

Rewritten for the
Anniversary Update

Scott's DISTANT WORLDS 2 Guide For New Users



Check out my YouTube channel [Scott's Space](#) for videos that complement this guide.

Introduction:

This DW2 guide is meant for new players but I think most people will find something useful here. It is not necessarily the best way to play the game - ***it is the way I like to play it.*** It is a bit research/revenue focused compared to a strong Military start. There are many other viable approaches - and on easier difficulty levels it's easy to experiment with them. I encourage you to do so.

I don't try to squeeze every advantage - so for example you could overload your space stations to have more research bays. I can't be bothered. I also don't delve too much into what weapon works best on shields v. armor and try to do all the math involved. Most weapons work fine against most targets and I find the advantage doesn't make a big enough difference for me to care *most of the time*. On the other hand, I like to carefully use the design screen to design my own ships. This gives a big advantage v. the AI. I leave a lot of things on auto because they don't interest me (or they are too tedious to worry about) such as spies. So it's a mixed bag. Feel free to skip the step-by-step section and put the difficulty lower (normal or below) and experiment on your own with your initial approach to research and building.

Finally - I worked through a year of beta testing so some of my habits are left over from when features didn't work so well. I don't use the troop or fleet templates early game (though I will cover them in some upcoming update of this document) because they weren't finished for much of the beta testing and so I'm used to the way I do things. And I still think I like more control over ships/fleets than the Templates provide for my play-style.

There is one small spoiler of a very early event, when playing *humans* as your race, in the section "First Steps" (page 16). So avoid reading that if you wish the first time you play to be a little surprised.

All that being said, I think you'll find at least some things in this guide useful. I will be updating it as mistakes/typos are inevitably found. DW2 is a great game (that will get much better with expansions as all games do) and the team that developed it (Elliot, Erik, etc.) are a small, passionate team that I really enjoyed working with. A rarity in this day and age. So I'm happy to support them with this guide. Also check out my latest video on DW2 [here](#).

Special thanks to **BTAxis** and **Omena** for their many ideas, corrections and suggestions. This guide would be a whole lot less accurate without them.

Finally, because of all of the many, many hours of work I've put into this guide, **I'm going to start charging a small fee**. If you like and decide to use this guide, I am requesting that you please pay it forward and do one random act of kindness to someone you encounter in your day. If you are feeling extra generous, please do it in memory of my son Michael who lost his battle with cancer at the age of 23 in 2018. That would mean a lot to me. Thank you!

Good hunting.

- **Scott2933** -

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See a list of Charts and Tables on the next page.

List of charts and Tables in this guide with links:

[Troop Stats](#) (costs, strength, maintenance, etc.)

[Race Assimilation Rates](#) (how easy it is to conquer and become profitable)

[Interface Guide](#) - navigating the various selection view (the small window at the bottom left of the game)

[Understanding Fleet and Ship Tactical settings](#)

[Economy Flow Chart](#) (State v. Private - see where credits come in and goes out)

[Colonization Modifiers by Race](#) (check how races will be affected by planet type)

[Planet/Moon Features](#) (size, likely resources, Quality range, etc.)

[Point Defense Systems Compared](#)

[Weapons compared](#) (tier 4, Medium sized)

[General Ship components overview](#) (Describes what all of the components are that go into the General (white) slots in the design screen)


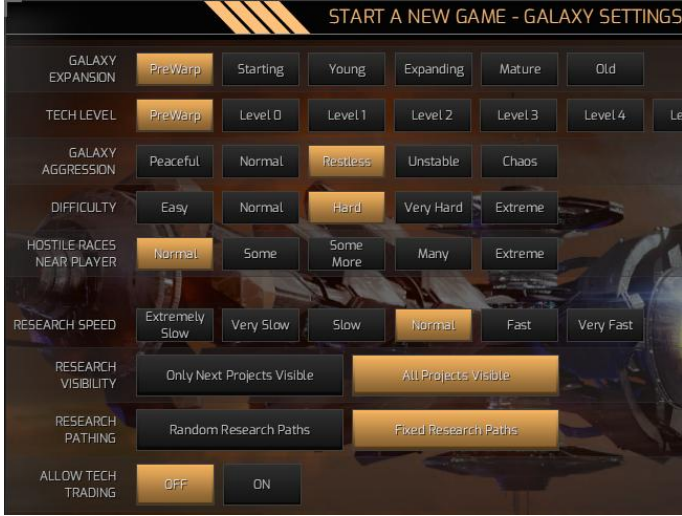
[Mid/Late Game Ship Hull Characteristics:](#) (Compare hulls of various designs for human and Ackdarian ships)



[The Math behind how Weapons Damage works](#)


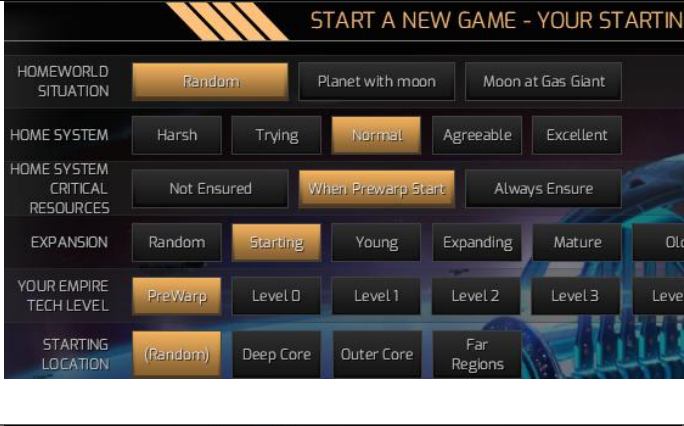


[Scanners, Sensors, and Stealth Components compared.](#)

[Tracking and Countermeasures \(ECM\) Sources](#)

Setting up a new game:

<p>Galaxy Shape:</p> <p>Stars:</p> <p>Nebula Density:</p> <p>Galaxy Size</p>	<p>Don't really care. The default spiral is fine. Clusters can be fun too.</p> <p>700 is small/manageable and it's the first size that allows 6 x 6 sectors (4 x 4 is too cramped). Game can get slow late game so I don't love larger number of stars. I want a game I have a chance of finishing but others love big galaxies.</p> <p>I like Nebulae. They make nice "space terrain" to protect your empire so you can't easily be attacked from all sides. But normal is more than enough.</p> <p>Depends on # of stars. If too small, your ships hyperdrive tech will allow you to cross the entire map by early-mid game. So 6 x 6 is nice. (I wish they had 10 x 10 with 700 stars)</p>	
<p>Galaxy Expansion and tech level:</p> <p>Galaxy Aggression:</p> <p>Difficulty:</p> <p>Research Speed:</p> <p>Research Visibility:</p> <p>Research Path:</p> <p>Tech trading:</p>	<p><i>PreWarp</i> is the only way to go in my opinion. You can't leave your first system for a while. This is what the game was designed to play. This is for the AI only so if you wanted to make the game more challenging you could change this. Your setting comes later.</p> <p>Restless. I like <i>Unstable</i> for the added excitement but for your first time playing I might suggest Restless or normal (I find normal a little less exciting)</p> <p>The AI has gotten much better in the most recent versions. Normal or Easy is the way to go if you're new to DW2. With this guide in hand, I think Normal is winnable with a reasonable challenge.</p> <p>Play on Normal. Strangely the slower settings really don't slow it down that much.</p> <p>I recommend All Project Visible. This will help you follow this guide more easily.</p> <p>I recommend Fixed. Random has some issues that could confuse new players.</p> <p>I never like tech trading in any game. But the spies steal a ton of tech anyway. Leaving it on will make it easier for you but I leave it Off.</p>	

<p>Pirates:</p> <p>Pirate Strength:</p> <p>Pirate Proximity:</p> <p>Pirates Re spawn:</p> <p>Space Creatures:</p>	<p>Early game they are a pain (unless you always pay them off which I do!). Mid/Late game they are just a nuisance. I use Normal here. There are PLENTY on this setting.</p> <p>As the game reached v1.0 they got tougher so I use Normal now. You might try stronger for more challenge later but I've been happy with normal.</p> <p>They are close enough on Average. Believe me. I can't even image Nearby.</p> <p>This is the one setting on this screen I would never change. Mid/late game they are like mosquitoes. I don't enjoy them then so I would strongly recommend Stay Dead.</p> <p>Just like Pirates, mid/late game I could do without. But I strongly recommend having them. Normal is fine - only a few species will give you any trouble at all.</p>	
<p>Colony Prevalence:</p> <p>Independent Colonies:</p> <p>Colony Influence Range:</p>	<p>So I really don't like the default game where I have 50+ colonies to manage. So I pick Very Rare or Rare. However - all this does is lower the planet qualities which isn't a perfect solution. Eventually with techs you can still end up a lot of colonies but it's much later (because the expense of low quality colonies is prohibitive). I'm not sure how the AI deals with this. I might recommend Rare or Normal for your first play through.</p> <p>So this one I do strongly recommend Very Rare. These are one colony empires - like city states in CIV VI - except all you do is either absorb them or conquer them. They are very valuable to get as they become profitable much faster than new colonies (especially if you colonize rather than conquer them). Less is more fun IMHO but a little bit more of a challenge.</p> <p>This is the colored bubble that extends from your colonies (and less so from your stations in uncolonized systems). I like it at 125% because I think the default is too tight. But it doesn't make a huge difference. Other Empires can't build stations or colonies in your influence (unless you are at war or have an agreement about it).</p>	
<p>Colonization Range Limit:</p>	<p>So this is really important. I play at 200M but <u>that is a bit limiting</u>. You may get frustrated when an independent colony seems not to far away but you can't colonize it because it's <i>"too far from your other colonies"</i>. So playing with my other Very Rare settings above, you might not have any good enough quality planets you can colonize between your home and that juicy independent colony you want. So if you go with Very Rare above like I do, you might consider 300M, It does NOT affect conquering a colony - which has no distance limit.</p>	

<p>Race, Play Mode, Government, etc.:</p>	<p>Not much to say here. I play humans mostly with Republic (you can change Gov. type anytime in game). Each Gov. type with each race gives different starting advantages (when you select one it lists the advantages and modifiers). Pick "Standard Empire" for play mode (ignore "refugee fleet" for now)</p>	
<p>Home Situation, System, and Res.</p> <p>Expansion:</p> <p>Tech Level:</p> <p>Starting Location:</p>	<p>Select Random, Normal, and "When Prewarp Start" for now. So unless you want an advantage for the AI, Normal here is fine. It just makes your home system higher quality so more income, etc.</p> <p>So this is YOUR start - not the other AI empires (despite the slightly misleading or generic tool tip). So I use Starting just like I set earlier for the AI.</p> <p>As mentioned earlier, PreWarp is the way to go and the way the game was designed to be played. This guide is based on this start.</p> <p>I like Far Regions so I can have my back to the edge of the Galaxy and work my way in. You are farther from the "riches" of the center but it gives you a defensive advantage. And it's not THAT far out - there are plenty of stars near you.</p>	
<p># of Empires:</p> <p>Auto Generate/Starting Empires:</p>	<p>I use the default 12 here (default for our earlier Galaxy size settings).</p> <p>I leave Auto-Generate on and Starting Empires off. It's not like CIV where there are empires that change the game drastically. Some species like you more, some less. It's a nice mix. So auto generate works fine for me.</p>	
<p>Victory conditions:</p> <p>General Story events, Rate specific story events, and Colony events:</p> <p>Return of Shakturi Storyline</p>	<p>So I would leave all the victory settings default. Of course you can read through the tool tips and decide for yourself.</p> <p>As for the other 3 at the bottom, I would leave these all ON. They add flavor and tell a background story through the game. The Colony events are a bit lackluster at V1.0 (IMHO), and I find that eventually every colony gets some of the bad ones (flood, earthquake, disease, etc.) but they aren't game changing much at all so I leave them on for flavor.</p> <p>If this is your first time, I strongly suggest "Late" for their arrival. It's pretty difficult - esp. with my recommended settings of less habitable colonies and less Indies.</p>	

THAT'S IT! You're ready to play! PAUSE the game (SPACE BAR) as soon as you are zoomed into your home colony

Automation settings

So super important here - the first thing you want to do is select what's automated and what's manual. You could, for example, automate everything except you control one fleet (like you were only an Admiral). It's a super cool, super flexible unique feature of this game. The Galaxy can live and breathe without you if you like.

I'm going to set this up for the way I like to play (minimize busy work, maximize fun) but you can make your own choices. I'll explain my choices below to help you decide what is best for you. Remember - you can change these at any time - especially if the message spam get overwhelming. Every new game will default to your choices here.

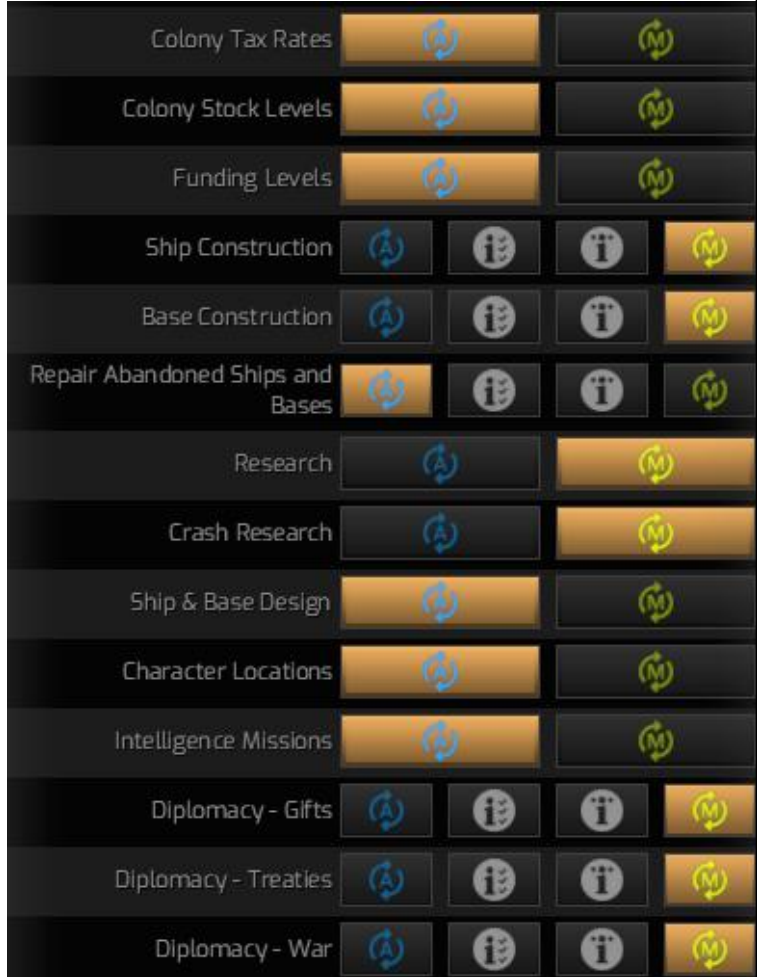
To begin: Pause the game (**space-bar**). Then open **POLICY SETTINGS** using the 3 clicks shown below in the upper left drop down panel.



Below is the various icons you can select. **Suggest and Execute** will give you a chance to respond but after a few seconds - it will implement the policy suggested.

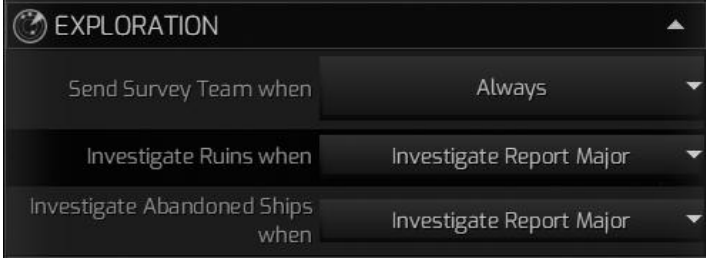



<p>Preset Config:</p> <p>Colonization:</p> <p>Colony Population Policy:</p> <p>Colony Facilities (Wonders, etc.)</p>	<p>This will change to Custom as soon as you make one change. You can use the presets but I recommend a custom setting.</p> <p>Manual. You do not want the AI colonizing for you. You might go broke and this is too important to leave to the AI. Alternatively you can click suggest (third icon) as a beginner to see what the AI suggests.</p> <p>Auto. You can manually override any colony you want later. 99% of the time you will simply leave it as is. The AI handles this pretty well.</p> <p>Manual or Suggest. These buildings have high maintenance and many should be used on dedicated planets - such as your troop HQ, or where you build ships, or where the most trade is. Suggest is fine first time through - it will make sure you don't miss a building when available through new techs but it gets spammy quickly so I prefer Manual. Note there are now 10 of these settings (not all shown at right!). If you go with auto, at least don't select auto for "Terraforming".</p> <p>Terraforming is super important to do early as it will increase the quality of your colony - i.e. <u>more revenue</u>. Revenue is king as it drives research and populations growth (if you don't have enough coming in your research and growth will suffer). However, these facilities have a very high maintenance cost. Though they are temporary (you usually remove them when the terraforming is done), it takes a lot of time. During that time, if your income is not strong enough to absorb this, your research and population growth will suffer. It's best to wait to build these until your cash flow is strong (like 5,000+ for example). And avoid building them on multiple planets at the same time unless your cash flow can handle it.</p> <p>For the three other Colony Facilities not shown - follow the same guidelines as above ("suggest" being the safest - but a bit annoying).</p>	
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<p>Colony Tax, Stock, and Funding levels:</p> <p>Ship Construction:</p> <p>Base Construction:</p> <p>Repair Abandoned Ships and Bases:</p> <p>Research:</p> <p>Crash Research:</p> <p>Ship and Base Design:</p> <p>Character locations:</p> <p>Diplomacy Gifts, Treaties, War:</p>	<p>Auto. The AI does a pretty good job at these (kind of). And it's quite complex to manage manually. The stocks are for resources - and again you can override some of these on individually colonies later if you wish. I don't usually.</p> <p>Manual. Very important to pick manual. The AI wants to build way too ships and you'll go broke or stifle your Tech/growth with maintenance costs.</p> <p>Manual or suggest. Auto is also not terrible here but it's a part of the game you should learn early. There are 4 major screens you need to check often that I will discuss later. If you are doing that, you can easily handle manual.</p> <p>Auto. You want these repaired almost 100% of the time so no need to set anything else but Auto. Yes it occasionally triggers a creature attack or a Pirate Spawn - but it's usually far from home and manageable. Usually.</p> <p>Manual. I don't play on Auto unless I am doing a unique game like "I'm only a lowly admiral" in a living universe. Too important to leave to the AI. <u>However, you CAN leave it on Auto as the AI won't change your choices - this way if you forget at least something is getting researched. But you need to check it often either way.</u></p> <p>Manual. You will use this a lot and the AI won't very often. It's critical to know when to rush a tech. or to spend extra money to get ahead. Use it often!</p> <p>Auto. Bases, transports, fighters, etc. are way too much minutia and time consuming to design myself. I only want to design combat ships which works fine when this is set to Auto. You can override per ship design as needed.</p> <p>Auto. Same as above. I only care about managing Admirals and sometimes ambassadors (which you can override individually whenever you want). The bulk of these leaders/scientists/spies/generals I don't care and it's way too much work. The AI does a decent job here except for Admirals and Ambassadors (IMHO).</p> <p>Manual. Auto here is insane (bye bye \$). Suggest here is spam city. Totally unnecessary and the rare time you will use this is easy to do manually.</p>	 <p>The screenshot shows a settings menu with the following items and their status:</p> <ul style="list-style-type: none"> Colony Tax Rates: Auto (A) Colony Stock Levels: Auto (A) Funding Levels: Auto (A) Ship Construction: Manual (M) Base Construction: Manual (M) Repair Abandoned Ships and Bases: Auto (A) Research: Manual (M) Crash Research: Manual (M) Ship & Base Design: Auto (A) Character Locations: Manual (M) Intelligence Missions: Manual (M) Diplomacy - Gifts: Manual (M) Diplomacy - Treaties: Manual (M) Diplomacy - War: Manual (M)
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<p>Military Attacks:</p> <p>War missions:</p> <p>Troop Recruitment:</p> <p>Fleet Formation and Postures</p> <p>Upgrade Fleet Management:</p>	<p>Auto or Suggest: This settings no longer seems to affect manual fleets so leave it to auto or suggest, otherwise AUTO fleets will act like Manual fleets and not react to threats outside of their current system. Never use manual as this will limit your auto ships to respond in system only. Also affects individual ships set to auto.</p> <p>If find these super annoying so I left this Manual. The AI will assign you missions to do during wars. I'm way to busy with my own strategy.</p> <p>Manual. Troops are expensive and largely unnecessary early game. The AI likes to build too many too early which costs a lot of maintenance \$.</p> <p>Manual. Otherwise the AI will be building ships, sending them places, etc. It's a lot of micromanaging on manual but this what I enjoy managing.</p> <p>Manual or Auto. I like to manage fleet templates (more on this alter) so I leave it on <i>manual</i> myself.</p>	<p>The screenshot shows a settings menu with the following items and their selected modes:</p> <ul style="list-style-type: none"> Military Attacks: Auto (blue 'A' icon) War Missions: Auto (blue 'A' icon) Troop Recruitment: Manual (yellow 'M' icon) Fleet Formation: Manual (yellow 'M' icon) Attack Fleet Postures: Manual (yellow 'M' icon) Defense Fleet Postures: Manual (yellow 'M' icon) Fleet Ship Management: Manual (yellow 'M' icon) Upgrade Fleet Templates: Manual (yellow 'M' icon)
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There are a few more automation settings hidden under other drop down menu bars so access these below. The rest (not shown) are fine for now as default.

