result
01-05	Cost Overruns
06-95	Tech available
96-00	Breakthrough

Table 34-1 Research Breakthrough

Cost Overruns: The project requires another 2d10% worth of Research Points.

Tech Available: The technology is available for immediate use.

Breakthrough: The project has generated an additional 2d10% worth of RP.

Research Areas & Technologies

Some levels have no technologies associated with them. In these cases, the total amount of RP is required as listed, but there is no roll required. Normally, RP are spread equally between all

Technologies at a given level. One Technology may be prioritized over the others. The prioritized Technology gains a 50% bonus to RP gained, while the others at that level suffer a 50% reduction in RP gained.

*A race is currently at Energy Systems level 4. They decide to focus on **Improved Engine Class**. They are allocating 30 RP to Energy Systems. Normally each tech would gain 30%. With their current focus, **Improved Engine Class** gains 45% this turn while the other technologies at that level gain 15%.*

Energy Systems

Technologies in this area deal with energy generation, storage, propulsion, and related modifications.

Level	Technology	RP Required
0	Primitive Fission	n/a
0	Nuclear Torch Engines	n/a
0	Basic Engine Class	n/a
0	Prototype Inertial Compensators	n/a
0	FTL Class I	n/a
0	Warp Anchor	n/a
0	Mine Reactors	n/a
1	Basic Fission	100
1	Power Efficiency I	100
1	Thrust Efficiency I	100
2	Standard Fission	100
2	Standard Engine Class	100
3	Improved Fission	120
3	Nuclear Pulse Engine	100
3	FTL Class II	100
4	Enhanced Fission	140
4	Primitive Fusion	100
4	Improved Engine Class	120
4	Power Efficiency II	100
4	Thrust Efficiency II	100
4	Standard Inertial Compensators	100
5	Advanced Fission	160
5	Basic Fusion	100
5	High Energy Capacitance Rings I	100
6	Standard Fusion	100
6	Ion Pulse Engine	100

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Level	Technology	RP Required
6	Enhanced Engine Class	120
6	FTL Class III	100
7	Improved Fusion	120
7	Power Efficiency III	100
7	Thrust Efficiency III	100
8	Enhanced Fusion	140
8	Primitive Antimatter	100
8	Advanced Engine Class	160
8	Enhanced Inertial Compensators	100
9	Advanced Fusion	160
9	Basic Antimatter	100
9	Grav Pulse Engine	100
9	FTL Class IV	100
10	Standard Antimatter	100
10	Power Efficiency IV	100
10	Thrust Efficiency IV	100
10	HEC Rings II	100
11	Improved Antimatter	220
11	HEC Rings Increased Charge Rate Mod	200
12	Enhanced Antimatter	240
12	Primitive Plasma Core	200
12	Plasma Torch Engine	200
12	FTL Class V	200
12	Advanced Inertial Compensators	200
13	Advanced Antimatter	260
13	Basic Plasma Core	200
13	Plasma Torch Engine	200
13	FTL Class V	200
13	Advanced Inertial Compensators	200
14	Standard Plasma Core	200
15	Improved Plasma Core	220
15	Plasma Torch Engine	200
15	HEC Rings III	200
15	Extra Drone Fuel Cells	200
16	Enhanced Plasma Core	240
16	Primitive Warp Tap	200
16	Acceleration Rings	220

Level	Technology	RP Required
16	HEC Rings Increased Capacity Mod	200
17	Advanced Plasma Core	260
17	Basic Warp Tap	200
18	Standard Warp Tap	200
18	Fusion Torch Engine	200
19	Improved Warp Tap	220
19	Jump Rings	220
20	Enhanced Warp Tap	240
20	Primitive Zero-Point Core	200
20	HEC Rings IV	200
20	Drone Speed Boost	200
21	Advanced Warp Tap	360
21	Basic Zero-Point Core	300
21	Fusion Pulse Engine	300
21	HEC Rings Metered Output	300
22	Standard Zero-Point Core	300
22	Jump Gates	360
23	Improved Zero-Point Core	320
24	Enhanced Zero-Point Core	340
24	Antimatter Torch Engine	300
25	Advanced Zero-Point Core	360
25	HEC Rings V	300
26	Stargates	380
27	Antimatter Pulse Engine	300

Defensive Systems

Defensive systems comprise armor and shields, along with related technologies and modifications.