<p>Send Survey Team when:</p> <p>Investigate Ruins when:</p> <p>Investigate Abandoned Ships when:</p>	<p>Always. You never really want to miss any of these opportunities to find things. Occasionally it will release something bad but it's usually manageable and far enough away. Usually. But would you ever say "No" to a chance to investigate something? The answer is - no.</p> <p>Investigate Report Major. This does cause more message spam but I like to know when something big has been found. So it's like Auto but it will tell you about it. And in the unlikely case the threat released is bad AND close, I need to know this.</p> <p>Investigate Report Major. Same as above. Same reasons.</p>	
<p>New Military Ships are Automated:</p> <p>New other state ships are Automated:</p>	<p>Automated. So even though everything I do with fleets is manual, I do leave this set to automated. So when you build a new ship - it will just do its own thing. What I do is group ships into fleets BEFORE they even come out of the production queue. But sometimes I just build a few escort or frigates (light combat ships) that I want to patrol or escort my non military ships. The AI handles this wonderfully so basically any ship I produce that I don't immediately put into a fleet, will just go off (after it's built) and patrol and protect my empire.</p> <p>Automated. So explorer ships (your eyes and ears) and constructor ships (they build bases, repair old wrecks, etc.) are handled pretty well by the AI. Plus YOU will select targets for your constructors (remember - we set "Base Construction" to Manual!) - they will simply do all the work that <u>you assign</u> without your intervention. There are times I want to manually control one of these ships but that is fine - you can override any individual ship and it will stay on manual until you tell it to go back to manual.</p> <p>Don't confuse these with "private" ships (freighters, miners, etc.) - they are ALWAYS automated and not in your control.</p>	

Note: Because of all of the prior manual settings, most of the other settings (e.g. the ones under "Military") are not used and/or the default settings are fine for now. Use the tool-tips to explore them as needed. But for a beginner guide, leaving everything else as the default setting is fine for now. You can change them at any time!

First steps - Early game (prewarp and the first few years after you leave the solar system)

My early game goals (from which all my strategies flow):

1	Increase revenue/profit
2	Maximize research (including funding it)
3	Expand influence/borders
4	Find the first independent Colony and Colonize it.

Strategies to achieve Goals

#	Strategy	Benefit
1	Locate new Resources and build mining bases	You need construction resources to keep building bases and ships. You need <i>Caslon</i> (fuel) to power your ships and to sell to private ships Luxury resources increase development which increases revenue
2	Locate new Research sources and build research bases	Increases Research points for faster research Stronger ships/troops to better protect/conquest other empires Better infrastructure increases revenue/profits
3	Research required tech and build a Resort Base at your home colony	Resort bases are a good, early bonus revenue source from Tourism (the private economy pays you - the state - to use these resorts)
4	Protect Colonies and bases from Pirates by building ships and troops	Pirate raids on Colonies reduce revenue (raise corruption) Pirate raids on Bases steal money and resources
5	Expand borders/influence	More resources/colonies for you and less for neighboring empires
6	Gain a new colony (preferably from colonizing independent colonies).	Generates more revenue (eventually) Expands border/influence Allows deeper exploration and expansion around all new colonies
7*	Locate and build mining bases on any of the 3 super luxury resources	Huge revenue boost from these rare luxury resources: <i>Loros Fruit, Korabbian spice, and Zentabia Fluid</i>
8*	Get Pirate factions to like you enough to get to the level of "Non aggression treaty" which is free.	Start by always accepting a protection agreement if they offer it to you. Then pay them for inexpensive information. Over time they will offer a non aggression treaty and this stops you bleeding money from any "protection" agreements.
9*	Eliminate space creatures nearby	Reduced threats to your bases and ships - especially freighters.

* Technically these are mid game strategy but I list it here for stretch goals - sometimes you can take out a base with an early game fleet.

First Steps during PreWarp (before leaving your solar system) *(updated for Aurora).*

Be sure the game is still paused! Since the game has changed a bit from release, I have modified this start for a third and final time. This approach focuses on paying off all pirates and increasing revenue/research as fast as possible. Feel free to try different approaches - especially on normal difficulty - including a strong early military start.

1 Select your first 7 research targets:

(click to left section of the top right bar where it says *Early*



Warp Field Experiments or *No Research Projects*)

This is a get out of your home system fast approach. Feel free to try other approaches



* The yellow bars mean you have a head start.

Early Warp Field Experiments allows your ships to move out of the immediate vicinity to the rest of the solar system (but not beyond). This will allow for more mining stations (and - if lucky - an extra Research Station) and freighters can get resources (goods) back to your colony/space station faster/sooner. . [Read here](#) why it's so important to start mining resources ASAP. **You should also immediately rush this tech but wait for the yellow bar to appear as seen at the left.** You may have to unpause for a few seconds to see it.

Basic Medical Systems: After this is researched, your space station will update and this newer component will slightly increase your revenue. Revenue is king. Revenue is life.

Early Energy Deflectors: When your explorer ships leave your home system, you'll want them to have these basic shields for protection against creatures.


Stable Warp fields: On the harder difficulties, you will be competing very quickly with unfriendly AI in your galactic neighborhood. You want to expand your influence quickly to the surrounding star systems. This tech will allow your ships to travel outside your initial star system to nearby stars. Your explorer ships will go first, followed by your constructors to build mining and research bases. I put this fourth because at about this time, your explorer ships are finishing up their exploration of your home system.


Planetary Exploration/Exploration Scanners This pair of tier 2 techs allow your explorer ships to scan quicker and perform a deeper scan to expose more information (especially research locations).

Research Labs: This will add a boost to your existing research bases and give you an early boost to research.

As soon as you complete the Warp techs, your ships will retrofit and explore the solar system and then finally other stars. You will soon attract Pirates which need to be paid off with protection agreements.

Note: The second (and higher) tier techs require money and resources so you certainly can be prudent

		<p>here and only select one tech at a time (and right before it finished select the next tech, and so on). You could run our of resources if you queue too many techs early on (mid game it won't matter).</p> <p>Just be careful to keep an eye on the upper right display which shows % complete of the current tech. Don't ever run the game with "No research selected". And I strongly suggest you rush (\$) the Tier 1 techs.</p> <p>Alternative Approach - Military Strategy: <i>You do not need to follow this particular start to win and/or enjoy the game. A Military approach that I use successfully involves delaying Early Warp and building up 2 tiers of weapons, tier 1 shields, armor, and then patrol ships and taking on the Pirates. The trade-off is the maintenance costs are higher but you aren't paying protection money. Try it! It's more excitement early on for sure!</i></p>
<p>2</p>	<p>Build a Spaceport at your Home Colony</p> 	<p>Spaceports are critical infrastructure because they:</p> <ul style="list-style-type: none"> ● Immediately give you a research boost (it has a science bay). ● More efficiently build/retrofit your ships (both state and private). ● Generate revenue from refueling Private ships and ships from other Empires/Indies ● Store fuel for your ships, resources for production, and luxury resources to spread throughout your Empire (once you gain more colonies). ● Add bonuses such as happiness, etc. to your colony below. <p>Generally speaking it's best to build Spaceports as soon as you can at every new or conquered colony. It gives you a research boost which is so important early on.</p> <p>Pro Tip: Sometimes (it seems to work randomly on some starts and not others) - BEFORE you build this, instead click on your home system and then right click in space near the planet.</p>
<p>3</p>	<p>Build a research base at your Home Colony.</p>	<p>Click on your colony and then right click in space near your spaceport. Sometimes this menu will contain the option "Build RS-1 Research station". Select it. This only sometimes works depending upon your start. There is about a 50/50 chance of this. And it's a big boost to your start if you get it.</p>
<p>4</p>	<p>Check on your Explorer <i>(only required if you see asteroids - 20 or so rocks - around your colony.)</i></p> <p>Click on the explorer ship then right click on closest planet/moon. Select Survey...</p>	<p>Your Explorer ship <i>should</i> be heading off to scan the closest large stellar body - Planet or Moon.</p> <p>If you started with an asteroid field around your home (20 or so smaller rocks), you must redirect your Explorer ship to the nearest large body (as of the latest version). The research and mining potential there is much more important/urgent than the mining potential from the asteroid field.</p> <p>This may also happen after you gain Warp drive and leave the system. They have to be managed to some</p>

	Finally click  and then select Fully Automate	degree early game to avoid hyper focusing on asteroids - which they tend to do.
5	Resume the game and let the game run.	Press SPACE to unpause and then I would recommend x4 speed for a while if you get bored. (first time playing maybe leave it on x1 and watch your explorer/miners at work and learn the interface, etc.). <i>This is a great time to zoom in on a ship and change the view (see below)</i>





While the game is running, you can watch for certain events and then implement the following orders. Note that over the next few minutes, the AI will produce first an explorer ship (which will scan everything in the near vicinity) and then a constructor ship (which because of our settings will just sit there until we tell it to build a base). The Private economy will also build and manage miner ships (that directly mine resources) and freighters.



To learn about resources and why the next steps of building mining stations are so important, [click here](#).

Check the next page for special triggers you need to watch for.

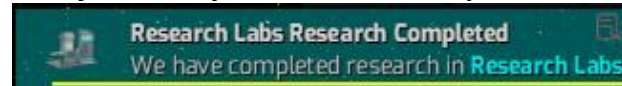


Watch for these events while the game is running and then take the steps indicated (Humans!).

#	Event that triggers the action:	What I would do and why:
5	<p>Your explorer finishes its first scan of the closest stellar body (planet, moon) other than your home:</p>  <p>Discovery at Seusis</p> <p>We have discovered hidden items at Seusis in the Najarca system.</p> <p>Bonuses: +15% Industrial Research</p>	<p>Tell the AI to build a research station. Use the NEW RESEARCH LOCATIONS list view to do this: <i>(Important: if you have 2 close stellar bodies it might not show up until you scan the second one!)</i></p> 
6	<p>It will simultaneously discover resources there as well.</p> <p>Note: Be careful not to build too many mining bases (no more than 3) before event #7 below (Hyperjump) because they use resources that you may only have a finite amount of initially. Each early mining base will need 172 Steel, 16 Mebnar, 12 Polymer, 12 carbonite, 8 silicon, and 6 nekros (see icons below)</p> 	<p>You can queue up this order immediately after build a mining base. Use the NEW RESOURCES LOCATIONS list view to do this. SHIFT F7 will get you there as well.</p> <p>You need to start collecting construction resources for producing more ships and bases. Your colony starts with a finite amount. Luxury resources help build Development for growth, happiness, and revenue.</p>  <p>If other resources appear in this list over time from your explorer, go ahead and order a base for them too.</p>

#	Event that triggers the action:	What I would do:
7	<p>Your first ship makes a Hyperjump</p>  <p>When you finish researching Early Warp Field Experiments your ships with auto retrofit with skip drives that allows them to travel the solar system.</p>	<p>Click on your Spaceport to select it.</p> <ol style="list-style-type: none"> 1) Build a second and third explorer ship (if you haven't already) at your space station 2) Build a second constructor ship (if you haven't already) at your space station 
8	<p>A new resource is discovered</p> <p>This will happen a dozen or so times over the next few minutes as your explorers scan the solar system.</p>	<p>Go back to NEW MINING LOCATIONS (SHIFT F7) as before and click on the mining base icon to order your constructors to build a base. The list will prioritize your most needed resource - so always click on the highest resource listed. Avoid building too many bases around rocks (asteroids) at this time (maybe 1 or 2). You can read about why it is so important to build these mining stations here.</p>
9	<p>A new research bonus location is discovered</p> <p>Very rare but it could happen - you are guaranteed the first one but a second one is extremely rare.</p>	<p>Go back to NEW RESEARCH LOCATIONS (SHIFT F9) list and select the icon with the research base. Note this will have to wait until all of your mining bases from step 8 are complete. I like to rush this sometimes so you can manually command a constructor ship to build this (right click at the location with the constructor selected). Just be sure to put the Constructor back on Auto or it will just sit there when it completes this base.</p>

#	Event that triggers the action:	What I would do:
10	<p>For humans only! (other races have different events): When you meet the Ghost Fleet Pirates These are the good guys. They will make you an offer.</p> <p><i>(This may happen BEFORE earlier steps)</i></p>	<p>1) Accept their offer to join you. This will cost you some \$ but it is worth it. You get a base and 4 ships.</p> <p>2) Press F11, Shift - select the 4 new ships that you just acquired, and click the Create new Fleet with these ships button at the bottom in the Select screen.</p> <p>3) Press F to select your fleet and then right click on your home spaceport to select Guard...</p>
11	<p>You get your first "Pirates!" message These are bad guys. And they are here to offer you "protection".</p>	<p>Accept their offer for protection. As long as you don't meet more than 3 Pirate factions, your income from resources, etc. will cover these expenses. However, the long term goal is to either graduate to a non-aggression treaty (which no longer costs \$) or destroy them.</p> <p>These protection agreements drain your money and makes them stronger over time. However, your increase in revenue from the priorities above make it worth it. You can also avoid a lot of early maintenance costs by not having to field a fleet early on. If you get unlucky to get 3 Pirate factions approach you during this time, money will get a little tight.</p>
12	<p>You get a message about an independent colony</p>	<p>1) In a short time, they will be available for contact via the Diplomacy screen. Check to make sure the race is not hostile to your race. It will be hard (but not impossible in most cases) to use diplomacy (aka money gifts) to get them to like you enough if they are polar opposites of your race,</p> <p>2) Contact them under the DIPLOMACY tab (use INDEPENDENT COLONIES tab under that).</p> <p>3) If you have the max Gift amount, gift it to them now. Otherwise wait until you do. At the same time, ask them to immediately start a trade treaty with them (or a better one than the current one). Over time they will like you more and more and eventually enough for you to colonize them. See here for more about that.</p>
13	<p>When Stable Warp Fields tech is completed</p>	<p>1) Build at least 4 more explorers (if you have the money - try 6 more instead).</p> <p>2) Build at least 1 more constructor (if you have the money - try 2 more)</p> <p>3) Build 10 or so Frigates and add them to your Fleet you created earlier.</p> <p>4) You'll want to start researching Basic colonization (and any techs that are prerequisites to this tech). This will allow you to build colony ships so you can colonize the nearest independent colony which is a critical early goal. You will also need Expanded Civilian Ships as well.</p>

14 *Your final tech you selected is completed..*

Go to the **Research Screen** (click on **No Research Projects** upper right corner of game window) and start building some more technology such as the one below:



I just like Missile weapons the best. But you can go for any tier 2 weapon type that you have already been given at start instead (e.g. Rail guns) and save some time. These techs will allow you to build your first useful ships (Frigates). Not strong enough to take out a Pirate base, but enough to defend your system.

This completes the PreWarp Guide. It's not important if you didn't follow it exactly. But for anyone who feels completely lost the first time you play the game, this will give you a good head start getting into the game. Feel free to experiment with different strategies - there is no one best way to approach this game.

Next page will give you some general strategies going forward.

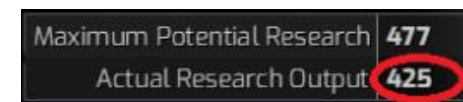
Next Steps: Strategies after Stable Warp Drives researched and leaving your home system.

Explore, Explore, Explore

- 1) Start researching **Exploration Scanner** and **Planetary Exploration** (tier 2 exploration techs) almost immediately (if you didn't follow the earlier sections) after **Stable Warp drive** (tier 2 hyperspace tech). In fact, you should very soon research tier 3 hyperspace tech (**HyperDrive technology**) to expand your explorer's reach. **Storage Systems** allows larger fuel tanks.
- 2) Build more Exploration Ships. Especially after you finish tier 2 exploration techs. You want about 20 - 25 within a few years after reaching tier 3 hyperspace tech (which adds a lot of range). They will retrofit themselves automatically after a while but I always build a few each time I research a new tier. Resources and Bonuses (including ones needed for new research stations) will remain hidden until you reach the highest exploration techs. Replace ones that get lost during exploration.
- 3) Colonize the nearby Independent Colony if possible. Peacefully (through bribes) is possible (click . Remember - new colonies (especially with a space station) give a new base for your exploration ships to fan out from. Caslon (fuel) mining stations help too. Be sure to check suitability before colonizing (it should be > 20%). If this race is different from yours, it opens up more colonization options for planets that might not be suitable for you original race! You also get bonuses (+/-) from their race.
- 4) A good thing to check here is make sure that all of your explorer's are not stuck researching asteroids. You may have to manually select one, right click over a new system, and select Survey... Just be sure to reset them to **FULL AUTO** after you do that. Tier 2 exploration techs help speed up asteroid scanning but it is still slow.
- 5) Keep your eye out for any of the 3 super valuable and rare luxury resources: **Loros Fruit**, **Korabbian spice**, and **Zentabia Fluid**. Mine, Secure, and defend these planets.

Expand your revenue and research. As your explorer's leave the system and explore new systems, you'll want to frequently check:

- 1) The **NEW MINING LOCATION** screen (**SHIFT F7**). Anything other than asteroids (rock pictures) you want to build all mining bases. They are listed by default by priority. Select the top most bases first. New resources increase colony development, colony happiness, and allow you to build ships and bases. Caslon allows you to move!
- 2) The **NEW RESEARCH LOCATION** screen (**SHIFT F9**). Any possible research stations should be built. You cannot progress past certain tiers without bonuses these provide.
- 3) The **NEW RESORT LOCATIONS** (under the **CIVILIAN** Tab) and build any possible resort bases. These produce a small amount of additional income for your empire. Some people recommend doing tech much earlier as the income bonus is much greater in the early game.
- 4) The **RESEARCH** main screen (under the **RESEARCH** tab). Your research will run at about 75% if you can't fund it. If you see your cash flow is low and you check your Research screen and your *Actual research* is not near your *Max potential* (see image), you need to try to increase your revenue(or give it time to catch up). **Crash** research often with extra \$s.



Add new colonies.

New colonies (eventually) increase revenue through taxes. They also expand influence.

Your first target should be nearby independent colonies (you've met one at this point). Assuming they are races that are not too hostile to your race (e.g. if you are human, Boskara (-90%), Dhayut (-80%), Gizurean (-100%) are difficult targets for diplomacy), you should do the following as soon as your total money level allows:

- 1) Research **Basic Colonization** first. Be sure you've already researched **Expanded Civilian Ships**. Both are required for building colony ships.
- 2) Contact them through diplomacy and Gift them the highest amount possible. At the same time, then offer them the highest trading level possible. Repeat in a few years until they tell you they want to be colonized. Researching Tech for their culture (very bottom left of tech screen) can give a little boost here too.



- 3) Build a colony ship and manually send it to their colony once they reach 100% colonization probability. I prefer to do this manually because there are a number of problems with this.
 - a) Sometimes the AI tells your colony ships to load up from other colonies (assuming you have any others). I want to load from the most populous colony (home)
 - b) Sometimes when you get there, there are Pirates and/or creatures waiting near the planet. So I carefully monitor this ship as it travels there. A neat trick I've used is if you see Pirate ships on one side of the planet, manually tell your ship to move to the other side before arriving. Then set the ship's retreat orders so **Never retreat**. As soon as it arrives, select it and right click on the colony and select **Colonize...** It will finish colonizing usually before the pirate or creature can travel to the other side of the planet and destroy your colony ship. Usually...
- 4) After colonization, if there are no pirates, immediately build a spaceport. Then have it build explorers and construction ships so you can spread out from there. Never a bad idea to build a small defense fleet of 8 or so ships there (set fleet home to the new colony, maybe even set [auto setting](#) to defense).

If you see a high **suitability** planet that your race thrives in, it's not a bad move to send a colony ship now as well. Especially if it would expand your influence bubble around a number of new systems. But be sure your revenue is high enough to absorb an increased cost for a long while without limiting your research/pop. growth.

Prepare for possible attacks by your nearest neighbors (esp. on harder difficulties).

Eventually you will encounter nearby AI players. They will eventually attack you at the harder difficulties.

I like to research *Interstellar Destroyers*, some kind of PD (Point Defense) such as *Basic Point Defense*, and *Starfighters* (for small fighter bay). Second tier Shields, Armor, and tier 3 hyperspace tech (*HyperDrive technology* to use the Gerax Drive) are important too. Finally you'll need tier 2 or 3 reactor tech (light purple) otherwise the drives won't have enough power to run full speed.

Then I [custom design](#) my destroyers like the chart on the right. I love Torpedoes but there is a good argument that Missiles are even better (and I often use them instead). Focus on one weapon type and try to get to tier 3 fairly early. A fleet of about 12 or so of these, a fuel tanker, and a manually placed admiral and I'm ready to hunt down space creatures and defend key assets from aggressive neighbors.

A good way to keep your enemies at bay is to gift them money or discoveries that you found. Also send an ambassador with a positive diplomacy to their capital.

Having bases in their territory, overlapping and bordering influence, etc. Increase hostility. Check the reasons why they don't like you in the diplomacy screen.

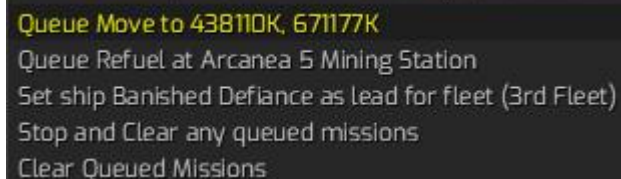


Some Final Tips:

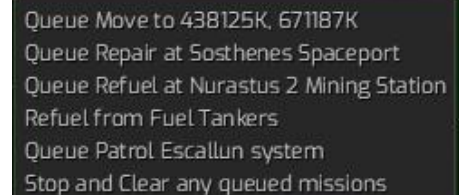
- 1) **Check your Scientists** for the “*addict*” trait. Check your other leaders for the “*demoralizing*” trait. I immediately dismiss these leaders as their negative effects are not worth any other benefit early game. **Good Administrator** reduces crash costs so if you have a scientist with this trait crash often to get ahead in tech! Finally, look for **Inspiring Presence** because all leaders at the same location improve their skills faster. So you may want to manually control this leader to stay at your home.
- 2) The **Colonization techs are super important** as they add to the suitability of your system for ALL races in your empire. This means more revenue and growth. After you research **Basic Colonization** research the tech for your home colony (e.g. Continental for humans). Your first independent colony planet type is a good second choice.
- 3) **Invasions** of other Empire colonies is a topic unto itself. You will need Ground troop techs (**Shock Forces, Battlefield Sabotage**), bombardment techs (**Bombardment Weapons**) and Troop Transport techs (**Ship boarding, Basic Transport Systems, and Basic Troop Transports**). Finally, it takes a long time to build troops on your colony so plan early for an invasion.
- 4) You can (and should) **trade money for neighboring empire mining/research bases** in systems you share. Check the diplomacy screen (**speak with them**, then **negotiate a deal**) for that empire to see if there are any that you can purchase.
- 5) Your **reputation** goes down when you bombard enemy planets, attack neutral bases/ships, etc. This affects happiness and corruption on you colonies (less \$) as well as your relationship with other Empires and indies. Reputation recovers fairly quickly. And if you anger a particular Empire (like destroying a base of theirs when you are not at war) - you can donate money to them to repair it very quickly. For example, if you find a planet with one of the 3 super luxury resources (e.g. **Loros fruit**) and your neighbor has a base there - it is very worth it to attack the base, manually tell a constructor to build one of your own there, and then send money (gifts) to the other Empire. Of course if you are peace and this is in his system, you can't build a base there. This would only work in a disputed system or one under your influence.
- 6) **Derelict Ships:** You will eventually acquire derelict ships from exploration and then constructor ships that will auto fix them. If it is early game, I will keep the Destroyer and stronger ships and attach them to my 1st fleet. They usually have good weapons (but lousy fuel capabilities). Your constructor ships will automatically begin repairing derelict ships it finds. This will, however, take away from the number of constructors building research and mining stations so keep an eye on the total number. Finally, derelict ships are great and sometimes powerful but they have very short range (compared to your ships). So I recommend making a fleet of them and leaving them to defend key positions throughout your empire. Also - the weakest of these (escorts and frigates) should be scrapped ([use the retire button](#)) at your shipyards for tech boots. You also sometimes get tech boosts during the repair process.
- 7) **New Colonies on the edge of your Empire often will have no fuel.** Sending a fleet out there will have trouble refueling. Include a tanker in the fleet. Also - make sure constructors prioritize Caslon (fuel) mining in that system if possible.
- 8) When you have good money and it's growing, **crash (rush) research often.** A “*good administrator*” trait on one of your scientists makes this even more imperative. You can wait until the tech is half way through to save money.

- 9) **You cannot research past certain technology tiers** (e.g. 4th tier torpedoes) without accumulating enough bonuses from research locations. Scientists and certain facilities mid game will also help raise this limit. You can review your total research bonus for each research category from the **RESEARCH** tab.
- 10) When you **run out of fuel**, your **ships cannot fire** their weapons (no energy). So be sure to include a tanker or two with every fleet and be sure to refuel manual fleets whenever you get the chance.
- 11) If you have 2 fleets defending a system under constant attack, and you want to retrofit, repair, or refuel one of the fleets - it won't work because the fleets will ignore your order and try to deal with the constant enemy threat. To get around this, you can go to the Fleet's **Set Tactics** screen (bottom right button in the Fleet select screen) and set Engagement range to **Do not Engage** temporarily. Be careful as your fleet is very vulnerable with this setting so other fleets should be nearby.
- 12) **During invasions** while you are bombarding a planet (to reduce its defending troops), your transport fleet (filled with troops) are just waiting near the colony to begin their assault. The problem is they will (be default) try to engage stray enemy ships nearby and move away from the colony (or worse - get destroyed with their precious troop cargo). You can go to the Fleet's Set Tactics screen and set Engagement range to **Engage when attacked** or **Do not engage**. This will keep them together and ready at a moment's notice to begin the invasion (right click on the colony and select **attack colony**).
- 13) Be aware that you can double click on ships not yet built (in the build queue of a spaceport or colony) to select them. Useful, for example, if you want to add that ship to an existing fleet before it even comes out of the shipyards.
- 14) **Ships in a fleet do not often arrive together**. Plan on this when sending them into a combat zone. Sometimes I right-click their arrival point a bit away from the action. Then, as they start to arrive and form up - the enemy ships will come to you. Sometimes piecemeal which makes them easy targets (versus you being the easy target as your ships arrive in small groups right on top of the enemies full strength fleet).
- 15) When you send gifts to independent colonies, your chance for colonization will be shown at the bottom of their colony select screen (get there by clicking on their colony). When it reaches 100% - there is a chance it will start going back down again (depending upon the race and whether or not you've got the trading agreement all the way up to Free Trade). So if you send a colony ship now - by the time it gets there the success % may have dropped too low. So a trick I use is to send the colony ship there manually (tell it to move there, not colonize). When it arrives (or right before) I then contact them and make my final gift. This way it will be at 100% and I can immediately colonize it. Also - if you are colonizing with a different race (e.g. you are human, they are Zenox), **ONLY** take the minimal amount of population in your colony ship! If you fill it with humans, they will bring down the revenue and growth of that colony.
- 16) Deciding which empire to conquer near you is a big decision. Their home system will take a long time to become profitable, some more than others. Mortalen, Haakonish, Baskara, and to a lesser degree Zenox are the most [resistant to assimilation](#). Choose another Empire to attack if you have a choice. Either way, researching that race's diplomacy tech - e.g. "Basic Diplomacy: Haakonish" will speed up the assimilation of their race on your newly conquered colony.
- 17) When researching down the **Shield technology** path always go down the "**Accelerated Shield Recharge**" branch (Talassos Shields) as better shield recharge rate beats better total Shield strength every time. Be sure to look into researching and installing "Quantum Capacitors" to further boost your shield capability (these install in addition to your normal shields and help with the recharge rate while also adding a little extra strength).

- 18) You used to be able to get away with firing at enemy ships or bases briefly when not at war with just a reputation hit. However, since recent patches it seems that the offended AI empire will go into a cold war stance and fire at your ships whenever they see them. So either give them gifts and try to get them to sign a non-aggression treaty quickly or be prepared for some violent backlash.
- 19) Once you've had a **protection agreement for Pirate** for a few years, trading with them (on the low cost information they offer) AND/OR giving them gifts will boost your rep. with them and they will then offer you a non-aggression treaty (which is free and therefore ends your payments). Eventually they will offer military refueling rights as well.
- 20) If you acquire a **derelict ship or Base that has fighters** - you will NOT be able to use them if you haven't researched Fighters yet. Be sure to do so (if you haven't already) if you gain control of a powerful carrier or battleship that has fighters so that you get the full benefit of these ships.
- 21) **New feature: Ranges on the map.** There are 2 ways this works:
 a) If you hold down the shift key, click on a start location anywhere on the map and then move the mouse, it will display the distance from that start location to where the mouse is pointing.
 b) If you hold down the shift key while a single ship is selected (visible in the bottom left side of the screen) - it will show you that ship's distance to its mission location.
- 22) Build **OUTPOSTS** instead of colonies if you want to spread your influence borders OR there is a planet might be suitable after its damage slowly repairs. Another reason would be if a valuable resource or base is in a system and you want to be sure your neighbor doesn't colonize it or dominate your region. Outposts are a drain on your economy so do this sparingly. Remember - if another Empire has a base/station in your influence - you can negotiate to buy that station/base! Great way to scoop up early research stations!
- 23) Maintenance can be a drag on your economy. In technology, consider researching better crew systems, certain buildings, and for troops - research logistics. There are various levels of each which reduce maintenance losses. Leaders, Admirals, and Generals often have a bonus reduction so place them in large fleets or on ships/colonies where your troops are.
- 24) When just starting a colony, build additional Colony ships and ferry populations back and forth from your other colonies that are full of people.
- 25) New Feature: Queue missions (ship or fleets). Select a ship (or fleet) and Hold down SHIFT and then RIGHT CLICK on a location. Select from the popup menu. Repeat until all mission assigned. Example below on left is for a ship, Example on right is for a fleet.



Queue Move to 438110K, 671177K
 Queue Refuel at Arcanea 5 Mining Station
 Set ship Banished Defiance as lead for fleet (3rd Fleet)
 Stop and Clear any queued missions
 Clear Queued Missions



Queue Move to 438125K, 671187K
 Queue Repair at Sosthenes Spaceport
 Queue Refuel at Nurastus 2 Mining Station
 Refuel from Fuel Tankers
 Queue Patrol Escallun system
 Stop and Clear any queued missions

Some great alternative approaches to starting out from other beta testers:

From: Omena	<p>I pretty much always go for early warp, research labs, armor/shield, bubble, frigate/tier 2 weapon.</p> <p>I haven't tested if going for research labs first would be better, but I kind of doubt it. You are going to need income to fund your research and that means getting new resources fast. You get early warp roughly at the time your first construction ship is finished (since you build explorer + starport first). The skip drive makes it a lot faster to get in location and probably outweighs any benefit from getting research labs a bit faster. There is always the chance that you find a new research location in system and that give a major research boost that you want to get asap.</p> <p>Worth pointing out that you don't need to be able to take on the pirates when they first appear. They will just mostly raid you caslon mine and try to raid you colony. They won't be strong enough to actually cause significant damage (like taking out research bases/starports). You can just tech up and then take them out with your fleet. That is why I often go bubble before frigates/tier 2 weapons.</p> <p>Once you home system is safe from pirates and you can start expanding. You could probably just use a few more escorts with tier 1 weapons instead of frigate/tier 2, but often it doesn't really matter so much.</p> <p>You also don't really need destroyers as you can always compensate with numbers. A fleet of 12-20 frigates is enough for taking out pirate bases and they can hold off enemy fleets well enough. Destroyers are better, but not critical or anything.</p> <p>Getting higher survey level is surprisingly good for getting more research locations. You want Gerax roughly by the time you have finished exploring nearby systems.</p> <p>Now that recreation and medical centers provide such nice bonuses, I should probably prioritize them more. I don't really care for tourism though, since it counts as extra income and is useless for investments. Private ships building tends to provide more than enough extra income anyways.</p> <p>There is also no need to save up credits for the Ghost fleet. You can always choose to pay them even if you don't have the credits. You will just go to negative, but that does not affect your investments.</p> <p>I would also highly recommend lowering the happiness thresholds in your planets. It lowers you growth a tad, but gives a lot more income (which you can use for growth investment that gives way more growth than happiness does).</p>
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Fighting your first (defensive) interstellar war

So an AI Empire has declared war on you. What do you do?

Early game your sensor technology will be low. You're lucky if you have long range sensors researched at this point (and some of your bases have upgraded to a design that has it!) so you'll have a little advanced warning before an enemy fleet arrives. Pause the game while you implement the steps below.

Step 1: Predict their targets in your empire.

So if you have a colony near your common border that will be a primary target. Next will be any mining bases brimming with fuel (Caslon). AI Empires will venture deeper into your space too. There is no perfect prediction method here.



Probably targets (circle in red) and probably courses of attack (coming from their fuel source or their colony).

Step 2: If you have enough fleets, move a fleet into each target area.

Here is what I typically do:

- 1) Select a fleet (use **F key** to cycle through fleets) so that you can see the fleet selected in the bottom left of the screen (select view)
- 2) Zoom into a system (mouse wheel) you want to protect. Often this is a fuel (**Caslon**) mining base.
- 3) I right click (fleet is still selected) on the base and select **Set home base to...**
- 4) I right click again and select **Guard... station**
- 5) Finally (with the fleet still selected), I click the **set tactics** button on the fleet at the bottom and set my engagement range to **Nearby**. If you have other important bases in the same system you can instead select **Same system** and your ships will engage the enemy anywhere in the current solar system.

If you don't have 4 or 5 fleets, put your 2 fleets at one of the red circled targets in the middle, and one at the colony. Watch for when your sensors pick up the incoming fleet(s) and manually send your fleets to meet them in the system they are heading to. Be sure to begin building another fleet at home to be ready. Also - if the frontier colony has a spaceport already, build one or two last minute ships there as soon as the declaration of war is made.

I usually leave these fleets on **manual** (they will react based upon their Engagement Range settings. **Auto - defense** is ok but occasionally they may decide to refuel, retrofit, or repair and they may include leaving the system to do so. If that happens, you are defenseless in that system for a short time. Manual fleets will not do that (unless you change the default setting in [Automation](#)).

Step 3: Build more ships (and create a new fleet) if you only have 2 or less fleets.

As you and your enemy destroy ships or bases, your war score will go up. Over time war weariness will increase. In a defensive war, you'll just need to hold the enemy off long enough until they offer you a white peace. If you destroyed a bunch of enemy mining/research bases in a particular system, you should try to build your own bases there very quickly and establish a presence there. Better to do it before the war ends if possible.

Invading your first enemy home world

If you are not at war and you want to conquer a small, nearby enemy empire - you'll need to invade and take over every colony. Be sure to check the race you are considering attacking. Some races are extremely resistant to assimilation which means you'll wait a very long time for the captured colony to be profitable. [Check this chart](#) to see how fast (or slow) each race will assimilate into your Empire. Best case there is only one colony in their control. If there are more than one, I usually take out the home (largest) colony first. This way if I lose some troops, I won't need as many for the smaller colonies.

Preparing for the invasion.

It takes a long time to build up enough troops, transports, and ships/fleets to prepare for an invasion. Start planning well in advance. Early game you can invade without tanks and special forces, but they offer a big advantage so I almost never invade until I have these ground forces types.

You can also use Bombardment weapons, but a few updates ago - they increased the penalty (and the time it takes for the penalty to wear off) so it will cost you more reputation damage. This affects colony happiness, etc. which ultimately affects revenue. As you are bombarding, the penalty accumulates over time. As short bombardment to soften up some troops isn't terribly detrimental so it remains a viable option in my opinion. The example below is my penalty after a short but effective bombardment on an enemy colony early game. Notice my penalty for betraying a non-aggression treaty was much more significant! Also notice the +2.2/year cool down rate which will soon erase my bad manners from bombardment.

Most importantly, since some recent updates, the AI doesn't build as many troops as it used to. The maintenance was crippling the AI income/research so the devs reduced the number the AI typically builds and maintains on a particular colony. So invasions are a bit easier now - with or without bombardment. Colonies with large population, however, still put up a large number of "militia" troops so don't expect an easy time

You also don't specifically need bombardment weapons (e.g. **Atomic Devastators [L]**) but without them, it will take a very long time for your fleets to destroy their ground defenses. The chart on the next page is a typical invasion strategy I use but by no means is it the only way. I've used much less on the hardest settings early game. Less troops is fine if you bombard until they have no troops left.



	Strategy/Steps	Techs required/recommended
Facilities <i>(on your home)</i>	<ul style="list-style-type: none"> ● Build an Armor Barracks (to train tanks) ● Build a Special Operation Barracks (to train special forces) 	Shock Forces (for Tanks) Improved Assault Tactics, Improved Defense Tactics, Battlefield Sabotage (for special forces)
Ground forces	On the colony you built the facilities on, train approximately: <ul style="list-style-type: none"> ● 15 infantry ● 20 tanks ● 15 special forces This will take a few years at a single planet. Start with infantry.	<i>See above.</i>
Transports	Build between 10 and 20 transports (depending upon your tech. level) and make a fleet. Higher tech. ships hold more troops	Basic Transport Systems, Ship boarding, Basic Troop Transports (minimum) Transport Systems, Expanded Troop Transports (recommended)
Bombardment Fleet <i>(optional)</i>	I like to bring in roughly 12 ships (typically Light Cruisers) with 2 Atomic Devastators (L) each (plus some normal weapons and some PD). Instead your ships from your combat fleet might be able to bombard (esp. If they have derilict ships you repaired!)	Bombardment Weapons (minimum) Advanced Bombardment (recommended) Multi-Role Starships (recommended for bombardment: light cruisers)
Combat Fleet	I like to bring at least one fleet of 25 or so, custom Fleet Destroyers (Missiless, PD, Med. Star fighter bay) and a good admiral to take out their ships and space station. If I'm behind them in tech., I bring more. Be sure to have 3 or 4 other fleets minimum to defend your colonies/bases once the war begins.	Interstellar Destroyers (minimum) Improved Destroyers (recommended)

Note: I have successfully invaded with basic destroyers, no bombardment, and less troops early game - especially on non-capital colonies. Low populations colonies (e.g. < 1000 M) are extremely easy to invade successfully with 20 or so total troops at most.

Beginning the invasion.

Hopefully you are not at war yet so you can use surprise. Of course load up your transports with troops (select the transport fleet and right click menu on your colony). Be sure all participating fleets are based as close as possible to your enemy (at a friendly space station or mining base with lots of fuel) and be sure to top off their fuel levels.

1. Move the Combat Fleet(s) to the target by selecting my fleet and then zooming (mouse wheel) into the target system. I right clicking (select **Move to...**) on a spot out of firing range of their space station. It gives my ships time to arrive and it often will lure his fleets over to where my fleet is arriving. Jumping directly into their fleet/space station can cause excessive losses as all of your ships won't arrive at the same time.
2. When your Combat Fleet(s) has almost arrived at the target system, I now order my bombardment fleet and my transport fleet to move there too (except I right click right next to the colony). There is nothing wrong with including the bombardment ships in your main fleet. But I like to have each focus on a single task. If there are no enemy ships left I'll have my main fleet bombard too - but they can defend the other 2 fleets while they do their job. I set my transport fleet and my bombardment fleet **engagement range** to **Engage when attacked** so they don't get distracted around the colony. They are a bit vulnerable like this so keep them protected (in a pinch - the bombardment fleet be changed back to **Nearby** if needed to fight enemy response fleets).
3. If you are not at war yet, wait until the rest of your Combat fleet ships arrive into the system and then declare war (**DIPLOMACY** tab). You are already taking a diplomatic hit for having all these combat ships in their home system - but who cares. You're declaring war!
4. After most of their ships who get lured out to fight you are gone, select your fleet and right click blockade their planet. Your ships will take out the space station on the way but you can target that first if you like. Make sure your fleet has its **engagement range** set to **Nearby** - otherwise they will start jumping around the system trying to take out mining bases on the far side of the system leaving your bombardment and transport fleets unprotected! Soon your other fleets will arrive.
5. Now select your bombardment fleet (and then later your combat fleet if they are bored) and right click on the colony selecting **Bombard Colony** from the pop-up menu. The result is that the ground forces will start to get weakened and then eventually destroyed. You don't have to wait until they are completely gone, but stop the bombardment no later than after the last ground unit is destroyed. The population will still put up a fight - and they aren't calculated in the defense numbers that pop-up. So you need at least 2:1 (probably more) of Attack Strength v. Defence. I usually bombard until the last defense unit is destroyed. You will kill a lot of civilians and possibly damage the quality but it's worth it. Mid game be sure those Planetary Defense troops are destroyed. They will kill a lot of your landing troops.
6. Finally select your transports and then right click on the colony and select **Invade colony**. Watch the progress by clicking on the target colony and then clicking on the red section that appears when your troops land.
7. After a successful invasion, the colony may rebel once or twice very rarely. Your troops will fight off the militia. Be sure at this time to refuel your fleets on the colony. Build a space station. If you want to take another colony, you'll need to ungarrison troops or go back to your home colony to get some more. If this was their only colony, then you'll notice you just gained a lot of stations, territory, and ships. Congratulations!

Note you can bombard a colony into oblivion if you don't feel like taking it over. Small colonies on planet types hostile to your race are sometimes not worth capturing. Finally, if you set your transports to "attack..." but no troops are landing - try destroying all of the orbiting bases which seems to help in the latest version.