Level	Technology	RP Required
0	Alpha Armor	n/a
1	Beta Armor	100
1	Power Plant Armor I	100
2	Gamma Armor	100
2	Alpha Shields	100
3	Delta Armor	100
3	Power Plant Armor II	100
3	Shield Penetration Mod	100

Level	Technology	RP Required
4	Epsilon Armor	100
4	Beta Shields	100
5	Zeta Armor	100
5	Power Plant Armor III	100
5	Drone Armor	100
6	Eta Armor	100
6	Gamma Shields	100
6	Shield Regen I	100
7	Theta Armor	100
7	Power Plant Armor IV	100
7	Alpha Reactive Armor	120
8	Beta Reactive Armor	120
8	Delta Shields	100
9	Gamma Reactive Armor	120
9	Power Plant Armor V	100
9	Shield Regen II	100
10	Delta Reactive Armor	120
10	Epsilon Shields	100
11	Epsilon Reactive Armor	220
11	Power Plant Armor VI	200
12	Zeta Reactive Armor	220
12	Zeta Shields	200
12	Shield Regen III	200
13	Eta Reactive Armor	220
13	Power Plant Armor VII	200
14	Theta Reactive Armor	220
14	Alpha Organic Armor	240
14	Eta Shields	200
15	Beta Organic Armor	240
15	Power Plant Armor VIII	200
15	Shield Regen IV	200
16	Gamma Organic Armor	240
16	Theta Shields	200
17	Delta Organic Armor	240
17	Power Plant Armor IX	200
18	Epsilon Organic Armor	240
18	Iota Shields	200
18	Shield Regen V	200

Level	Technology	RP Required
19	Zeta Organic Armor	240
19	Power Plant Armor X	200
19	EM Plating Armor Mod	200
20	Eta Organic Armor	240
20	Kappa Shields	200
20	EM Bands Shield Mod	200
21	Theta Organic Armor	340
21	Shield Regen VI	300
22	Lambda Shields	300
22	Thermal Plating Armor Mod	300
23	Thermal Bands Shield Mod	300
24	Mu Shields	300
24	Shield Regen VII	300
25	Kinetic Plating Armor Mod	300
26	Nu Shields	300
26	Kinetic Bands Shield Mod	300
27	Shield Regen VIII	300
28	Xi Shields	300
28	Armor Hardening Armor Mod	300
29	Shield Hardening Shield Mod	300
30	Omicron Shields	300
30	Shield Regen IX	300
31	None	400
32	Pi Shields	400
32	Shield Reflection Mod	400
32	Armor Reflection Armor Mod	400
33	Shield Regen X	400
34	Rho Shields	400
35	Polarized Armor Mod	400
36	Sigma Shields	400
37	None	400
38	Tau Shields	400
39	None	400
40	Upsilon Shields	400
41	None	500
42	Phi Shields	500
43	None	500
44	Psi Shields	500

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Level	Technology	RP Required
45	None	500
46	Omega Shields	500

Electronics

Electronic systems are sensors, ECM/ECCM, stealth systems, science instruments, and related modifications.

Level	Technology	RP Required
0	Base Sensor Class 1	n/a
0	Channel Class 1	n/a
0	Signature Class 1	n/a
0	Resolution Class 1	n/a
0	Ripple Detectors	n/a
0	1 st Generation Science Instruments	n/a
1	Base Sensor Class 2	100
1	EWD	100
2	Channel Class 2	100
2	1 st Generation ECM	100
2	1 st Generation ECCM	100
3	Signature Class 2	100
3	1 st Generation Stealth	140
4	Resolution Class 2	100
5	Base Sensor Class 3	100
5	1 st Generation Long-Range Scanner	100
5	2 nd Generation Science Instruments	100
5	Drone Sensors	100
6	Channel Class 3	100
6	2 nd Generation ECM	100
6	2 nd Generation ECCM	100
7	Signature Class 3	100
7	2 nd Generation Stealth	140
8	Resolution Class 3	100
8	Extra Range EWD Mod	100
9	Base Sensor Class 4	100
9	2 nd Generation LRS	100
9	3 rd Generation Science Instruments	100
10	Channel Class 4	100

Level	Technology	RP Required
10	3 rd Generation ECM	100
10	3 rd Generation ECCM	100
11	Signature Class 4	200
11	3 rd Generation Stealth	240
11	Enhanced Resolution LRS Mod	200
12	Resolution Class 4	200
12	1 st Generation Command Net	260
12	Basic Sensor Boost Sensor Mod	200
13	Base Sensor Class 5	200
13	3 rd Generation LRS	200
13	4 th Generation Science Instruments	200
14	Channel Class 5	200
14	4 th Generation ECM	200
14	4 th Generation ECCM	200
14	Basic ECM Boost ECM Mod	200
15	Signature Class 5	200
15	4 th Generation Stealth	240
15	Increased Analysis Capacity mod	200
16	Resolution Class 5	200
16	2 nd Generation Command Net	260
16	Wide-Band Sensors mod	200
17	Base Sensor Class 6	200
17	4 th Generation LRS	200
17	5 th Generation Science Instruments	200
18	Channel Class 6	200
18	5 th Generation ECM	200
18	5 th Generation ECCM	200
18	Wide-Band ECM mod	200
19	Signature Class 6	200
19	5 th Generation Stealth	240
20	Resolution Class 6	200
20	Increased Radius Command Net mod	200
20	Improved Resolution Sensor mod	200
21	Base Sensor Class 7	300
21	5 th Generation LRS	300

Level	Technology	RP Required
22	Channel Class 7	300
22	6 th Generation ECM	300
22	6 th Generation ECCM	300
22	Improved Resolution ECM Mod	300
23	Signature Class 7	300
23	6 th Generation Stealth	340
24	Resolution Class 7	300
24	Enhanced Channels Command Net mod	300
25	Base Sensor Class 8	300
25	Drone ECM	300
26	Channel Class 8	300
26	7 th Generation ECM	300
26	7 th Generation ECCM	300
27	Signature Class 8	300
27	7 th Generation Stealth	340
28	Resolution Class 8	300
29	None	300
30	8 th Generation ECM	300
30	8 th Generation ECCM	400
31	8 th Generation Stealth	460
32	None	400
33	9 th Generation ECM	400
33	9 th Generation ECCM	400
34	9 th Generation Stealth	460

Biotech

Biotech technologies are population, planetary environments, and longevity technologies.

Level	Technology	RP Required
0	Cryogenics I	n/a
1	Anagathics I	100
2	Organic Improvement I	100
2	Cryogenics II	100
3	Population Improvement I	100
3	Anagathics II	100
4	Cryogenics III	100
5	Organic Improvement II	100
5	Anagathics III	100

Level	Technology	RP Required
6	Cryogenics IV	100
7	Population Improvement II	100
7	Anagathics IV	100
8	Cryogenics V	100
8	Organic Improvement III	100
9	Anagathics V	100
10	None	100
11	Organic Improvement IV	200
11	Population Improvement III	200
11	Anagathics VI	200
12	None	200
13	Anagathics VII	200
14	Organic Improvement V	200
15	Population Improvement IV	200
15	Anagathics VIII	200
16	None	200
17	Anagathics IX	200
18	None	200
19	Population Improvement V	200
19	Anagathics X	200

Construction

Construction technologies deal with ground troops, hull materials and cost, small craft, and support technologies.