A quick overview of recruit-able troops:

SPECIALTY TROOPS						
Type	Size	Attack	Defense	\$ Recruit	\$ Upkeep	Building Required:
Armored *	10000	360	120	\$3,750	\$375	Armor Barracks
Special Forces **	5000	240	90	\$5,000	\$500	Special Operations Barracks
Synthetic Brigade	4000	120	120	\$20,000	\$200	Synthetic Troop Foundry
Aerospace Def. Brigade ***	1500	48	72	\$20,000	\$2,000	Planetary Defense Center
Battle Robot Brigade	4000	60	60	\$1,250	\$125	Robotic Troop Foundry
Titan Company *	20000	600	360	\$50,000	\$1,000	Titan Manufacturing Center

Notes: * Infantry evasion ** Sabotage *** Intercept

* **Infantry evasion** means infantry are less effective against them.

** **Sabotage** gives them a chance to destroy various defenses before the battle begins. Having special forces (like Armored forces) also adds an overall bonus to the entire invasion.

*** **Intercept** means these units have a chance to shoot down invading troops even before they land and attack. Very powerful on defense (and expensive).

RACE DEFAULT INFANTRY:						
Race	Type	Size	Attack	Defense	\$ Recruit	\$ Upkeep
Ackdarian	Defender Brigade	5000	90	90	\$2,500	\$200
Atuuk	Hunting Party	5000	68	68	\$2,500	\$200
Boskara	Executioner Hive	5000	135	135	\$2,500	\$200
Dhayut	Mercenary Brigade	5000	126	126	\$2,500	\$200
Gizurean	War Swarm	5000	92	92	\$2,500	\$200
Haakonish	Battlematon Brigade	5000	125	125	\$2,500	\$200
Human	Strike Trooper Brigade	5000	120	120	\$2,500	\$200
Ikkuro	Sentinal Force	5000	134	134	\$2,500	\$200
Ketarov	Battle Group	5000	72	72	\$2,500	\$200
Kiadian	Battle Trooper Brigade	5000	128	128	\$2,500	\$200
Mortalen	Conqueror Force	5000	140	140	\$2,500	\$200
Naxxilian	Fighting Clan	5000	129	129	\$2,500	\$200
Quameno	Battle Mech Brigade	5000	96	96	\$2,500	\$200
Securan	Scout Group	5000	76	76	\$2,500	\$200
Shandar	Protector Force	5000	81	81	\$2,500	\$200
Sluken	Terminator Brigade	5000	130	130	\$2,500	\$200
Teekan	Trapper Group	5000	65	65	\$2,500	\$200
Ugnari	WarBot Brigade	5000	72	72	\$2,500	\$200
Wekkarus	Guardian Brigade	5000	84	84	\$2,500	\$200
Zenox	Robo-Guard Force	5000	105	105	\$2,500	\$200

RACE ASSIMILATION RATES		
Race	Assimilation Rate	Value
Ackdarians	Adaptable	0%
Atuuk	Adaptable	0%
Boskara	Resistant	-40%
Dhayut	Adaptable	0%
Gizurean	Adaptable	0%
Haakonish	Resistant	-40%
Human	Adaptable	0%
Ikkuro	Adaptable	0%
Ketarov	Adaptable	0%
Kiadian	Adaptable	0%
Mortalen	Resistant	-50%
Naxxilian	Adaptable	0%
Quameno	Adaptable	0%
Securan	Adaptable	0%
Shandar	Adaptable	0%
Sluken	Adaptable	0%
Teekan	Compliant	20%
Ugnari	Adaptable	0%
Wekkarus	Adaptable	0%
Zenox	Adaptable	-10%

Appendix A: Overview of navigating the various Select Screens

SHIP SELECTED - Navigation

The screenshot shows the 'SHIP SELECTED' interface for a 'Deadly Foe' (12th Fleet) carrier. The main ship display includes a 3D model, a 'Patrol Zerolast system' icon, and a 'Carrier (size 1433, Carrier)' label. It features a 'WEAPONS' section with a strength of 5,236, an average DPS of 43.6, and a range of 3,290. The ship's status is shown with fuel (130/150), energy (700/700), and speed (0/64). A hexagonal gauge displays 1344 shields and 600 armor, with 100% hull integrity. The 'ONBOARD' section lists 18 Interceptors, 18 Bombers, and 0 Buildings. A 'TACTICAL SETTINGS' panel is open, showing options for Role within Fleet (Attack), Engagement Range (Same System), Attack Stance (Neutral), Retreat When (20% of non-defense components damaged), and Invade Colonies (Immediately).

WEAPONS - DEADLY FOE

STRENGTH:	5,236	MAX DPS:	56.1	AVG DPS:	43.6	RANGE:	3,290
1	HyperDeny GW4000						
2	Ion Rapid Pulse Array (PD)						
1	Grapple Beam (S)						
4	Hive Missile Battery (M)						
1	Hail Cannon (S)						
3	Medium Starfighter Bay						

SHIELDS 1344

ARMOR

HULL 100%

	Amount	Normal	Damaged	Destroyed	Disabled
Engine	6	6	0	0	0
Weapon	8	8	0	0	0
Defense	8	8	0	0	0
Sensor	6	6	0	0	0
Hangar	3	3	0	0	0
General	12	12	0	0	0

TACTICAL SETTINGS - DEADLY FOE

Role within Fleet	Attack
Engagement Range	Same System
Attack Stance - Weaker targets	Neutral
Attack Stance - Stronger targets	Cautious
Retreat When	20% of non-defense components damaged
Invade Colonies	Immediately

Admiral Jundo Yablik
Commanding 12th Fleet from Deadly Foe

- Weapons Damage Increase +34%
- Targeting +36%
- Ship Maneuvering +13%
- Ship Speed +8%

Callouts:

- Click to Select/view the 12th Fleet
- Click for previous selection/view
- Click to view design details
- Click to Select/view Zerolast (the mission target)
- Double click here to Zoom and center view on ship
- Click to send ship to nearest location to repair and refuel
- Click to send ship to nearest location to retrofit to latest design
- Click to have ship leave its current fleet
- Click to retire ship at nearest spaceport
- Click to automate ship (or switch back to manual)
- Click to manage fighters

FLEET SELECTED - Navigation

12th Fleet (Forceful Sun)
Refuel at Tran Marell 5 Mining Station
Fuel Level: 5945/6300 (355 to fill)
(Manually controlled)
HOME BASE: Kadumae 2
STRENGTH: 95,218 (29 ships, 372 fighters)
TROOPS: 0/80,000 (Strength: 0)

Admiral Jundo Yablik
Commanding 12th Fleet from Deadly Fo
Weapons Damage Increase +34%
Targeting +36%
Ship Maneuvering +13%
Ship Speed +8%

TACTICAL SETTINGS - 12TH FLEET
Fleet Engagement Range: 40% of Fuel Range
Fleet Retreat Strategy: Enemy Strength 50% greater
Hide Advanced Settings
Formation: Very Tight
Allow Position Reassignment: Ships retain current position within fleet

Annotations:
- Double click to Zoom and center view on fleet
- Click to select/view ship "Forceful Sun"
- Click to select/view "Tran Mariel 5"
- Click to select/view "Kadumae 2"
- Hover to see Ship name/Fuel status or Click to select/view ship
- Click to automate fleet (Manual, Attack, Raid, Defend, Invade)
- Click to replenish lost ships (if using fleet templates)
- Click to send fleet to nearest location to repair and refuel
- Click to send fleet to nearest location to retrofit to latest design
- Click to disband fleet (ships go their own way)

SPACEPORT SELECTED - Navigation

Annotations:

- Click to view design details
- Click for previous selection/view
- Double click here to Zoom and center view on Spaceport
- Hover
- Double click to select/view ship OR Single click to reorder build queue or cancel production
- Click to retrofit Spaceport to a newer design
- Click to scuttle spaceport
- Click to build Ships
- Click to manage fighters
- Click to toggle between Manual and Automatic Resource Stock Management

WEAPONS - KADUMAE 2 SPACEPORT

STRENGTH: 9,887 MAX DPS: 122.4 AVG DPS: 67.1 RANGE: 8,400

3	Interceptor Missile [PD]
1	Tractor Beam [M]
1	Intimidator Surge Blast [L]
3	Concussion Missile [L]
1	Ion Cannon [M]
3	Phaser Cannon [L]
4	Medium Starfighter Bay

SHIELDS 2880

ARMOR 108 108 108 108 108 108

HULL 100%

	Amount	Normal	Damaged	Destroyed	Disabled
Engine	0	0	0	0	0
Weapon	12	12	0	0	0
Defense	12	12	0	0	0
Sensor	3	3	0	0	0
Hangar	6	6	0	0	0
General	23	23	0	0	0

RESOURCES & STOCK LEVELS

Show All Resources On Hand Maintain Rsvd Other Sources

Fuel Resources

Caslon	14,526	15426	5,300	3760	129 of 231
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Construction Resources

Aculon	3,278	2422	0	2925	164 of 429
Argon	6,014	3220	0	3734	110 of 266
Carbonite	9,489	10120	0	1723	46 of 89
Cuprica	2,163	1563	0	895	86 of 233
Dyrrillium Quartz	5,477	4864	0	109	27 of 38

COLONY SELECTED Navigation

Hover Targets for more information:

- 255 Check Exploration level
- 161% Check Development
- 36% Check Corruption
- 158K Check Revenue

Double click here to Zoom and center view on

Click for previous selection/view

Hover to see details OR Click to upgrade, change build order, or to scrap

Double click to select/view ship OR Single click to reorder build queue or cancel production

Hover to see Bonuses for Location and Empire

Manually manage colony tax rate and set this colony to be the Capital

Build new Ground Troops

Build new Facilities

Build new Ship or Base

Set Colony Automation

Select to garrison, ungarrison, or disband OR Change build priority

Race	Assimilation	Amount	Growth Rate
Ackdarian	96%	6683M	+1.5%
TOTAL	96%	6683M	+1.5%

Growth rate does not include... from...
emigration. Nor does it include...

Race	Assimilation	Amount	Growth Rate	Other
Ackdarian	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boskara	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dhayut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Haakonish	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The inhabitants of Kadumae 2 are angry (-35)
 Our colony has a very high level of development (+33)
 We enjoy our colony's high quality environment (+9)
 Medical facilities increase our happiness (+4)
 Recreation facilities increase our happiness (+4)
 Ackdarians are unhappy being part of our Human empire (0)
 High corruption reduces our happiness (-8)
 We are concerned about our empire's poor reputation (-17)
 The current tax rate is too high! (-60)

Show All Resources	On Hand	Maintain	Rsvd	Other	Sources
Fuel Resources					
Caslon	14,526	19,026	5,300	3,760	129 of 231
Construction Resources					
Aculon	3,278	2,422	0	2,925	164 of 429
Argon	6,014	3,220	0	3,734	110 of 266
Carbonite	9,489	1,020	0	1,723	46 of 89
Cuprica	2,163	1,663	0	895	86 of 233
Dyrillium Quartz	5,477	4,864	0	109	27 of 38

Size	4428	Revenue	\$ 249,157
Quality	52%	Corruption Losses	\$ -90,818 (36.5%)
Pop	6683M	Base	158K

Detailed Colony View

Appendix B: Designing your own ships guide

Watch [this new video](#) for more custom ship design tips (updated March 2023)

If you want to see a currently selected Ship's design (without being able to change it) click on the ship type (see image).



Ships are broken up into categories call "roles". Each role (eventually) will have different hull types available. Now that they added improved support for multi-hull play, it is a lot more fun to design ships. An example of a Human mid-game Roles and Hull types within each role:

Role	Hulls	Tech. name in research screen
Escort	Escort Patrol Escort , Heavy Escort	Basic Military Starships (Tier 1) Improved Escorts (Tier 2)
Frigate	Frigate, Fleet Frigate , Fast Frigate , Heavy Frigate	System Patrol Starships (Tier 2) Improved Frigates (Tier 3)
Destroyer	Destroyer, Fast Destroyer , Heavy Destroyer , Fleet Destroyer	Interstellar Destroyers (Tier 3) Improved Destroyers (Tier 4)
Cruiser	Light Cruiser Cruiser , Fast Cruiser , Long Range Cruiser , Command Cruiser Exploration Cruiser , Patrol Cruiser , Fleet Command Cruiser , Heavy Cruiser	Multi-Role Starships (Tier 5) Improved Cruisers (Tier 6) Advanced Cruisers (Tier 7)

So when you have multiple Hulls available, you may want to keep 2 or more designs active per Role. Here is a simple example of different **Cruisers** you might want active at the same time:

Patrol Cruiser: Flak (anti fighter/projectile) Cruiser for defense. You might set *position in fleet* to **Picket** and have good number of these.

Short Range Senors, 2x Large Missile Weapons, 2 x Bombard Weapon, 4 x PD weapon


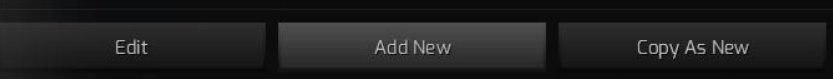



Fleet Command Cruiser: A Support Cruiser to assist the other ships. You might set *position in fleet* to **Core** and have only one or a small number of these.

Long Range Sensors, Fleet Targeting, Fleet Countermeasures, 2 x Large Missile Weapon, 2 x PD weapon. Fill all shield and armor slots if possible as well. If you can fit a fighter bay or trade it out for the Missile weapon, it will help with defense.

Heavy Cruiser: The main punch of your fleet . You might set *position in fleet* to **Close Escort** and have a lot of these ships.

Trace Scanner, 4x Large Missile Weapons, 1 x PD weapon, 1 Target Tracking System.

A quick example of using the Design Screen for an early Frigate:

<p>1 Open the design screen.</p> <p><i>Note there is a tour (click the flashing “?”) when you get into the design screen at step 4. I recommend you watch that first before doing step 4</i></p>	
<p>2 Click add new</p> <p><i>(if a Frigate design already exists you can select it and then click upgrade instead and then go to step #4 directly)</i></p>	
<p>3 Select Frigate from the list and then click Auto-generate...</p>	
<p>4 Filter the COMPONENTS list (upper left corner) by Latest Per Category (this is not very important now but it's a good habit for later designs)</p>	
<p>5 We want to change the weapons in our Frigate Design. Select the Rail Gun (M) from the COMPONENTS list (top left window). (Alternatively you can select another (M) tier 2 weapon you may have researched instead.)</p>	
<p>6 Click on the Empty bay size 39 in the DESIGN BAYS list to add the Rail Gun.</p> <p>** note the Rail Gun (M) listed in the COMPONENTS window is size 26 which won't fit in the smaller, 19 sized bay!</p> <p>Watch the size of your design go up as you add components. (upper right window):</p> 	

<p>7</p>	<p>Finally replace the Seeking Missile with a small Rail Gun.</p> <p>Select Rail Gun (S) from the COMPONENTS list and then hover over the size 19 Seeking Missile (S) bay in the DESIGN BAYS window.</p> <p>Note the comparison pop-up when you mouse-over the bay! Always choose the largest weapons - even if it means leaving some bays empty!</p> <p>Also note that the small Rail gun is only size 13 – so it will easily fit in the size 19 bay.</p>	
<p>8</p>	<p>Click on the 19 size bay to replace the Missile weapon with Rail Guns.</p> <p>You should now see only Rail guns (2 mediums and 1 small) and the total Hull size (upper right) will be 446/450 (we just made it!). Notice we can't fit another weapon even with the empty slot still available.</p>	
<p>9</p>	<p>Optionally you can set ship behavior here (top middle of the screen).</p> <p>If you use stand-off weapons (e.g. Torpedoes or Missiles) it's good to set the Attack stances (2nd and 3rd button) to cautious so ships fire from long distances. Role within fleet doesn't matter early game but later these close-in ships (with close-in weapons) should be set to Picket. "Retreat When" should be set to the least restrictive: "Same System"</p>	
<p>10</p>	<p>Finally rename the design (I use FR for Frigate and then whatever I want for the name of the design).</p> <p>Click Save and Exit</p>	

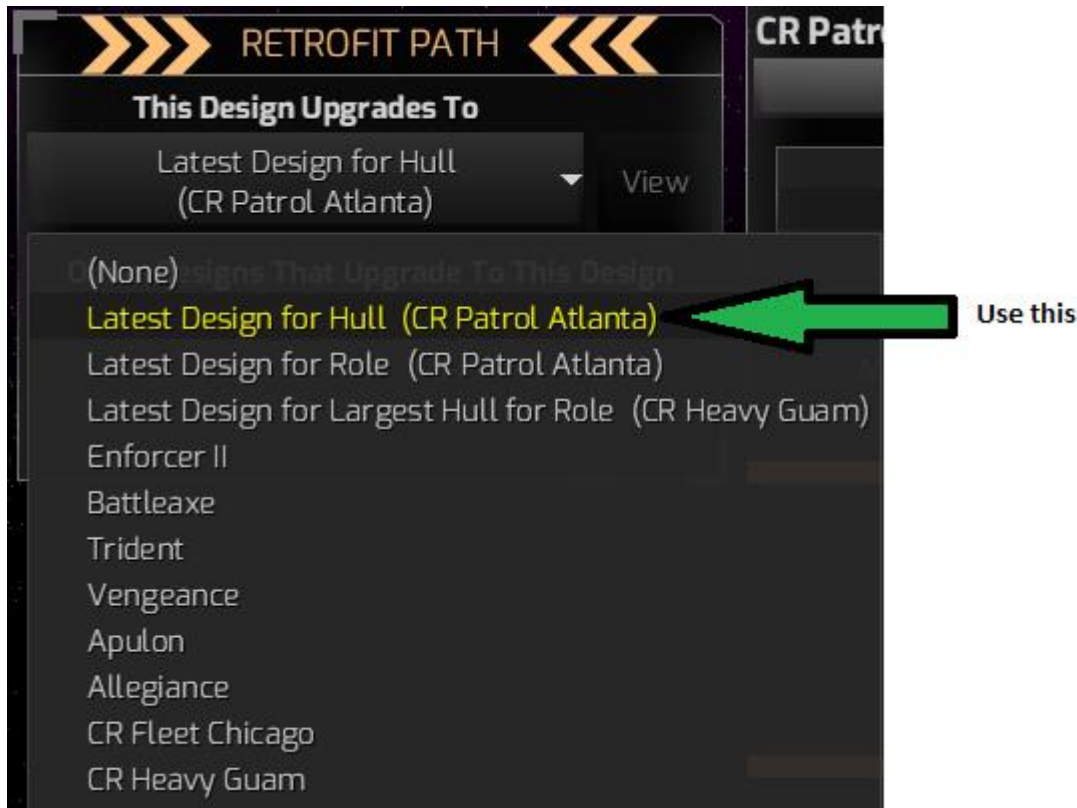
Super important note: If you research a *new version* of a weapon, component, etc. Your ships will auto retrofit - no need to send them to a base or planet to retrofit! Think of this as a software only upgrade. You only need to retrofit if you research a component with a *new name*.

A note about Retrofit Path:

So in the example on the previous page we ignored this setting and left it at the default. That's fine for beginners but if you want to have 3 different Cruisers designs active (aka having 3 different hulls for a single role) for example, then you need to set this retrofit path to something else.

So for this example, you'll need to go back a few pages and see the 3 Cruiser fleet example I made earlier. Here are the names of the designs I made:

- CR Patrol Atlanta** - A Patrol Cruiser: Flak (anti fighter/projectile) Cruiser for defense.
- CR Fleet Chicago** - A Fleet Command Cruiser: A Support Cruiser to assist the other ships.
- CR Heavy Guam** - A Heavy Cruiser: The main punch of your fleet .



Latest Design for Hull
Use this setting so that this design will only retrofit to identical hull designs. So if you upgrade the Heavy Cruiser, for example, this Patrol Cruiser will NOT retrofit to that design.

Latest Design for Role
Never use this - it is a legacy setting that will simply retrofit to the most recent design - even if it is a lower tier (weaker) design.

Latest Design for Largest Hull for Role (default)
This will update to the most recent design but only if the design is the same tier or higher. Currently this doesn't work for the "most recent" - but it will prevent backward tier retrofits.

Individual designs (various)
Only useful if you want to force a retrofit to a particular existing design.

Some other notes about the DESIGNS window below

Manual under **Auto Design** (see green circle below) means that as new techs come out your ship will generally not be upgraded.

You'll need to select the design and then click **Upgrade** from this screen when new components are researched. You will probably have to manually manage the weapons each time you use **Upgrade** as we just did on the previous page (the AI does not make the best weapon choices for you).

*If a newly discovered component only changes a version number (but keeps the same name), not only does the AI update your design automatically, it also instantly updates your ships with the latest version (no retrofit required). Don't use **Upgrade** for only a change in version number. A little unrealistic but very, very convenient.*














When you upgrade a design (e.g. the Cruiser design circled) with the **Upgrade** button, the AI will automatically obsolete the old design when you save your changes. But if you create a new Frigate using the **Add New** button, the old design will still be active too. You'll need to change the view from **Latest Buildable Designs** (pull down menu upper left) to **Active designs** to see if there are duplicate designs. Click on the last column (**status**) to change the status from **Active** to **Obsolete**.