Level	Technology	RP Required
0	Hull Cost 10 MCr/ton	n/a
0	Hull Signature Tons/20	n/a
0	Max Thrust = 5	n/a
0	Small Craft HTK +1	n/a
0	Shuttlebays	n/a
0	Shuttles	n/a
0	Barracks	n/a
0	Magazine Capacity 1	n/a
0	Troop Types Available (GAR, RCN, INF, AST, HVA, ENG, HQ, MED, SEC, MAR, SCR)	n/a
1	Troop DV + 1	100
1	Troop ATK + 1	100

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Level	Technology	RP Required
1	Mineral Improvement I	120
2	Hull Cost 9 MCr/ton	100
2	Hull Signature Tons/25	100
2	Max Thrust = 6	100
2	Small Craft HTK + 1	100
2	Cargo Shuttles	100
3	Decoy HTK 10	100
3	Troop Types Available (AIR, ARM)	100
4	Hull Cost 8 MCr/ton	100
4	Hull Signature Tons/30	100
4	Max Thrust = 9	100
4	Small Craft HTK + 1	100
4	Pinnaces	100
5	Troop DV + 2	100
5	Decoy HTK 13	100
5	Industrial Index x2	140
5	Magazine Capacity 2	100
6	Hull Cost 7 MCr/ton	100
6	Hull Signature Tons/35	100
6	Max Thrust = 10	100
6	Small Craft HTK + 1	100
6	Fighter Hangars	100
6	Assault Shuttles	100
7	Decoy HTK 15	100
7	Troop ATK + 1	100
7	Light Fighters	100
7	Mineral Improvement II	120
8	Hull Cost 6 MCr/ton	100
8	Hull Signature Tons/40	100
8	Max Thrust = 13	100
8	Small Craft HTK + 1	100
8	Drop Pods	100
9	Troop DV + 2	100
9	Decoy HTK 18	100
10	Hull Cost 5 MCr/ton	100
10	Hull Signature Tons/45	100
10	Max Thrust = 14	100

Level	Technology	RP Required
10	Small Craft HTK + 1	100
10	Industrial Index x3	140
10	Magazine Capacity 3	100
11	Decoy HTK 20	200
11	Docking Bays	200
12	Hull Cost 4 MCr/ton	200
12	Hull Signature Tons/50	200
12	Max Thrust = 17	200
12	Small Craft HTK + 1	200
13	Decoy HTK 23	200
13	Troop DV + 1	200
13	Mineral Improvement III	220
14	Hull Cost 3 MCr/ton	200
14	Hull Signature Tons/55	200
14	Max Thrust = 18	200
14	Small Craft HTK + 1	200
14	Medium Fighters	200
15	Decoy HTK 25	200
15	Industrial Index x4	240
15	Magazine Capacity 4	200
16	Hull Cost 2 MCr/ton	200
16	Hull Signature Tons/60	200
16	Max Thrust = 21	200
16	Small Craft HTK + 1	200
17	Decoy HTK 28	200
17	Troop DV + 1	200
18	Hull Cost 1 MCr/ton	200
18	Hull Signature Tons/65	200
18	Max Thrust = 22	200
18	Small Craft HTK +1	200
19	Decoy HTK 30	200
19	Mineral Improvement IV	220
20	Industrial Index x5	240
20	Tractor Beams	260
20	Magazine Capacity 5	200
21	Decoy HTK 33	300
21	Heavy Fighters	300
22	None	300

Level	Technology	RP Required
23	None	300
24	None	300
25	Industrial Index x6	340
25	Mineral Improvement V	320
26	None	300
27	None	300
28	Assault Fighters	300

Weapons

This research area covers all the technologies that go boom, or make other things go boom, and any related modifications.

Level	Technology	RP Required
0	Laser Aperture (5cm to 25cm)	n/a
0	Class I Laser RoF	n/a
0	Far IR Laser Frequency	n/a
0	Fission Warheads	n/a
0	Basic Missile Frames	n/a
0	Missile Reload Rate 1	n/a
0	Mine Cost = 0.4 MCr/CP	n/a
1	Troop ATK + 2	100
1	Missile Decoys	100
1	Mass Cannon Caliber (1cm & 2cm)	100
1	Launch Velocity 3000 km/s	100
1	Basic Solid Slugs	100
2	Class II Laser RoF	100
2	Troop ATK + 1	100
2	Autofire Weapon Mod	120
3	Laser Aperture (30cm to 50cm)	100
3	Gauss Cannon Caliber (1cm & 2cm)	100
3	Gauss Cannon Cycle Rate 1	100
4	Class III Laser RoF	100
4	Mid-IR Laser Frequency	100
4	Fusion Warheads	100
4	Mass Cannon Caliber (3cm & 4cm)	100
4	Ultra-Dense Slugs	100