DESIGNS											
FILTER		Active Buildable Designs		All Types		Ship Design is Automated		Load Designs		Save Designs	
Name	Role	Hull	Build Cost	Maintenance	Date Created	Size	Amount	Hull Upgrade	Retrofit	Status	
Allegiance	Cruiser	Exploration Cruiser	45,276	1,840	2841.08.21	897	0	Automatic	Automatic	Active	
Allegiance III	Destroyer	Heavy Destroyer	16,628	676	2835.06.20	629	0	Automatic	Automatic	Active	
Apulon	Cruiser	Cruiser	37,984	1,544	2837.10.22	840	0	Automatic	Automatic	Active	
BMR-8 Basic Bomber	Bomber	Basic Bomber	1,101	55	2841.11.16	61	216	Automatic	Automatic	Active	
Battleaxe	Cruiser	Fast Cruiser	37,188	1,512	2837.10.22	824	0	Automatic	Automatic	Active	
CLN-16 World Founder	Colony Ship	Small Colony Ship	44,877	1,824	2827.11.26	380	0	Automatic	Automatic	Active	
CR Fleet Chicago	Cruiser	Fleet Command Cruiser	43,139	1,754	2842.07.29	830	0	Manual	Automatic	Active	
CR Heavy Guam	Cruiser	Heavy Cruiser	44,594	1,813	2842.07.29	894	0	Manual	Automatic	Active	
TT1000 Fuel Transport	Fuel Tanker	Small Fuel Tanker	5,608	228	2827.11.26	444	3	Automatic	Automatic	Active	
Trident	Cruiser	Long Range Cruiser	37,928	1,542	2837.10.22	840	0	Automatic	Automatic	Active	
Vengeance	Cruiser	Command Cruiser	37,984	1,544	2837.10.22	840	0	Automatic	Automatic	Active	
Victory II	Escort	Patrol Escort	5,860	238	2835.06.20	350	0	Automatic	Automatic	Active	
751000 Ore Hauler	Mining Ship	Small Mining Ship	4,175	170	2827.11.26	395	0	Automatic	Automatic	Active	

Edit	Copy As New	Mark Selected As Auto Hull Upgrade	Mark Selected As Auto Retrofit	Mark Selected As Active	Delete Selected
Add New	Upgrade	Mark Selected As Manual Hull Upgrade	Mark Selected As Manual Retrofit	Mark Selected As Obsolete	






Super important! The cells in the last 3 columns of this table are clickable! Click to change from Auto to Manual, Active to Obsolete, etc.

A quick overview of some important General Components:

Explanation of Combat Ship General Components (when designing ships)									
	Name/Category	+ TO HIT	+ DMG	Repairs DMG	- Enemy TO HIT	- Enemy DMG	Reduce \$	Uses	Benefit/Value
	Tractor Beam							Pulls/pushes ships	Pulls for boarding/capturing or to prevent retreat (requires Ship Boarding). Pushes to keep ships at far distance. Can also prevent them from retreating
	Reactors							Powers other components	Required to power ship's components. Be sure to have enough to fully power hyperdrive engines or your ships will not go at their full speed. Check charts in far right of design screen.
	Energy Collector							Replaces small fuel usage to compensate small loss when idling ships	Every ship should have one
	Target Tracking	<input checked="" type="checkbox"/>						Increases Weapons TO HIT chance	Weapons more likely to hit targets
	Countermeasures System				<input checked="" type="checkbox"/>			Decreases enemy Weapons TO HIT chance	Enemy Weapons less likely to hit you
	Proximity /Short / Long (Sensors)							Show location of enemy ships/creatures Tracks Jumps (movement) of enemy ships	Proximity: Close Short Range: Same System Long Range: Multi-system Range
	Trace Scanner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Shows nearby enemy ship stats/cargo/troops Increases TO HIT and DAMAGE for WEPs	Can use in conjunction with other Sensors
	Fuel Cells							Increase fuel capacity (and therefore range)	Range early/mid game is important so worth getting early.
	Command Center	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Save on Maintenance (\$), Reduce and repairs Hull Damage taken, Increases TO HIT chance, Decrease enemy TO HIT chance	Lots of bonuses to combat and maintenance. High Priority
	Crew Systems					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Required as you add more components/weapons. Slightly reduces hull damage taken and Maintenance \$	The design screen will warn you when you add too many components and require additional crew systems. Higher Tier versions have more crew support. Components detail views show # of crew requirements
	Damage Control			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		Reduces incoming damage to hull, Repairs Armor/Hull/components	Prevents you from having to go back to base for minor repairs. High Priority
	Stealth Cloak				<input checked="" type="checkbox"/>			Jams Scanners to hide ship	Depends upon enemy sensor level for how much their visibility is reduced
	Assault Pod (Ship Boarding)							Required to board/capture ships	Consider getting Tractor Beams to complement this

****NOT SHOWN: Quantum Capacitors:** These boost shields strength (slightly) and shield recharge rates (more importantly). Super important and highly recommended

Mid/Late Game Ship Hull Characteristics (HUMAN ONLY - other races have differences) *(updated for Aurora)*:

Key differences in Mid/Late game Human Ship hull Types																																
Human Ships																																
	Tech :	Improved Destroyers			Improved Cruisers				Advanced Cruisers				Battleships (4 different				Carriers (4 different techs)															
	Heavy	Fast	Fleet	Fast	Long Rg	Cmd	Cruiser	Explore	Patrol	Flt Cmd	Heavy	BC	BB	Hvy BB	Dreadn.	CVL	CV	Hvy CV	Fleet CV													
Speed and Hull Size																																
Speed Bonus :	10%	20%	10%	5%								5%																				
Maneuvering Bonus :	10%																															
Max Size :	675	675	675	840	840	840	840	900	900	900	900	1200	1300	1500	1800	1200	1300	1500	1800													
Combat Bonuses																																
Targeting :	+10%			+ 5%								+ 5%																				
Countermeasures :			+ 5%				+ 5%			+ 5%			- 5%	-10%	-10%	-10%	- 5%	-10%	-10%	-10%												
Shield Recharge :					+ 5%				+10%			+25%	+25%	+25%	+25%	+25%	+25%	+25%	+25%	+25%												
WEPs Range Increase :				10%								+25%	+25%	+25%	+25%																	
Reactive Rating :	4	4	4	6	6	6	6	6	6	6	6	7	8	10	12	6	7	8	10													
Component Bays (Standard/Large)	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L												
WEPs :	2	3	2	1	2	3	5	5	4	5	5	5	5	5	5	5	6	8	6	10	6	12	6	12	3	2	6	2	6	2	6	2
Engines :	4	6	5	7	7	6	6	7	8	6	6	6	7	8	8	10	11	12	12	10	11	12	12	10	11	12	12					
Defense :	5	4	5	7	7	7	7	7	7	8	8	10	11	12	12	10	11	12	12	10	11	12	12	10	11	12	12					
Hanger :	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	4	5	6	6	4	5	6	6	4	5	6	6					
Sensor :	1	1	1	1	1	1	3	1	4	1	4	1	3	1	5	1	3	1	5	1	3	1	4	1	4	2	4	2	4	2	4	2
General :	13	14	13	16	16	16	16	18	17	16	18	21	23	25	25	20	22	24	24	20	22	24	24	20	22	24	24					

Reactive Rating works by taking damage off of each hit before it damages the Hull. This is after Damage reduction from Command Center, etc.

Mid/Late Game Ship Hull Characteristics (Ackdarian only):

Key differences in Mid/Late game Ackdarians Ship hull Types																																					
Ackdarian																																					
Tech :	Improved Destroyers			Improved Cruisers				Advanced Cruisers				Battleships (4 different				Carriers (4 different techs)																					
	Heavy	Fast	Fleet	Fast	Long Rg	Cmd	Cruiser	Explore	Patrol	Flt Cmd	Heavy	BC	BB	Hvy BB	Dreadn.	CVL	CV	Hvy CV	Fleet CV																		
Speed and Hull Size																																					
Speed Bonus :	10%	20%	10%	5%					5%																												
Max Size :	675	675	675	840	840	840	840	900	900	900	900	1200	1300	1500	1800	1200	1300	1500	1800																		
Combat Bonuses																																					
Targeting :	+10%		+ 5%								+ 5%																										
Countermeasures :			+ 5%			+ 5%				+ 5%		- 5%	-10%	-10%	-10%	- 5%	-10%	-10%	-10%																		
Shield Recharge :				+ 5%				+10%				+25%	+25%	+25%	+25%	+25%	+25%	+25%	+25%																		
WEPs Range increase :												+25%	+25%	+25%	+25%																						
Reactive Rating :	4	4	4	6	6	6	6	6	6	6	6	7	8	10	12	6	7	8	10																		
Component Bays (Standard/Large)																																					
WEPs :	4	2	3	2	4	2	6	4	5	4	6	4	6	5	5	4	5	5	5	6	5	8	8	8	9	8	10	8	10	3	5	3	5	3	5	3	5
Engines :	5	7	6	8	8	7	7	8	9	7	7	7	8	9	7	7	8	9	9	7	8	7	7														
Defense :	4	3	4	6	6	6	6	6	6	6	7	7	8	9	10	10	8	9	8	8																	
Hanger :	2	2	2	2	2	2	2	2	2	2	2	3	3	4	4	5	6	5	5																		
Sensor :	2	1	1	2	0	3	1	4	1	4	1	3	1	5	1	3	1	5	1	6	1	6	1	6	1	6	1	4	2	4	2	4	2	4	2		
General :	11	12	11	16	16	16	16	18	18	16	16	20	22	24	24	20	22	20	20																		

Reactive Rating works by taking damage off of each hit before it damages the Hull. This is after Damage reduction from Command Center, etc.

Appendix C: Fleet Management and Fleet Tactics Settings

Creating a fleet from scratch

Mid to late game, I have started using Fleet Templates. You can use them any time including early game. But early game, I find it easier to build and manage my own specialized fleets. Unfortunately the UX does not handle non-template fleet construction/organization well (IMHO) so here is how I do it:

- 1) **Build the ships at your spaceport.** Click repeatedly on the ship icons (use the tool tips to see details). You will see them in the queue on the [spaceport screen](#).
- 2) Go the **MILITARY SHIPS** list (under the **MILITARY** tab) and scroll down to the bottom of the list. All the under construction ships will be listed here and the ship icons will be red. Shift-click or Control-click to select multiple ships at the same time. Notice the bottom left Select screen shows all of the ships you've selected.
- 3) In that bottom right select screen, click the button with the tool tip **Create new fleet with these ships**.
- 4) Use the **F** key to select the fleet (this key cycles through all your fleets) and then right - click - hold on your spaceport and select **Set home base...**
- 5) Finally set the **Fleet's tactics settings** by hitting the last button on the button row of the **Fleet select Screen** (see below for explanations).

Fleet Tactics Settings

Fleet Eng. Range :	Determines how far away your fleet will go to engage enemies for both Auto and Manual fleets. Note settings overrides (ignores) the individual ship engagement range as long as the ship is in a fleet. YELLOW: means this setting doesn't work on manual fleets (manual fleets will not auto - engage enemies outside of a system like auto fleets will. Manual fleets will not retreat as a fleet) ORANGE: Your Military Attacks Policy is set to manual (change it!).
Fleet Retreat Strat:	For Auto fleets only: Sets parameter for the entire fleet to retreat together under certain conditions. Individual ships may retreat before the fleet does if they meet their own individual ship retreat rules.
Formation:	Makes ships in the fleet bunched or spread apart. Not a critical setting.
Allow Position Re...	When you design a ship you can set it to Core (stay in center), Close Escort (inner ring around the core) or Picket (outer ring around fleet). Change this setting to allow the fleet to manage what ships do what when forming up as a fleet during combat and ignore individual ship settings.

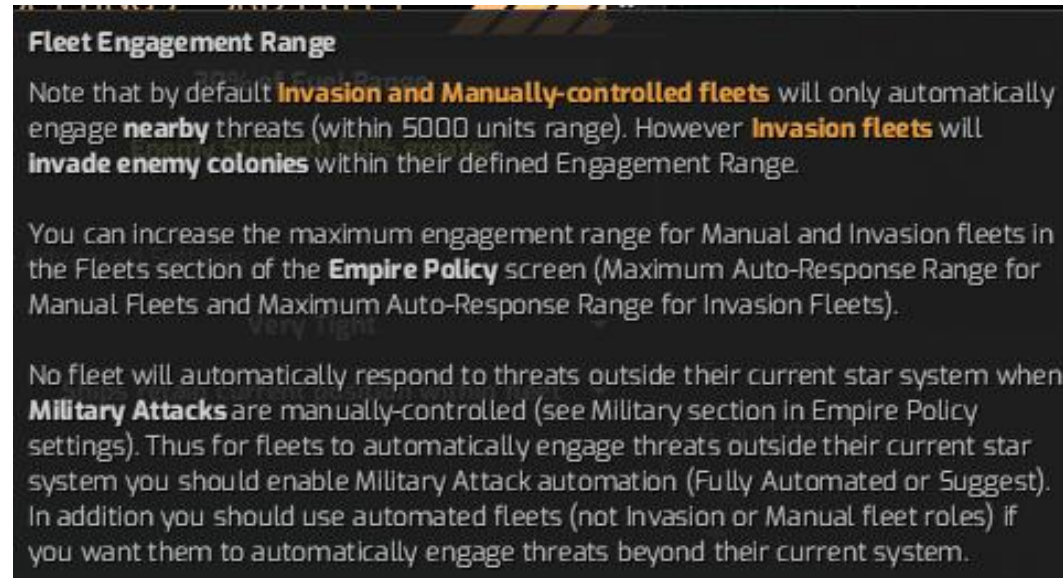


Fleet Tactics Override Ship (not shown above - scroll down in game):

Change this to **"Use Fleet Tactics instead..."** to override all individual ship tactics (**Engagement, Attack Stance, Retreat When, and Invade**) for as long as ships are in the fleet. After changing this, scroll down to set each tactic for all ships in the fleet. Only overrides while ships are in fleet. Read more about the relationship between ship and fleet tactics [here](#).

More On Fleet Engagement Range:

The hover too tip has some great points so I included it below:



Assigning missions to fleets.

So the first thing I recommend doing is setting a home for your fleet (don't worry - you can change it at any time). Very early that will probably be your home colony spaceport. This way your fleet will (eventually) always return here or use it as it's radius for activity.

Selecting a fleet quickly.

There are 3 easy ways to select a fleet (so you can give them orders and see its status)

- 1) Use the **F** key to toggle between your fleets.
- 2) Under the **MILITARY** Tab, select the **FLEETS** sub tab to get a list of all of your fleets.
- 3) When zoomed out to the Galaxy view, use the quick access bar along the very bottom center of the screen. Note if you mouse-over the green fleet icons, it will show the fleet name and display a line pointing to the fleet on the map. Click the fleet icon to select a fleet. Note that the icons change to reflect admirals and the **Fleet Role** automation setting (crossed swords for **Raid fleet**, Shield for **Defense Fleet**, lightning bolt for an **Attack Fleet**).



Manual Fleets (the default when you create one):

There are order buttons along the bottom of the fleet view ([explained here](#)) but the **right click menu** is very handy when working with manual fleets. Select your fleet and then **click on a target**. Some right click menus and their included commands are listed here based upon the right click targets:

Empty Space in current Solar System	Your Mining Station	Enemy Fleet	Enemy Colony
Move to this location Repair at Space station Refuel at Space station Patrol System Stop	Refuel at Station Guard Station Move to Station Set home base here Stop	Prepare and Attack Attack this fleet Move to this location	Prepare and Attack Colony Attack Colony Bombard Colony Blockage Colony Move to Colony Set attack point



A super important note about manually controlling fleets is about **changing orders mid-move**. If you order a fleet to go to a far away system, all of its ships will not arrive at the same time. So you might have 7 ships of a 20 ship fleet arrive together in a system and find an enemy fleet has just shown up on the opposite side of the same system. Left alone (depending upon their Engagement Range, etc.) they will start to move to attack the enemy. But you may feel the need to select the fleet, right click on the enemy, and immediately order them to attack. They will follow your orders but the problem is that the other ships still traveling at hyperspeed between systems will **stop moving** and readjust their target. They will take longer to get here now (though they will go directly to the enemy ships) because they will have to re-initiate their hyperdrives. If you again readjust your fleet's orders, they will stop a second time. Better to instead select each of the 7 ships (CTRL - click) and give the group orders.

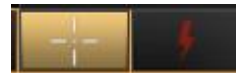
Setting fleets to Automatic:

So you have a remote colony that you don't want to worry about because you're so busy. You select a 12 ship fleets and right click on a colony to select **Set home base for this fleet to this colony (or nearby station)**. Then you select the Fleet role to: **Defend**. This fleet will now actively engage threats that attack your assets without you having to manage it. It will use the fleet's setting for **Fleet Engagement range** (I often set to "same system" or "nearby" if this colony/base is the only asset in system). Furthermore, all of the automatic fleets listed below will automatically:

- Refuel when fuel gets low (sometimes leaving the system to do so)
- Retrofit to new designs as technology advances
- Repair themselves at the closest space station or colony after getting damaged

Here are the 5 automation settings and what they do:

<p>Attack</p>	<p>Leaving your fleet on this mode will allow it to pick its own hostile targets based upon your fleet's Tactical settings (button at the bottom right). So for example if the engagement range is set to 33% of Fuel Range, your fleet will attack anything it deems a threat (Pirate Base, Space Creature, enemy fleet, etc.) in nearby systems but not past 33% fuel usage from it's home base. It will return to its home after it finishes. Be sure you left the <u>Military Attacks Policy Setting</u> to Automated (the default) or Suggest... - otherwise AUTO fleets will act like manual fleets.</p> <p>You can also queue attack targets under the MILITARY tab that your Attack fleets will then actively engage until eliminated (sort of a "honey do list" for your admirals) as long as it is in range.</p>
<p>Raid</p>	<p>These fleets will engage in <i>hit and run</i> tactics of nearby enemy installations.</p>
<p>Defend</p>	<p>Different from Attack above, Defense fleets will wait until something (ship, creature, etc.) attacks one of your assets (or sets a course for your assets with an intent to attack). It will use the same tactical setting to decide how far away it defend. I lot of times I set the range to be "nearby" - especially early game. This is because they might be off chasing a lone ship across your system - too far to defend against a lightning invasion of your colony. They will get back but usually not in time to stop the enemy from dropping their troops. So just be aware it's not perfect at defending a location as they tend to run off to deal with any old threat.</p>
<p>Invade</p>	<p>I never use this as I want to micro manage my invasions. It will load up transports with troops and invade nearby enemy colonies. It will use targets selected by you just like Attack fleets do.</p>
<p>Manual</p>	<p>Manual fleets left alone will also automatically engage nearby threats (using the Fleet Engagement range settings just like Auto fleets do) but NOT beyond the current system (e.g. it will ignore 33% range setting). But they won't automatically retrofit, refuel, retreat, or repair like the automatic fleets above will. They also won't pursue enemy targets you set like Attack, Raid, and Invade fleets will do unless in the same system.</p>



More about Fleet Engagement Range. This setting determines how far a fleet will go to engage enemy ships/fleets. I included the tool tip from in game below.

Engage when attacked is useful when refueling or refitting and you don't want the ship to get distracted by nearby threats. Just don't forget to set it back when you are done! When in a fleet, this setting is overridden. Highly recommended for Invasion fleets too so they don't get distracted during an invasion.

Nearby means closest station, planet, or moon

Same Location includes the planet, moons, and bases around the closest object.

Same System means they system the ship is currently in. Manual fleets ignore ANY ranges further than this

100M - 300M means how far on the galaxy map the auto fleet will go to engage. **Tip** - hold down shift and then click on the location of the fleet. Then move the mouse to see different ranges.

30%/40% fuel range. Will use the fleet's fuel capacity to decide how far to engage. Note that clicking on a ship or fleet will display on the map these two ranges (see below). Orange for 33% range, and yellow for 50% range.

Fleet Engagement Range
 Fleet Engagement Range specifies when a fleet will engage targets.

- **Do Not Engage:** the fleet will never engage enemies
- **Engage When Attacked:** will engage enemies only when directly attacked by them
- **Nearby:** will engage enemy targets that are nearby (within 5000 units range)
- **Same Location:** will engage enemy targets that are at the same location (planet and moons)
- **Same System:** will engage enemy targets that are in the same star system
- **50M range:** will engage enemy targets that are within 50 million units
- **100M range:** will engage enemy targets that are within 100 million units
- **200M range:** will engage enemy targets that are within 200 million units
- **300M range:** will engage enemy targets that are within 300 million units
- **33% of Fuel Range:** will engage enemy targets that are within 33% of fleet fuel range
- **50% of Fuel Range:** will engage enemy targets that are within 50% of fleet fuel range

Note that **fleet engagement range overrides the engagement ranges of individual ships in the fleet.** When a ship is part of a fleet it uses the fleet engagement range instead of its own engagement range.