Level	Technology	RP Required
5	Kinetic Beam Aperture (5cm & 10cm)	100
5	Fire Delay 0	100
5	Standard Missile Frames	100
5	Hyper-Velocity Cannon Caliber (1cm & 2cm)	100
5	HVC Packet Size 1	100
5	Recon Drones	100
5	PD Drone Hardpoint	100
6	Laser Aperture (55cm to 75cm)	100
6	Class IV Laser RoF	100
6	Troop ATK + 1	100
6	Missile Reload Rate 2	100
6	Gauss Cannon Caliber (3cm & 4cm)	100
6	Armor-Piercing Weapon Mod	120
6	Standard Drone Hardpoint	100
6	Particle Weapon Aperture (5cm)	100
6	Particle - Electrons	100
7	Particle Bomb Aperture (10cm to 20cm)	100
7	Containment Strength 1	100
7	Mass Cannon Caliber (5cm & 6cm)	100
7	Launch Velocity 3500 km/s	100
8	Class V Laser RoF	100
8	Near IR Laser Frequency	100
8	Antimatter Warheads	100
8	Hyper-Velocity Cannon Caliber (3cm & 4cm)	100
8	HVC Packet Size 2	100
8	Explosive Slugs	100
9	Laser Aperture (80cm to 100cm)	100
9	Mine Cost = 0.2 MCr/CP	100
9	Gauss Cannon Caliber (5cm & 6cm)	100
10	Class VI Laser RoF	100
10	Kinetic Beam Aperture (15cm & 20cm)	100
10	Enhanced Missile Frames	100

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Level	Technology	RP Required
10	Mass Cannon Caliber (7cm & 8cm)	100
10	1 st Generation Miniaturization Weapon Mod	120
10	Light Attack Drone	100
10	Drone Shields	100
11	Electron Torpedo Aperture (10cm & 20cm)	200
11	Missile Reload Rate 3	200
11	Hyper-Velocity Cannon Caliber (5cm & 6cm)	200
11	HVC Packet Size 3	200
11	Turreted Drone Hardpoints	200
11	Particle Weapon Aperture (10cm)	200
12	Visible Laser Frequency	200
12	Plasma Warhead	200
12	Gauss Cannon Caliber (7cm & 8cm)	200
12	Gauss Cannon Cycle Rate 2	200
12	APDS Slugs	200
13	Proton Torpedo Aperture (20cm & 40cm)	200
13	Mass Cannon Caliber (9cm & 10cm)	200
13	Launch Velocity 4000 km/s	200
14	Particle Bomb Aperture (30cm to 40cm)	200
14	Containment Strength 2	200
14	Hyper-Velocity Cannon Caliber (7cm & 8cm)	200
14	HVC Packet Size 4	200
14	Shield Penetration Weapon Mod	220
14	Particle – Neutrino	200
15	Kinetic Beam Aperture (25cm & 30cm)	200
15	Fire Delay 1	200
15	Advanced Missile Frames	200
15	Gauss Cannon Caliber (9cm & 10cm)	200
15	Attack Drones	200
16	Near Ultraviolet Laser Frequency	200