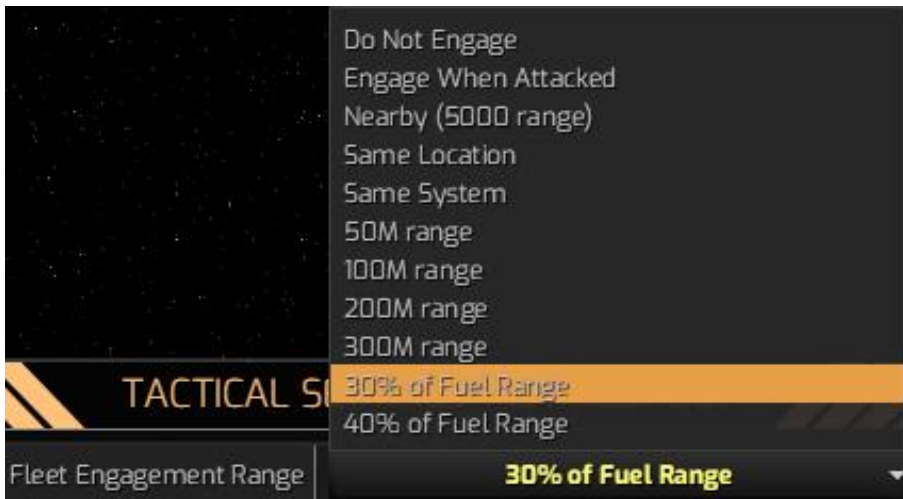
Manually-controlled and Invasion fleets will only automatically engage **nearby** threats (within 5000 units range). This is indicated by yellow text for this setting.

However you can increase the maximum engagement range for Manual and Invasion fleets in the Fleets section of the **Empire Policy** screen (Maximum Auto-Response Range for Manual Fleets and Maximum Auto-Response Range for Invasion Fleets).

To enable automated threat response for more distant targets you should use a different automated fleet role (Defense, Attack, Raid).

No fleet will automatically engage threats outside their current star system when **Military Attacks** are manually-controlled (see Military section in Empire Policy settings). This is indicated by orange text for this setting when Military Attacks are manually-controlled.

Thus for fleets to automatically respond to threats outside their current star system you should enable Military Attack automation (Fully Automated or Suggest). In addition you should use automated fleets (not Invasion or Manual fleet roles) if you want them to automatically respond to distant threats.



ONLY when fleets are set to AUTO and you click different **Fleet Engagement Range** settings, a blue disk will appear showing you on the map how far they will engage.



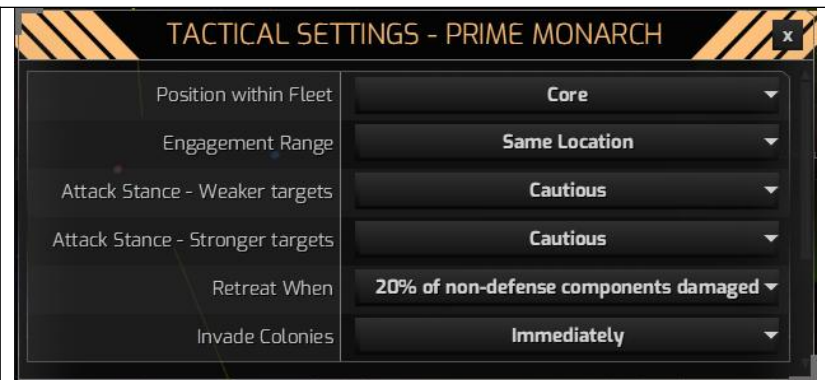
Appendix D: Understanding Ship v. Fleet Tactical Settings

All of these settings for ships should be done in the design screen when you first design a ship so that every ship built comes with a default value that you want. Each ship can then manually be changed after it is built. Scroll down when in the **Ship** Tactical settings screen if you want to change ALL ships of a role, design, etc. to these settings.

Also note that fleets can override all ship settings listed here by scrolling to the bottom of the **fleet** tactical screen (see next page). Check my YouTube channel for my videos on Fleet Tactics for more explanations (*be aware that the older video on this topic is out of date since V1.0.4.1*).

Ship Tactical Settings:

Position in Fleet:	Obviously only works when in a fleet. Core puts your ship in the center (e.g. Carriers) that will be surrounded by the Close Escort ships. Picket puts the ship along the outside of the fleet (like the Screen). Picket and Close Escort ships should have good PD weapons to protect the fleet.
Engagement Range:	See previous page (Appendix C) for full explanation.
Attack Stance:	Use Cautious for ships with ranged (stand-off) weapons such as missiles. Your ships will attempt to keep distance from the target while shooting. Best when you have good engines. For Torpedoes I use neutral and for close-in weapons, I use Aggressive .
Retreat When:	Tells the AI when your ship has <i>had enough</i> and should try to escape a battle. I typically use " Shields below 20%... "
Invade Colonies:	Leave this on immediately . I manually control invasions so it's not so important.



Changing multiple ship tactical settings at one time.

First, be sure to set Ship Tactical settings for every custom design you create in the design screen as good practice.

Next - you can set groups of ship's Tactical Settings all at once. Scroll down when viewing the screen above (**Ship Tactical Settings**) and select **All ships of this role, all ships of this design, All ships of this position in the fleet, or all ships in this particular fleet.**

Read more about the interaction between ship and fleet tactics [here](#).

SHIP TACTICS AND FLEET TACTICS INTERACTION GUIDE

Ship Tactics set at the design screen



Once you set Ship Tactics below it will override the default design settings

Individual Ship settings



(scroll down in this view to see bottom half)

Select "Use Fleet Tactics instead..." and these settings will override the ship settings for as long as the ship is in this fleet.

Use these to set ALL ships of a particular group to the same settings for this ship

This Fleet Engagement Range will completely override the individual ship Engagement Range Setting.

Fleet Settings



(scroll down in this view to see bottom half)

ONLY WORKS FOR FLEETS SET TO AUTO:

If the Fleet Retreat Strategy setting is met, the ENTIRE fleet will retreat

If the Ship Retreat Strategy setting is met, the SHIP will retreat a safe distance away until the condition changes (e.g. in this example shown here - if it repairs itself enough - it will rejoin the battle)

Appendix E: State v. Private Sector and the Economy Explained

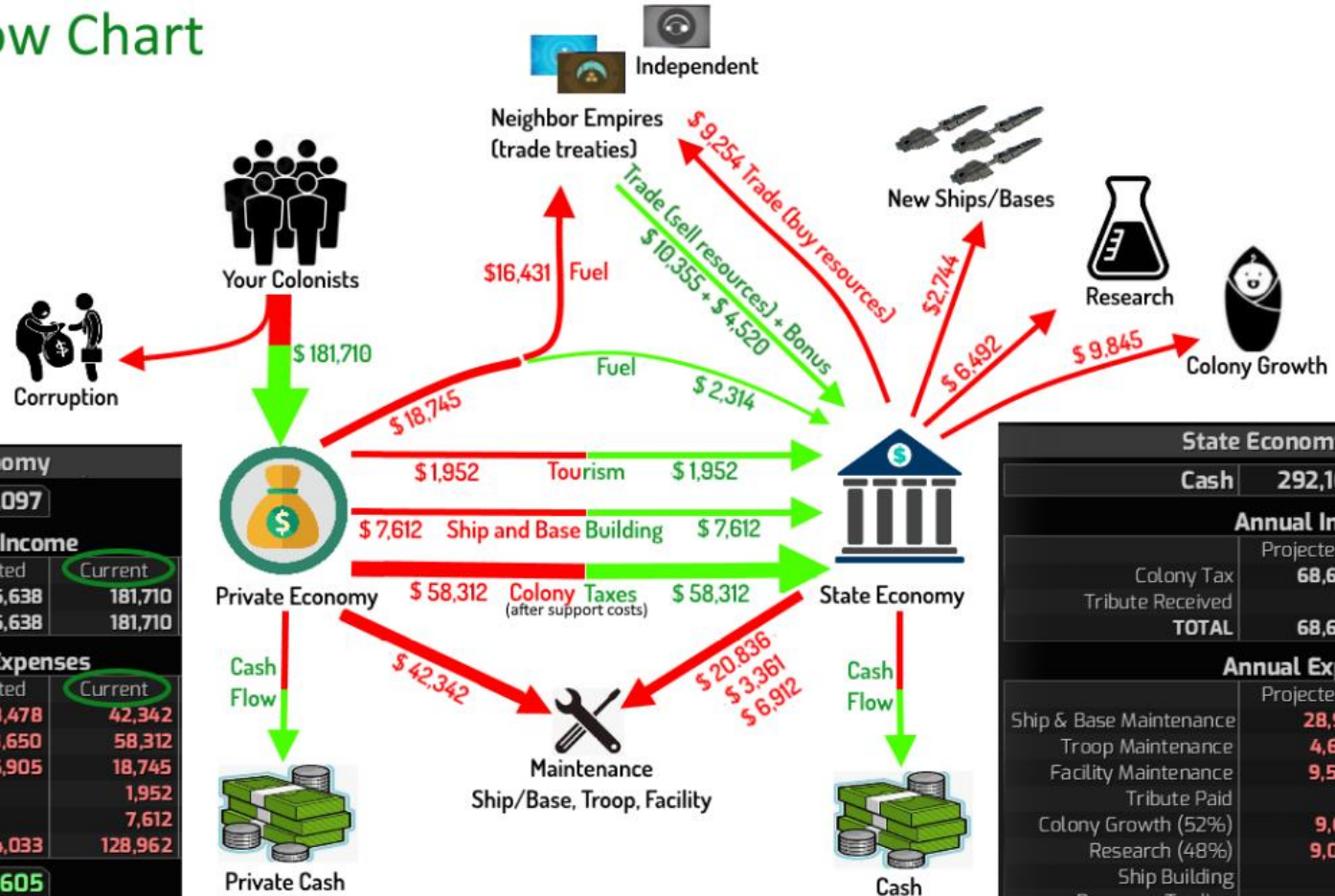
The State is you, the military, and is controlled by you (or partly by the AI if you chose to automate things). There is also a private sector that you do not directly control (though you can pick where it builds its mining bases). The private sector handles moving people and resources around your empire (except for colonizing) using civilian ships such as freighters and passenger ships. It also controls mining ships. The private sector pays you taxes (your primary income). It also automatically orders civilian ship production at your spaceports and colonies and then pays you for that. It also pays you for fuel and for tourism (your people using resort bases).

Assets summarized

	Combat Ships, Troop Transports, Fuel Tankers	Explorers	Constructors	Defense and Monitor Bases	Spaceports	Research Bases	Mining Ships, Passenger Ships Freighters	Mining Bases	Resort Bases
Ownership (pays construction and upkeep)	STATE	STATE	STATE	STATE	STATE	STATE	PRIVATE	PRIVATE	PRIVATE
Responsibilities	Attack, Defends, Refuels	Explores	Builds Bases Repairs ships Repairs Wrecks	Defense and Observing	Build Ships Repairs Ships Retrofit Ships Stores Resources	Generates Research	Transports Resources, and People	Mines Resources from Planets and Rocks	Generates Tourism Revenue
Who decides when and where to build?	STATE	STATE	STATE	STATE	STATE	STATE	PRIVATE	STATE	STATE

The Flow chart on the next page explains the 3 way economy between you (the state), the private sector, and other Empires.

Economy Flow Chart



Private Economy			
Private Cash	4,192,097		
Annual Income			
	Projected	Current	
Private Colony Revenue	255,638	181,710	
TOTAL	255,638	181,710	
Annual Expenses			
	Projected	Current	
Private Ship Maintenance	58,478	42,342	
Colony Taxes	68,650	58,312	
Private Fuel	16,905	18,745	
Private Tourism		1,952	
Private Ship Building		7,612	
TOTAL	144,033	128,962	
Private Cashflow	+111,605		

State Economy			
Cash	292,164		
Annual Income			
	Projected	Current	
Colony Tax	68,650	58,312	
Tribute Received	0	0	
TOTAL	68,650	58,312	
Annual Expenses			
	Projected	Current	
Ship & Base Maintenance	28,951	20,837	
Troop Maintenance	4,620	3,361	
Facility Maintenance	9,500	6,912	
Tribute Paid	0	0	
Colony Growth (52%)	9,691	9,845	
Research (48%)	9,024	6,492	
Ship Building		2,744	
Resource Trading		9,254	
Fuel Costs		0	
TOTAL	61,785	59,445	
Cashflow	+6,865		
Annual Bonus Income			
	Current	P	
Ship Building	7,612		
Resource Trading	10,355		
Fuel Sales	2,314		
Tourism	1,952		
Trade Bonuses	4,520		
TOTAL	26,753		

Appendix F: Early Game - the race for construction resources

You start out with a finite amount of construction resources on your colony and you can easily get into shortages if you don't build mining bases quickly. The figure at the right shows approximately what you have after building your first spaceport, constructor, and exploration ship. Below is a chart of what some common ships/bases require to be built:

Mining Base cost to build:	Research Base cost to build:	Escort Ship cost to build:	Explorer cost to build:	Freighter cost to build:
<ul style="list-style-type: none"> 172 Steel 16 Mebnar 12 Polymer 12 Carbonite 8 Silicon 6 Nekros Stone 	<ul style="list-style-type: none"> 102 Steel 10 Silicon 10 Polymer 6 Carbonite 4 Mebnar 2 Nekros Stone 	<ul style="list-style-type: none"> 102 Steel 18 Carbonite 12 Mebnar 10 Silicon 10 Polymer 	<ul style="list-style-type: none"> 114 Steel 16 Polymer 14 Carbonite 12 Silicon 4 Mebnar 4 Nekros Stone 	<ul style="list-style-type: none"> 102 Steel 10 Silicon 10 Polymer 6 Carbonite 4 Mebnar 2 Nekros Stone

These supplies on your home colony (and soon to be shared with your Spaceport) will quickly dwindle unless you find more sources quickly. Here's the process that happens for every resource:

- 1) Your explorer ships scans a Planet, Moon, or Asteroid and finds resources there.
- 2) You assign a constructor ship to build a Mining Base (which costs resources. See above).
- 3) This new mining base immediately starts gathering resources and stores it on the base.
- 4) The private sector automatically tells your spaceport to build some freighters (which costs resources).
- 5) Freighters travel to the base, load up resources, and deliver them to your spaceport and/or colony.

Mining Ships (the private sector will quickly build 2 or 3) can also mine resources directly (without a mining base) and will deliver them directly to your Spaceport. This is vital in the event that you run out of something like silicon before you were able to build a base at a local source. Of course there has to *be* a source or the mining ships won't help of course. It can happen that you run out of something and your explorer leaves the system and finds a source outside of your home system. Because of Beta testers, mining ships will now prioritize mining resources that you need to build a base. This was added after we had test games where we literally had to quit because we couldn't produce anything after running out of silicon (we had a source in our starting system but not enough to build a base there).

Independent freighters (or your freighters who visit one of your trading partner's spaceports) will also bring in needed resources. You will pay for these resources that they bring to you. Usually your first trading partner is the independent colony you encounter early on.

Your home colony will produce some resources by itself (and more as you discover them over time). See the red pick-axe symbol in the RESOURCES AND STOCK LEVELS screen. Click [here](#) to see how to navigate around your colony screen.

Caslon (fuel) could run out too but there is always a source in your home system. Just be sure to put this at the top of your Mining Base targets.

Resource	On Hand	Maintain	Rsvd	Other	Sources
Fuel Resources					
Caslon	11,500	20000	0	0	0 of 0
Construction Resources					
Aculon	476	0	0	0	0 of 0
Argon	714	0	0	0	0 of 0
Carbonite	2,971	809	0	0	1 of 1
Cuprica	476	0	0	0	0 of 0
Emeros Crystal	714	0	0	0	0 of 1
Kaasian Crystal	714	0	0	0	0 of 2
Krypton	714	0	0	0	0 of 0
Mebnar	537	188	0	0	0 of 1
Nekros Stone	763	100	0	0	0 of 1
Osalia	714	0	0	0	0 of 0
Polymer	2,986	802	0	0	1 of 1
Silicon	819	360	0	0	0 of 0
Steel	3,392	3806	0	0	0 of 1
Tyderios	714	0	0	0	0 of 0



New Technologies - as you research new weapons and components, you'll need different resources and more of the usual ones.

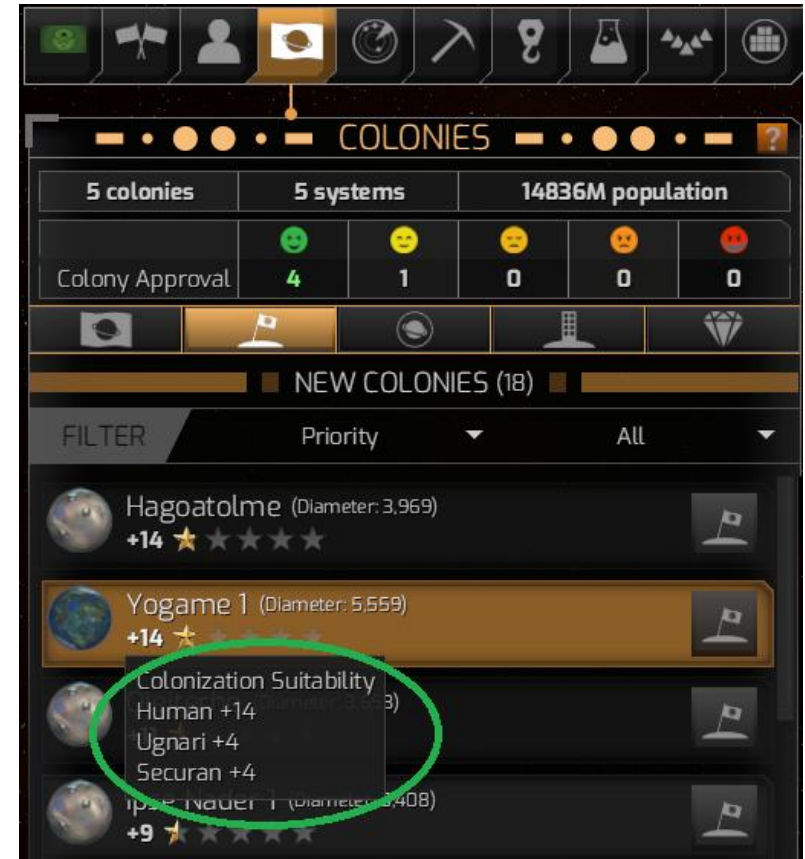
Appendix G: Colonizing and Colony Prosperity. A quick guide

Colonizing new planets

First, you want to look for planets/moons with high **suitability** for your race (or other races that belong to your Empire from conquests or assimilation).

Use the **COLONIES** tab (shown here) to check for potential new colonies. Each race has its [preferred planet types](#) and by researching colonization techs, you can further increase the suitability.

For example: researching **Temperate Colonization** would increase the net suitability for all races by 5% - so the circled tool tip at the right for **Yogame 1** would then read "*Human +19, Ugnari +9, and Securan +9*". The formula for how this is computed can be found in the **Galactopedia (F1)** - you just really need to know the net suitability for your race. **You want to avoid anything under 20%** suitability for the race you will colonize it with unless there is some super strategic importance or if you have a terraforming technology. Otherwise it will grow and develop slowly and drain your economy for a very long time. Click the colonize button at the far right to have the AI build and send a colony ship for you.



NOT a good planet for your available races to Colonize. You need at least 20 to be profitable.

Nurturing Existing Colonies

Happy, highly populated, highly developed colonies with low corruption produce a lot of revenue (which is also important for reaching your full research potential). You can use the tool tips in the [Colony screen](#) to check on your progress in these areas.

Development: This number affects revenue and happiness. There is a base development number from your population and then the value increases by:

● Luxury resources brought to the colony	● Special Location bonuses on the planet
● Facilities you build (Administration centers, etc.)	

Happiness: This number affects growth and how much you can tax (which increases revenue). Extreme low happiness can lead to rebellions. Happiness is affected by:

● Development (high values raise it/low values lower it)	● Your Tax rate (high tax rates lower it)	● Living at the Capital (raises it)
● Facilities you build (raise it)	● High Corruption (lowers it). See below	● War weariness and Bad Rep (lowers it)
● Reputation (high values raise it/low values lower it)		

Corruption: This reduces revenue and happiness on a planet. Here are the factors that affect corruption:

● Populations that are above the maximum population limit	● Some Facilities (decrease it)	● Government Types (varies)
● Distance from the Capital (more distance = more corruption)	● Recent Pirate Raids (raises it)	● Tax rates above 20% (raises it)
● Unassimilated Populations (e.g. from a recent conquest)	● Low Development (raises it)	

Population Growth: Population drives both the Private Economy and your tax base. Factors that affect Population Growth:

● High Suitability	● Special Location bonuses on the planet	● Certain Luxury Resources
● State Funding (you need a high green revenue)	● Happiness	

Quality: Higher Quality means happier populations, faster growth, and more revenue. See next page for details.

● Research tech for your planet type	● Be sure the best races are on the planet, set other races population policy to "resettle"
● Research and build Terraforming Facilities	

Actual Tax Revenue per colony = **Tax Revenue** - **Support costs**.

Support costs = \$1,000 base + \$ for unassimilated + \$ for very large/small pop.

Increasing Colony Suitability (watch my [Terraforming and Suitability video](#) for more details)

Method 1: Research Techs shown in the purple box. Each one will increase suitability by 4% for ALL races for that particular planet type (up to 10% if you research both!)