Level	Technology	RP Required
16	Warp Warheads	200
16	Missile Reload Rate 4	200
16	Mass Cannon Caliber (11cm & 12cm)	200
16	Flechette Slugs	200
16	Particle Weapon Aperture (15cm)	200
17	Electron Torpedo Aperture (30cm & 40cm)	200
17	Hyper-Velocity Cannon Caliber (9cm & 10cm)	200
17	HVC Packet Size 5	200
18	Proton Torpedo Aperture (60cm & 80cm)	200
18	Mine Cost = 0.1 MCr/CP	200
18	Gauss Cannon Caliber (11cm & 12cm)	200
18	Extended Range Weapon Mod	220
19	Plasma Cannon Aperture (25cm & 50cm)	200
19	Troop ATK + 1	200
19	Mass Cannon Caliber (13cm & 14cm)	200
19	Launch Velocity 4500 km/s	200
19	Particle – Muon	200
20	Extreme UV Laser Frequency	200
20	Kinetic Beam Aperture (35cm & 40cm)	200
20	Gravitic Warheads	200
20	Hyper-Velocity Cannon Caliber (11cm & 12cm)	200
20	HVC Packet Size 6	200
20	Ultra-Dense APDS Slugs	200
20	Heavy Attack Drones	200
21	Particle Bomb Aperture (50cm – 60cm)	300
21	Containment Strength 3	300
21	Missile Reload Rate 5	300
21	Gauss Cannon Caliber (13cm & 14cm)	300
21	Gauss Cannon Cycle Rate 3	300
21	Particle Weapon Aperture (20cm)	300

Level	Technology	RP Required
22	Mass Cannon Caliber (15cm & 16cm)	300
22	Overloaded Weapon Mod	320
23	Electron Torpedo Aperture (50cm & 60cm)	300
23	Proton Torpedo Aperture (100cm & 120cm)	300
23	Hyper-Velocity Cannon Caliber (13cm & 14cm)	300
23	HVC Packet Size 7	300
24	Soft X-Ray Laser Frequency	300
24	Plasma Cannon Aperture (75cm & 100cm)	300
24	Gauss Cannon Caliber (15cm & 16cm)	300
24	EM Slugs	300
24	Particle – Tau	300
25	Kinetic Beam Aperture (45cm & 50cm)	300
25	Fire Delay 2	300
25	Mass Cannon Caliber (17cm & 18cm)	300
25	Launch Velocity 5000 km/s	300
25	Assault Drone	300
26	Missile Reload Rate 6	300
26	Hyper-Velocity Cannon Caliber (15cm & 16cm)	300
26	HVC Packet Size 8	300
26	2 nd Generation Weapon Miniaturization Mod	320
26	Particle Weapon Aperture (25cm)	300
27	Gauss Cannon Caliber (17cm & 18cm)	300
28	Hard X-Ray Laser Frequency	300
28	Particle Bomb Aperture (70cm to 80cm)	300
28	Containment Strength 4	300
28	Proton Torpedo Aperture (140cm & 160cm)	300
28	Mass Cannon Caliber (19cm & 20cm)	300
28	Launch Velocity 5500 km/s	300
28	Flak Slugs	300

Level	Technology	RP Required
29	Electron Torpedo Aperture (70cm & 80cm)	300
29	Plasma Cannon Aperture (125cm & 150cm)	300
29	Hyper-Velocity Cannon Caliber (17cm & 18cm)	300
29	HVC Packet Size 9	300
29	Particle – Photon	300
30	Kinetic Beam Aperture (55cm & 60cm)	300
30	Gauss Cannon Caliber (19cm & 20cm)	300
30	Gauss Cannon Cycle Rate 4	300
30	Proximity Fuse Weapon Mod	320
31	Launch Velocity 6000 km/s	400
31	Particle Weapon Aperture (30cm)	400
32	Gamma Ray Laser Frequency	400
32	Hyper-Velocity Cannon Caliber (19cm & 20cm)	400
32	Explosive Flechette Slugs	400
33	Proton Torpedo Aperture (180cm & 200cm)	400
33	Gauss Cannon Cycle Rate 5	400
34	Plasma Cannon Aperture (175cm & 200cm)	400
34	Launch Velocity 6500 km/s	400
34	High-Energy Focus Weapon Mod	420
34	Particle – Boson	400
35	Kinetic Beam Aperture (65cm & 70cm)	400
35	Fire Delay 3	400
35	Particle Bomb Aperture (90cm to 100cm)	400
35	Containment Strength 5	400
35	Electron Torpedo Aperture (90cm & 100cm)	400
35	HVC Packet Size 10	400
36	Capacitor Slugs	400
36	Particle Weapon Aperture (35cm)	400
37	Launch Velocity 8000 km/s	400