Method 2: Research the blue circled techs and then build a Terraforming facility. Each one of these facilities (limited, standard, enhanced, etc.) will increase the planet **quality** for all races by 3% each (there are 5 all together). Note that increasing the planet **quality** will increase **suitability** directly and increase the **max pop** limit which helps reduce/delay your population going over the maximum and then causing penalties. See the video above to see the formula used for compute the Max pop size.

Warning - these facilities have very high maintenance costs so wait until you can afford it! When the facility gets a red highlight (and it says "5% MAX" in the Planet Quality tool tip) - delete the facility. It isn't needed after it completes the 3% increase in quality and it will still cost you a high annual costs. Exception! if Suitability is <20% leave it.



There are more Terraforming techs off to the right of this image as well.

Colonization Suitability by Race:

Use this chart to see your race's *net advantage* for colonizing the indicated Planet types.



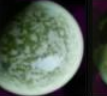



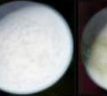
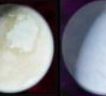
RACE *NET* BONUS FOR EACH PLANET TYPE (50% - Colonization Minimum Quality + Racial Colonization Modifiers)

Planet Type:																
Race:	Continental	Grasslands	Forest	Mangrove Forest	Marshy Swamp	Sandy Desert	Desert Savanna	Rocky Desert	Ocean	Deep Ocean	Ice	Ice Tundra	Frozen Ice	Carbonaceous	Volcanic	Sulphur Volcanic
Ackdarians	-	-	-	-	-	-10%	-10%	-10%	+25%	+30%	-	-	-	-	-	-
Atuuk	-	+10%	+10%	+10%	-	-	-	-	-	-	-	-	-	-	-	-
Boskara	-10%	-15%	-20%	-	-10%	-	-	-	-10%	-20%	-10%	-10%	-10%	+25%	+45%	+30%
Dhayut	-	-	-	-	-	+15%	+30%	+20%	-	-	-	-	-	-	-	-
Gizurean	-	-	-	-	-	+40%	+10%	+30%	-5%	-5%	-	-	-	-	+25%	-
Haakonish	-	-	+5%	+15%	+25%	-10%	-	-10%	+10%	-	-10%	-	-	-	-	-
Human	+15%	+10%	+10%	-	-	-	-	-	-	-	-	-	-	-	-	-
Ikkuro	+10%	+10%	+15%	+10%	+15%	-	+15%	-	+10%	-	-	+5%	-	-	-	-
Ketarov	-	+10%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kiadian	-	-	+5%	-	-	-	-	-	-	-	-	-	-	-	-	-
Mortalen	-10%	-	-5%	-	-	+20%	+30%	+40%	-	-	-	-	-	-	-	-
Naxilian	-	-	-	-	-	-	-	-	-	-	+10%	+25%	+15%	-	-	-
Quameno	-	-	-	+20%	+15%	-	-	-	+15%	+10%	-	+5%	-	-	-	-
Securan	-	-	-	-	-	+10%	+30%	+10%	-	-	-	-	-	-	-	-
Shandar	-	-	-	-	-	-	-	-	-	-	-	-	-	+25%	+40%	+25%
Sluken	-	-	-	+10%	+10%	-	-	-	-	-	-	-	-	-	-	-
Teekan	-10%	-10%	-10%	-15%	-15%	+40%	+25%	+15%	-15%	-20%	-	-	-	-	-	-
Ugnari	-	-	-	-	-	-	-	-	-	-	+10%	+25%	+15%	-	-	-
Wekkarus	-	-	-	-	-	-10%	-5%	-10%	+15%	+30%	-	-	-	-	-	-
Zenox	-10%	-10%	-15%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	+25%	+35%	+25%	-	-	-

Suitability = Planet Quality% - 50%* + Colonization Suitability (numbers in chart above) + any bonus from technology researched. If **suitability < 20%** you should generally avoid colonizing (it will not be profitable for a very long time). You can still use the suitability pop-up in game and ignore all of these numbers.

An overview of what each Planet/Moon type typically offer:

Corrections from version 2.2 thanks to Empereor0Akim!

Planet/Moon Features by type																
Planet Type:																
	Continental	Grasslands	Forest	Mangrove Forest	Marshy Swamp	Sandy Desert	Desert Savanna	Rocky Desert	Ocean	Deep Ocean	Ice	Ice Tundra	Frozen Ice	Carbonaceous	Volcanic	Sulphur Volcanic
Features																
Quality :	60% - 90%	55% - 80%	60% - 85%	50% - 80%	50% - 70%	25% - 50%	35% - 55%	20% - 50%	50% - 70%	45% - 65%	20% - 50%	30% - 60%	15% - 45%	10% - 30%	10% - 40%	5% - 30%
Size Max :	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500
Size Min :	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Bonuses																
Scenery :	3% - 10%	3% - 10%	3% - 10%	3% - 10%	3% - 10%	2% - 6%	3% - 10%	3% - 10%	3% - 10%	4% - 15%	3% - 12%	3% - 10%	3% - 10%	3% - 8%	3% - 10%	3% - 8%
Plague Curing :	8% - 20%	-	8% - 20%	8% - 20%	8% - 20%	-	-	-	-	-	-	-	-	-	-	-
Happiness :	5% - 15%	5% - 15%	5% - 15%	-	-	-	-	-	-	-	-	-	-	-	-	-
Mining Rate :	-	-	-	5% - 15%	5% - 15%	-	-	-	-	-	-	-	-	-	-	-
Defense :	-	-	-	-	-	-	-	8%-20%	-	-	8%-20%	-	8%-20%	-	-	-
Research Bonus	-	-	-	-	-	A, T	-	A, T	C	Sh, S	S	-	A, T	A, T, E	C, W	E
Resources	Bifurian Silk	Bifurian Silk	Bartak Wood	Akran Amber	Caquar Fur	Dantha Fur	Doakan Tea	Dantha Fur	Aquasian Incense	Darkhul Tentacles	Hexodorium	Decarlon Ale	Attarion Fur	Carbonite	Aculon	Dyrillium Quartz
	Carbonite	Copandil	Brejljan Berries	Carbonite	Carbonite	Korabbian Spice	Suculos Wood	Natarran Incense	Kaasian Crystal	Hyutil Resin	Jabanta Ivory	Hexodorium	Hexodorium	Emeros Crystal	Emeros Crystal	Emeros Crystal
	Giraxian Nectar	Korduva Grain	Caquar Fur	Ekarus Meat	Ekarus Meat	Korhuga Beans	Wiconium	Nekros Stone	Nepthys Wine	Kaasian Crystal	Norjak Eggs	Kasotti	Jakanta Ivory	Polymer	Nekros Stone	Feraxian FireSt.
	Losam Syrup	Muurion Wine	Hapek Obsidian	Ilosian Jade	Ilosian Jade	Osalia	Yapara Leaf	Oksunum Steak	Ordulos Shell	Polymer	Tebrullian Moss	Tyderios	Terallion Down	Vakala Crystal	Osalia	Nekros Stone
	Megallos Nut		Polymer	Inkasdia Fruit	Megallos Nuts	Silicon		Osalia	Polymer	Questurian Skin	Tyderios		Tyderios	Vofula Scent	Rhylig	Podanthia Root
	Polymer		Rephidium Ale	Loros Fruit	Loros Fruit	Sokalian Brandy		Shudasta Scale	Questurian Skin	Ucantium Pearl	Vodkol		Vodkol			Tebraakian G.
	Steel			Lukaarin Fungus	Obrudan Amber	T. Moss Fiber		Yotapian Onyx	Sarrobia Coral	Xukantar Resin						Zentabia Fluid
	Yarras Marble								Ucantium Pearl							
									Wruzos Anemone							

Blue and green: Luxury, White: Construction. RESEARCH BONUS: A = Armor, T=Troop, C = Construction, E= Engine, S = Sensor, Sh = Shield, W = Weapons

Note there are other types of non-habitable planets/moons that also have resource preferences. I will add those in a later version of the guide.

Appendix H: Weapons, Combat, Shields, and Point Defense explained

Point Defense overview (early game)

(watch my new REDUX [PD video](#) demonstrating each PD in action and which one is the best value for your ships!)

Early/Midgame Point Defense Weapons compared						
PD Types:						
	Blocking Field Generator	Buckler Repeating Blaster	Sentinel Multi-Beam Defense	Ion Pulse Blaster	Interceptor Missile V2	Point Defense Cannon V2
General Stats						
Type :	Beam	Direct Fire	Beam	Direct Fire	Seeking	Direct Fire
Tier :	3	2	2	3	3	3
Size :	15	10	11	12	19	13
Range :	300	650	950	590	1520	630
Accuracy (Close/Far) :	96%/72%	88%/44%	96%/72%	88%/44%	88%/77%	80%/40%
Intercept Targeting :	+30%	+35%	+25%	+25%	+35%	+30%
Dmg rates per second						
v Direct Fire WPNs :	6.5	-	-	-	-	-
v FL Beam WPNs :	6.5	-	-	-	-	-
v Seeking WPNs :	6.5	20.0	18.0	20.0	8.1	14.3
v Fighters :	6.5	20.0	18.0	20.0	12.2	21.4
Specials:						
Shield Bypass :	-	-	-	-25%	+25%	+50%
Armor Bypass :	-	-	+20%	+25%	-10%	-20%

PD (Point Defense) weapons protect your ships from incoming fighters and missiles. The **Blocking field generator** also targets Direct Fire and Beam weapons. PD will target ships/bases if they don't have any other targets.

Your normal weapons (torpedoes, Blasters, etc.) will also attack fighters but they are less effective and are best used against other ships and bases.

PD weapons have different Damage rates per target so check the chart carefully. They all have different ranges and different sizes as well.

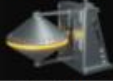





Size is super important early and mid game because a large PD weapons might mean you can have fewer standard weapons or smaller versions of those weapons because of total size limitation.

The **Buckler Repeating Blaster** and the **Sentinel Multi-Beam** is the best bang for your buck early/mid game. They are small, easy to get to in your research (tier 2), and does a great job on fighters. With size 10/11, you do not have to sacrifice other weapons quality or size typically. **Blocking field Generator** is good too as it intercepts all weapon types. The **Sentinel Multi-Beam** has good range and good to hit stats.

If your hull has it, try to utilize the **270 degree bay** when designing them if you can. This gives the PD weapons a lot better coverage.

PD To hit % = Accuracy + Intercept targeting - Weapon countermeasures (mouse over target weapon in design screen too see this value for each weapon)
PD Damage = Damage of PD v. target. Note missile and torpedo damage amount at time of intercept is their "hit points". Takes 2 PD hits often to destroy.

Here is a comparison of the same PD weapons on how they performed in my latest PD video against missiles. I rank my favorites against missiles:

Early/Midgame Point Defense Weapons Battle Results v Concussion Missiles (L)						
PD Types:						
	Blocking Field Generator	Buckler Repeating Blaster	Sentinel Multi-Beam Defense	Ion Pulse Blaster	Interceptor Missile V2	Point Defense Cannon V2
General Stats						
Type :	Beam	Direct Fire	Beam	Direct Fire	Seeking	Direct Fire
Tier :	3	2	2	3	3	3
Size :	15	10	11	12	19	13
# installed in test :	x1	x2	x2	x2	x1	x2
Damage each (seeking):	25	9	9	12	6	6
Test Results						
Total Shots taken :	15	22	19*	24	13	29
% hit targets:	60%	59%	76%	67%	54%	62%
Total Destroyed :	28%	13%	21%	13%	6%	14%
Total Damaged :	0%	16%	21%	26%	3%	41%
Total Neutralized :	28%	29%	43%	39%	10%	55%
% Missles unscathed :	72%	72%	57%	61%	90%	45%
Shield Damage :	16%	28%	11%	11%	24%	5%
SCOTT'S RANKING:	3	2	1	5	6	4

On the next page we'll compare Weapons at the Early / Mid-game (tier 4). If you Refer to the research screen (when playing on "fixed research") and look down the 4th column to see what you need to research to get to the weapons on the charts.

I selected these techs because this is the heart of the game and at this level, there are a number of options per category. So it is the most interesting time in game. You can make your own comparisons between weapons in the design screen by holding down CTRL and click on a weapon in the Components list (upper left of design screen).

Check out my [Weapons video](#) that goes deeper into weapons and this chart specifically.

Early/Mid-game Ship Medium Weapons compared (All tier 4)											
	Pulse		Beam	Torpedo			Missile			Rail	Ion
	Maxos Blaster v2	Impact Assault Blaster	Shatterforce Beam	Shockwave Torpedo	Epsilon Torpedo v3	Velocity Shard	Lightning Missile v2	Concussion Missile	Lance Missile	Rail Gun v3	Ion Cannon
General Stats											
Type :	Direct Fire	Direct Fire	F.L. Beam	Seeking	Seeking	Seeking	Seeking	Seeking	Seeking	Direct Fire	Direct Fire
Size :	20	20	22	28	30	26	38	38	38	26	24
Standoff/Close in :	Close	Close	Standoff	Standoff	Standoff	Standoff	Standoff	Standoff	Standoff	Close	Close
Range :	1360	1090	1760	2260	2510	3000	2280	2810	2570	1120	1090
Dmg Loss per 1000 :	-15%	-25%	-15%	-20%	-25%	-15%	-0%	-0%	-0%	-10%	-20%
Accuracy (Close/Max) :	80% / 40%	80% / 40%	88% / 66%	80% / 70%	80% / 70%	80% / 70%	88% / 77%	80% / 70%	80% / 70%	72% / 36%	80% / 40%
Travel Speed :	Fast	Fast	Very Fast	Slow	Slow	Slow	Slow	Slow	Slow	Slow	Slow
Raw Damage											
Damage each :	23	33	30	58	55	40	17	16	24	16	16*
Volley :	x2	x2	x1	x1	x2	x2	x8	x8	x2	x2	x2
Time between Volleys :	2.8 sec	3.5 sec	3.5 sec	4.5 sec	7.0 sec	8.0 sec	20 sec	20 sec	10 sec	1.6 sec	3.5 sec
Dmg rates per second:											
v ships/bases :	8.2	9.6	4.4	5.8	7.3	4.6	3.7	3.2	2.4	10.5	10.5
v Fighters :	Average	Good	Poor	Poor	Average	Average	Very Good	Very Good	Poor	Good	Poor
v seeking WEPs :	Good	Very Good	Poor	Poor	Good	Average	Very Good	Good	Poor	Good	Poor
v Troops (Bombard) :	Average	Good	Poor	Good	Very Good	Average	Average	Poor	Poor	Very Good	Poor
Bonus/Penalties:											
Dmg. v Shields :	-	-	-	-40%	-40%	-40%	-25%	-25%	-25%	-50%	-25%
Shield Bypass :	-	-	-	-	-	-	+25%	+25%	+25%	+50%	-
Dmg v Armor :	-	-	-20%	-40%	-40%	-40%	-10%	-10%	-10%	-20%	-25%
Armor Bypass :	-	-	+20%	+40%	+40%	+40%	-	-	-	-	+25%

A quick overview of basic weapon types:

Weapon Class	The Good	The not so good
Pulse Weapons	<ul style="list-style-type: none"> ● Good damage up close ● Nearly immune to PD (Point Defense) ● Small in size (you can fit a lot in your custom designed ship). ● Can bombard troops effectively ● Good at taking our fighters ● Short time between volleys. 	<ul style="list-style-type: none"> ● Short range ● Low accuracy at max range
Beam Weapons	<ul style="list-style-type: none"> ● Better Range and more accurate at range than Pulse weapons ● Nearly immune to PD (Point Defense) ● Small in size (you can fit a lot in your custom designed ship). ● Short time between volleys. 	<ul style="list-style-type: none"> ● Weak against Fighters and Seeking Weapons ● Low damage/single volley ● Low bombardment damage on troops
Torpedoes	<ul style="list-style-type: none"> ● Long range (but best damage at Medium or closer) ● Medium size component. ● OK against fighters ● Good at ground troop bombardment (especially Epsilon). ● High Damage - especially once shields are down. ● Armor bypass (damages hull somewhat when they hit armor). 	<ul style="list-style-type: none"> ● High damage drop off due to range. Better a mid range/close range ● Slow and easy targets for PD weapons ● Somewhat weaker against Shields
Missiles	<ul style="list-style-type: none"> ● Long range. Can fire before Enemy can reach you sometimes. ● No damage drop-off due to range (only accuracy). ● Large volleys (except for Lance Missile). ● Very good against fighters ● Shield bypass (hits armor also) 	<ul style="list-style-type: none"> ● Slow and easy targets for PD weapons ● Low overall damage at higher Tiers. Hard to penetrate late defenses. ● Low bombardment damage on troops until Epsilon (Tier 4) ● Large components ● Much better at Tier 4+ Use with Components that add targeting!
Rail Guns	<ul style="list-style-type: none"> ● Good damage up close ● Nearly immune to PD (Point Defense) - very fast ● Small in size (you can fit a lot in your custom designed ship). ● Very good at bombarding troops when invading a colony. ● Good against fighters ● Very short time between volleys. ● Shield bypass 	<ul style="list-style-type: none"> ● Short range ● Low accuracy at max range (only good very close-up) ● Weaker against armor

Ion Weapons: Have a special ability that can disable components (temporarily) even through shields and armor.

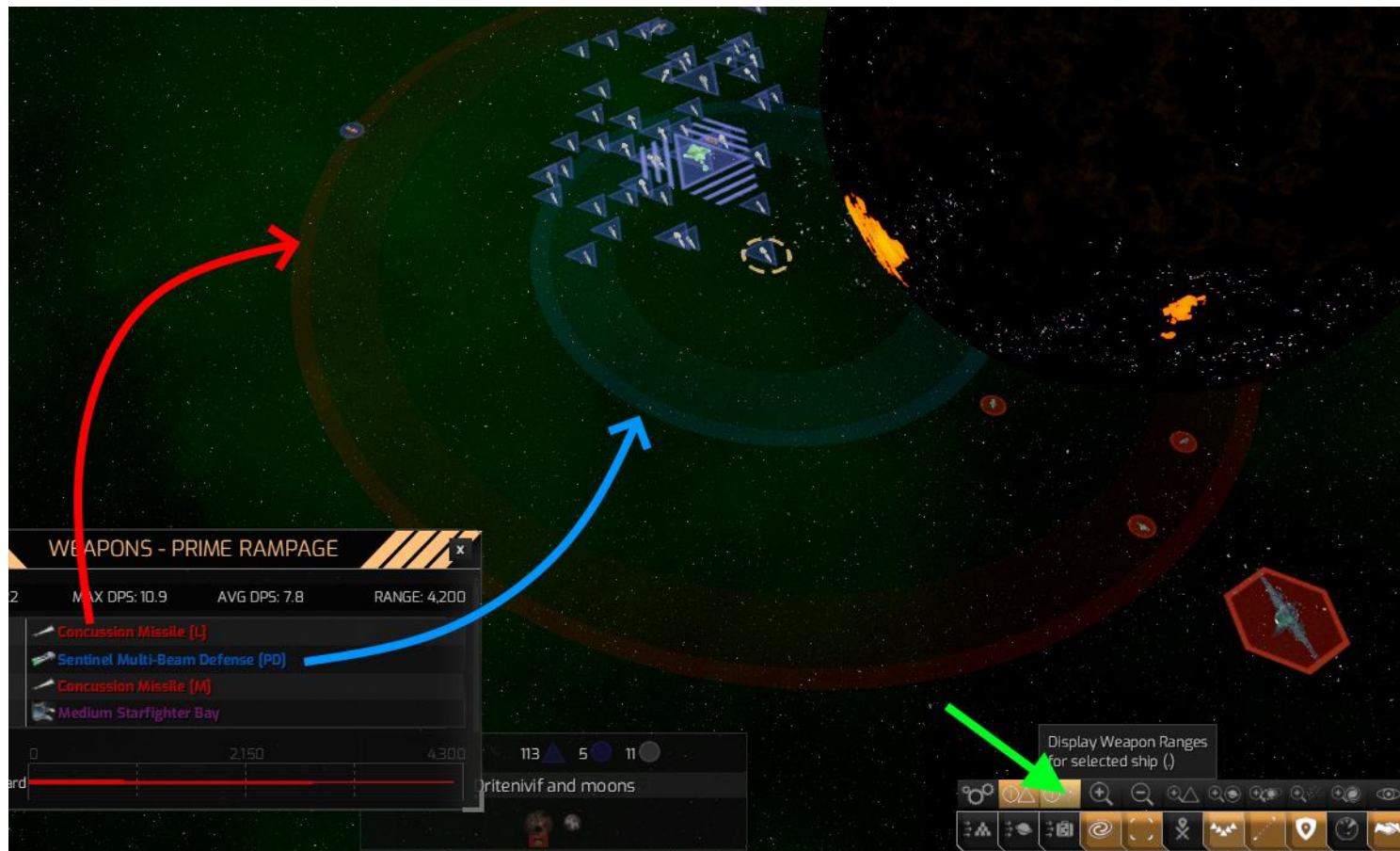
Area Weapons: Not included on the chart - they usually come in LARGE size at this tier. Very powerful though they can damage your own nearby ships (rarely).

Hint: If you decide to use **missile weapons** (highly recommended), be sure to set your ship and/or fleet [tactical settings](#) to **“cautious”** for enemies that are stronger and weaker (2 settings). If you have equal or better engines than the enemy, this will enable your ships to keep their distance from their target and maintain long range.