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Level	Technology	RP Required
38	Pulse Weapon Mod	420
39	Plasma Cannon Aperture (225cm & 250cm)	400
39	Particle – Gluon	400
40	Kinetic Beam Aperture (75cm & 80cm)	400
40	Launch Velocity 10000 km/s	400
41	Particle Weapon Aperture (40cm & 45cm)	500
42	3 rd Generation Weapon Miniaturization Mod	520
43	Launch Velocity 12000 km/s	500
44	Plasma Cannon Aperture (275cm & 300cm)	500
44	Particle – Baryon	500
45	Kinetic Beam Aperture (85cm & 90cm)	500
45	Fire Delay 4	500
46	Enveloping Weapon Mod	520
46	Particle Weapon Aperture (50cm)	500
47	Particle – Meson	500
48	None	500
49	Particle – Tachyon	500
50	Kinetic Beam Aperture (95cm & 100cm)	500
50	Fire Delay 5	500
50	Stealth Weapon Mod	520

Communications

These technologies deal with communications. The bonus to communications applies to all rolls after the bonus is gained. The Political Capital gain is a one-time bonus to your race's Political Capital.

Level	Technology	RP Required
0	Comm Suite	n/a
1	+1 Political Capital	100
2	+1% to Communications Roll	100
3	+2 Political Capital	100
4	+1% to Communications Roll	100
5	+3 Political Capital	100
5	Ansible – Range 2 light years	200

Level	Technology	RP Required
6	+1% to Communications Roll	100
7	+4 Political Capital	100
8	+1% to Communications Roll	100
9	+5 Political Capital	100
10	+1% to Communications Roll	100
10	Ansible – Range 4 light years	200
11	+10 Political Capital	200
12	+1% to Communications Roll	200
13	+11 Political Capital	200
14	+1% to Communications Roll	200
15	+12 Political Capital	200
15	Ansible – Range 6 light years	300
16	+1% to Communications Roll	200
17	+13 Political Capital	200
18	+1% to Communications Roll	200
19	+14 Political Capital	200
20	+1% to Communications Roll	200
20	Ansible – Range 8 light years	300
21	+20 Political Capital	300
22	+1% to Communications Roll	300
23	+21 Political Capital	300
24	+1% to Communications Roll	300
25	+22 Political Capital	300
25	Ansible – Range 10 light years	400
26	+1% to Communications Roll	300
27	+23 Political Capital	300
28	+1% to Communications Roll	300
29	+24 Political Capital	300
30	+1% to Communications Roll	300
30	Ansible – Range 12 light years	400
31	+30 Political Capital	400
32	+1% to Communications Roll	400
33	+31 Political Capital	400
34	+1% to Communications Roll	400
35	+32 Political Capital	400
35	Ansible – Range 16 light years	500
36	+1% to Communications Roll	400
37	+33 Political Capital	400

Level	Technology	RP Required
38	+1% to Communications Roll	400
39	+34 Political Capital	400
40	+1% to Communications Roll	400
40	Ansible – Range 20 light years	500

Level	Technology	RP Required
16	Shard Lance	400
16	Machine Intelligence buy off 1 negative trait	400
17	Machine Intelligence buy off 1 negative trait	400
18	Machine Intelligence buy off 1 negative trait	400

Racial Technologies

The three racial technology trees (Crystal, Psychic, and Machine Intelligence) are only available to races with the requisite advantage. The techs are grouped together, but should not be advanced together unless the race has the proper advantages.

Level	Technology	RP Required
0	Psychic Scanners	n/a
0	Crystal Hulls	n/a
0	Machine Intelligence uses Mineral Index for Population	n/a
1	Psionic Inhibitor	100
1	Crystal Armor	100
1	Machine Intelligence Reverse Engineering Bonus	100
2	None	100
3	None	100
4	None	100
5	None	100
6	Psionic Shields	200
6	Shard Projectors	200
6	Machine Intelligence Industrial Index + 1	200
7	None	200
8	None	200
9	None	200
10	None	200
11	Psibombs	300
11	Shard Bombs	300
11	Machine Intelligence +1 Crew Grade	300
12	None	300
13	None	300
14	None	300
15	None	300
16	Psychic Annihilators	400