Weapon Ranges:

To see and understand Range of weapons in game be sure to:

1. Turn on **display weapon ranges** by clicking at the bottom right of the screen (or pressing PERIOD on the keyboard).
2. Hover over the weapons line when you've selected a ship. A pop-up will show the range value of the red and blue circle surrounding your ship whenever it's selected.



Shield Overview

Check out my Shield/Armor/Hull/ [Damage Video](#) to see all of the below explained with an example ship battle.

Some important Points about Shields:

1. Shield Penetration Chance (and penetration Ratio) show the chance the shields will fail on any given weapon attack. Higher Tier shields (and higher version numbers) minimize and/or eliminate this chance.
2. Shield Resistance shows how much damage is subtracted from each weapon when it hits the shield.

The following example shows how multiple shields and using different shields affect defense values (Stacking v. not stacking):

How Shields and Capacitors Stack Bonuses				
				
Name	Talosor Shield v2	Covidian Shields v2	Quantum Capacitors	Total Effect on Ship
Amount	x 2	x 1	x 2	
Size :	20	20	5	$20 \times 2 + 20 + 5 \times 2 = 70$
Shield effects				
Shield Strength :	480	360	40	$480 \times 2 + 360 + 40 \times 2 = 1400$
Recharge Rate (per second) :	3.3	1.2	0.5	$3.3 + 1.2 + 0.5 \times 2 = 5.5$
Shield Resistance * :	2	1	2	$N/A + 1 + 2 \times 1 = 3$

* Mixing Shields Types uses the lower of the 2 for **Shield Resistance**. Only the first **Quantum Capacitor** contributes to **Shield Resistance**



Corvidian Shields (v2)
 Shields
 Size: 20 Crew Requirement: 5
 Static Energy Used: 3.00/sec
 Component Ion Defense **1.00**
 Ion Damage Defense **20.00**
 Shield Strength **360**
 Shield Resistance **1.00**
 Shield Penetration Chance **10%**
 Shield Penetration Ratio **40%**
 Shield Recharge Rate **1.20/sec**
 Shield Recharge Energy Usage **6.00/sec**

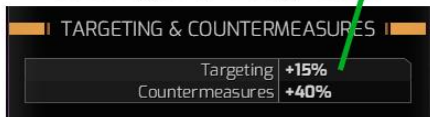
TO HIT Calculations (Weapons v. Ships):

WEAPON "TO HIT" CALCULATION EXAMPLE

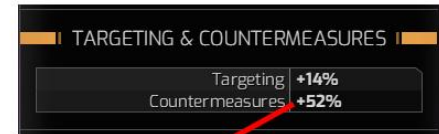
Attacking Weapon



Attacking Ship Design Stats



Defending Ship Design Stats



Accuracy (e.g. Max Range): 77%

Weapon inherent Targeting: +10%

Attack Ship net Targeting: +15%

Defense Ship net Countermeasures (ECM): -52%

Final "To Hit" percent change: 50%

Notes:

1. This is approximate and it is never 0 or 100%. There might be a diminishing returns as the net ECM or TRACKING is large (testing seems to hint at this).
2. The developers have said there is a speed bonus for defending ships that make them harder to hit. I have not been able to confirm that in testing EXCEPT to say that ECM (countermeasures) do NOT WORK AT ALL if your ship is stationary. The developers have hinted this might change but as of now, ECMs in a space station, for example, are useless. It can't hurt to have a faster ship but the benefits to avoiding getting hit are still not clear.
3. Not all weapons have inherent Targeting.
4. Tracking and ECM net values can be found in the lower right of any ship's design screen (or click on "more details" when hovering over the ship type). This number comes from ship components (countermeasures, command center, etc.) and sometimes from the hull type. These effects are in white/red numbers. BUT it is also modified by bonus percentage (in green/red color fronts) from buildings, race, government, etc. This % modifier can be seen under "COMPLETE BONUSSES" in the ship design screen. For a full list of where they are coming from - go to YOUR EMPIRE tab (far upper left corner) and then click the BONUS tab). Scroll to "Countermeasures" (if any - if you can't find it - there are not any). [CLICK HERE](#) to see a chart of all sources

Damage Formulas - the math behind how much damage a weapon will do.

See this [video](#) for a full explanation of the next 3 pages.

(see next 2 pages for diagrams illustrating 2 example attacks on a shield and on armor).

DAMAGE Calculations on SHIELDS*:

Base Damage Value	Each weapon has a base damage value. Components such as the Trace Scanner can increase the base! Be sure add % if you have one.
- Damage loss to range (% off)	All weapons except missiles lose damage the greater the range. Each ship has a % rate of loss per 1000.
- Shield bypass (% off)	Shield bypass reduces damage to shields but has a chance to damage armor and/or components. Some ships also have a negative shields bypass rating. That is a damage reduction. Use "Dmg v Shields" row in my chart above to see this penalty
- Shield resistance	Later shields have this stat. For example "1" or "2". This means every shot that hits the shield starts with 1 or 2 less damage.
= NET DAMAGE TO SHIELDS	

* Early/mid shields have a weakness called **Shield Penetration Chance**. If that % chance happens (check per each hit), then **Shield Penetration Ratio** % of weapon damage bypasses shields and damages armor and potentially components. This is a **SEPARATE** bypass event (this one only has a chance of happening while the normal weapon shield bypass always happens)

DAMAGE Calculations on ARMOR:

Base Damage Value	Each weapon has a base damage value. Components such as the Trace Scanner can increase the base! Be sure add % if you have one.
- Damage loss to range %	All weapons except missiles lose damage the greater the range. Each ship has a rate of loss per 1000.
- Armor bypass rating %	Armor bypass reduces damage to armor by the % shown but it has a chance to damage components with the amount that bypasses the armor. Some ships also have a negative armor bypass rating. That is a damage reduction. Use the "Dmg. v Armor" row in my chart above to see this penalty. IGNORE this if only hull is left and armor is gone (obviously).
- Armor Reactive Rating	This means every shot that hits the armor starts with this much less damage.
= NET DAMAGE TO ARMOR	

DAMAGE Calculations on HULL:

Base Damage Value	Each weapon has a base damage value
- Damage loss to range %	All weapons except missiles lose damage the greater the range. Each ship has a rate of loss per 1000 so this will vary.
- Damage Reduction %	Every ship being targeted has a % rating for this in their design screen. Note that Damage Control units, Command Centers , and each crew systems offer Damage reduction penalties to attacking ships against Hull and component damage. See design screen for rating.
- * Damage Reduction % *	Every ship being targeted has a % rating for this in their design screen . Note that Damage Control units, Command Centers , and each crew systems offer Damage reduction penalties to attacking ships against Hull and component damage.
- Hull Reactive Rating	See this table for some mid/late ship stats on this. This data can only be found on the Technology screen (not the design screen)
= NET DAMAGE TO ARMOR	

** Note - Armor can be damaged before the shields are down (positive Shield Bypass %). Hull can be damaged before Armor is down (Positive Armor Bypass %). Damage that passes through Armor can damage/destroy the armor components themselves as well as all other components on the ship.

DAMAGE Calculations example - when a Lance Missile hits the Shields.

Not shown below: With a shield Penetration Chance of **15%** and Shield Penetration Ratio of **40%** - each hit has a **15% chance that 40% of its damage** will pass through the shield and hit the armor (see stats under "Corvidian Shields" below right).

Lance Missile [L]
Standoff Weapon
Size: 57 Crew Requirement: 12
Static Energy Used: 3.00/sec
8 Emeros Crystal, 8 Steel, 8 Nekros Stone, 8 Mebnar

Fire Type **Seeking**
Damage Type **Standard Impact**
Damage **38.00 (1.90/sec)**
Range **3500**
Damage At Max Range **38.00 (1.66/sec)**
Bombardment Infrastructure **4.00 (0.20/sec)**
Bombardment Military **4.00 (0.20/sec)**
Bombardment Population **2.00 (0.10/sec)**
Bombardment Quality **4.00 (0.20/sec)**
Point Blank Accuracy **80%**
Max Range Accuracy **70%**
Weapon Countermeasures **+59%**
Speed **350/sec**
Shield Bypass **+25%**
Armor Bypass **-10%**
Energy Per Shot **12.00**
Fire Rate **32.00 secs**
Intercept Range **1750**
Intercept Energy Per Shot **12.00**
Intercept Fire Rate **20.00 secs**
Shots per Volley **2**
Volley Fire Rate **1.00 secs**

DEFENSE

Shields
Shields **864**
Shield Recharge Rate **2.4/sec**
Damage Reduction **32%**
Damage Repair **0.2/sec**
Hull Size **225**
Armor Rating **208.0**
Ion Damage Defense **2.0**

Corvidian Shields
Shields
Size: 20 Crew Requirement: 5
Static Energy Used: 4.00/sec
8 Argon, 8 Krypton, 4 Silicon, 4 Polymer, 4 Tyderios
Component Ion Defense **1.00**
Ion Damage Defense **2.00**
Shield Strength **288**
Shield Resistance **1.00**
Shield Penetration Chance **15%**
Shield Penetration Ratio **40%**
Shield Recharge Rate **0.80/sec**

Command Center
Command Center
Size: 8 Crew Requirement: 5
Static Energy Used: 2.00/sec
6 Steel, 6 Polymer, 6 Silicon
Status: Normal
Maintenance Savings **12%**
Crew Capacity **20**
Damage Reduction **5%**
Damage Repair **0.10/sec**
Component Ion Defense **5.00**
Countermeasures **+10%**
Targeting **+10%**

Enhanced Armor
Armor
Size: 10 Crew Requirement: 1
Static Energy Used: 0.00/sec
10 Mebnar, 5 Carbonite, 5 Steel
Status: Normal
Rating **125**
Reactive Rating **5.00**
Ion Damage Defense **1.00**

Damage Control Unit
Damage Control
Size: 10 Crew Requirement: 10
Static Energy Used: 5.00/sec
3 Steel, 3 Carbonite, 3 Polymer
Damage Reduction **25%**
Damage Repair **0.10/sec**
Component Ion Defense **5.00**

Crew Systems
Damage Reduction **2%**

Missile Damage when hitting Ship Shields
* All Damage numbers rounded up to nearest integer

DAMAGE Calculations example (after shields are gone) - when an Epsilon Torpedo hits the Armor

Epsilon Torpedo (M) (v2)
Standoff Weapon
Size: 30 Crew Requirement: 8
Static Energy Used: 2.00/sec
6 Nekros Stone, 3 Cuprica

Fire Type **Seeking**
Damage Type **Standard Impact**
Damage **44.00 (5.87/sec)**
Range **2010**
Damage At Max Range **21.89 (2.55/sec)**
Bombardment Infrastructure **4.00 (0.53/sec)**
Bombardment Military **4.00 (0.53/sec)**
Bombardment Population **2.00 (0.27/sec)**
Bombardment Quality **2.00 (0.27/sec)**
Point Blank Accuracy **80%**
Max Range Accuracy **70%**
Weapon Countermeasures **+54%**
Damage Falloff Ratio **25% per 1,000**
Speed **350/sec**
Shield Bypass **-40%**
Armor Bypass **+40%**
Energy Per Shot **30.00**
Fire Rate **12.00 secs**
Intercept Fighter **22.00 (4.69/sec)**
Intercept Seeking **22.00 (4.69/sec)**
Intercept Range **1005**
Intercept Energy Per Shot **30.00**
Intercept Fire Rate **7.50 secs**
Shots per Volley **2**
Volley Fire Rate **0.25 secs**

Torpedo damage as it heads for ship with no Shields

44

33 Lost 25% due to range (varies)

20 Lost 40% to Armor Bypass

13 This is the 40% heading to hull

16 Lost 4 to Reactive Rating

9 Lost 32% to Damage Reduction

5 Lost 4 from Hull Reactive Rating

0 520

0 504

Final Result: 95% + Possible Component Damage

DEFENSE

Shields	0
Shield Recharge Rate	0.0/sec
Damage Reduction	32%
Damage Repair	0.2/sec
Hull Size	225
Armor Rating	520.0
Ion Damage Defense	0.0

Heavy Armor
Armor
Size: 10 Crew Requirement: 1
Static Energy Used: 0.00/sec
8 Mebnar, 4 Carbonite, 4 Steel
Status: Normal
Rating 104
Reactive Rating 4.00
Component Ion Defense 1.00

Damage Control Unit
Damage Control
Size: 10 Crew Requirement: 10
Static Energy Used: 5.00/sec
3 Steel, 3 Carbonite, 3 Polymer
Status: Normal
Damage Reduction 25%
Damage Repair 0.10/sec
Component Ion Defense 5.00

Command Center
Command Center
Size: 8 Crew Requirement: 5
Static Energy Used: 2.00/sec
6 Steel, 6 Polymer, 6 Silicon
Status: Normal
Maintenance Savings 12%
Crew Capacity 20
Damage Reduction 5%
Damage Repair 0.10/sec
Component Ion Defense 5.00
Countermeasures +10%
Targeting +10%

Crew Systems
Crew Quarters
Size: 10 Crew Requirement: 5
Static Energy Used: 2.00/sec
6 Steel, 3 Polymer
Status: Normal
Maintenance Savings 11%
Crew Capacity 100
Damage Reduction 2%
Component Ion Defense 5.00

Hull: Fleet Destroyer (Has hull Reactive Rating = 4)

Filling weapons slots in custom designs - quantity (Small/Medium) or quality (Large)?:

(Watch my [video "Does Size Matter?"](#) to learn more about this topic)

So for example, do you fill a slot with a large weapon and keep empty slots or do you fill every slot (for example 3 smaller versions of the same weapon).






The answer isn't clear, and it will vary per weapon type and tier (column in the research screen) - but here is an example of why larger weapons have advantages:

	Large (L) Heavy Rail gun	3 Small Rail Guns (S) size
Size used in ship design :	(L) Large - size 40	(S) Small - Size 13 (total for 3 = 39)
Raw Damage at close range :	Damage per round: 50 damage	Damage per round: 16 x 3 = 48 damage
Max Range :	1680	1120
Point Blank range Shield Damage :	50 - 50% bypass - 1 Shield Resistance = 24 Damage to shields	16 - 50% bypass - 1 Shield Resistance = 7 each (x3) = 21 Damage to shields
Point Blank range Armor Damage :	25 points get through shields but then - 20% armor bypass - 4 Armor Reactive = 16 Damage to Armor	8 points get through shields but then - 20% armor bypass - 4 Armor Reactive = 2.4 each (x3) = 7 Damage to Armor
TOTAL DAMAGE:	40 Damage	28 Damage

Smaller weapons have to pay the price of Shield Resistance and Armor Reactive ratings 3 times instead of only once for the Large Weapon.

In general, 3 smaller ships with 3 small weapons will often perform better than 1 larger ship with one large weapon because of the extra hit points, extra targets for the enemy, etc. So the answer is: *it depends*.

Appendix I: Scanners, Sensors, Jammers, and Stealth

Sensors, Scanners, Jammers, and Stealth components compared																			
																			
Category :	Trace Scanners			Short Range Sensors			Long Range Sensors					Trace Jammers			Stealth				
Version :	Trace	Trace V2	Multi - S	Proximity	Short	Short V2	Long	Long V2	Ultra	Ultra V2	Ultra V3	Jam.	Jam. V2	Multi Sp.	Cloak	Cloak V2	Sheath	Sheath V2	
Research Tier :	T2	T4	T7	T1	T2	T4	T3	T5	T7	T8	T9	T3	T5	T8	T4	T6	T8	T9	
Size :	5	5	5	10	5	5	70	70	60	60	60	5	5	5	40	40	40	40	
Combat Effects																			
Targeting :	+5%	+7%	+10%																
Countermeasures :												5%	7%	10%	5%	10%	15%	20%	
WEPs Damage :	+5%	+5%	+10%																
Scanning (Sensors)																			
Power :	100	150	200	75	100	125	125	150	160	170	175								
Range :	0	0	1M	1M	1M	3M	40M	60M	80M	100M	120M								
Jump Tracking :				5%	10%	15%	30%	35%	40%	45%	50%								
Trace Scanning																			
Power :	100	150	200	50	75	88	63	75	88	90	93								
Range :	150K	250K	500K	125K	125K	375K	2M	3M	5M	7M	10M								
Stealth																			
Scanner Jamming :												90	140	190	25	50	75	100	
Empire Masking Power :												5	10	15	5	10	15	20	
Role Masking Power :												5	10	15	5	10	15	20	
Stealth Rating :															50	70	100	120	

Scanning (sensors): Determines location, Role, and Empire and tracks Jump arrival/departure. At about 70% of max range Role ID is lost. At about 84% Empire data is lost.

Trace Scanning: Determines Strength rating, Cargo, Troops, and Component Status. Enables you ships to make decisions about fight or flee.

Trace Jammers: Reduce Trace Scanning (whether or not you can see inside a ship). It also reduces the range that Role and Empire is visible. That stacks with Stealth's effect.

Stealth: Reduces Scanning (Sensor) range. **Calculation:** (Scanning Sensor Power - Stealth Power)/Scanning Power = %. That is the % that the Max sensor range is reduced by. Empire and role detection is further reduced (below the normal 70% and 84% of Maximum) and stacks with Trace Jammer's Role/Empire masking.

My Sensor Strategies:

Manual fleets really don't need scanners/sensors. Or better to make one ship type only have short range sensors and the bulk of your ships use that space for weapons and defenses. However, Trace Scanners offer a nice Targeting AND damage bonus for only 5 space. They also double as sensors without the jump tracking (and they only work close up). The biggest sacrifice might be not knowing when enemy fleets are approaching in warp (jump tracking) until very late. You also won't be able to pursue retreating ships because you won't know where they are going to. But if you are defending a system with a base or other ships are present with sensors, then it's not an issue as they will have sensors by default. Finally, space creatures may be difficult to identify until really close so you might not get a range advantage on them if you have seeking weapons such as missiles (then again - still mop them up every time with nothing but trace scanners).

Automatic ships and fleets will benefit from short range sensors as they will be better able to react to enemy attacks in their system and they can better judge the strength of an enemy. This will allow them to properly decide between fight or flight.

Try to avoid **long range sensors** on ships as they take up a lot of room (size = 70). Maybe on Carriers or Capital ships so that you fleet can benefit from these - but then remove all sensors (except Trace) from all of your other ship designs in the fleet.

Short Range Sensors are half the size of Proximity sensors (5 v. 10) so research these quickly if you plan on using them. Early game that 5 size can make a difference.

Explorers with Long range sensors parked (set to manual) near neighboring Empire systems can give you some early warnings. Installing these on bases (such as monitoring or even mining bases) will offer a nice early warning as well.

Stealth is powerful but a mid to late game technology to be useful (other than the countermeasures benefit). If your Stealth rating is larger than their Scanning Power, you can usually send your stealth ships right up to the target before they will fire/send reinforcements. Its major benefit is limiting the reaction time when you are invading a system - i.e. the AI won't be able to start sending ships from other systems to reinforce until you arrive in system.

The problem with Stealth is that Tier 4 and 5 scanners are stronger than tier 8 and 9 Stealth. So at best, most of the game you are reducing the range that they will spot you approaching their system by a moderate amount. Useful, but it takes a lot of room just to limit their reaction time somewhat. I generally avoid these components.

Other Stealth points:

- Small ships (Destroyers, Small Cruisers) are better at stealth. Larger ships hull size reduce Stealth somewhat (larger hull size, less stealth).
- As soon as your ships fire (or get hit) - they lost their stealth ability until after the battle.
- At near range (around the same planet/moon as the enemy ships for example) - you are always visible regardless of stealth rating.
- Nebula clouds greatly reduce scan range (so stealth works even better in Nebulae).
- Strong Trace Scanners are better at seeing stealth within a system than sensors - and will almost always detect your stealth ships.

Stealth Calculation Example

Ultra Long Range Sensor Array (v2)
Long Range Scanner
Size: 60 Crew Requirement: 4
Static Energy Used: 40.00/sec
Tier 8
16 Polymer, 16 Silicon, 16 Dyrillium Quartz
Status: Normal
Component Ion Defense 3.00
Scan Power 170.00
Scan Range 100M
Trace Scan Power 90.00
Trace Scan Range 7000000
Jump Tracking 45%

I-Space Stealth Sheath
Stealth
Size: 40 Crew Requirement: 5
Static Energy Used: 20.00/sec
Tier 8
18 Polymer, 18 Silicon, 18 Aculon, 18 Dyrillium Quartz
Component Ion Defense 4.00
Countermeasures +15%
Scanner Jamming 75.00
Empire Masking Power 15.00
Role Masking Power 15.00
Stealth Rating 100.00

Versus

Scan Range % = $\frac{170 - 100}{170} \approx 41.2\%$

Net Max Scan Range = 100M x .412 = 41M

Appendix J: Tracking and Countermeasures (ECM) Sources.

Below is a chart of sources where you can get bonuses to your Tracking or ECM.

ECM and Tracking Sources						
Name	Type	ECM	Tracking	ECM Bonus	Tracking Bonus	Tech to Research
Command Center/Module	Component	10 to 20	10 to 20			
Trace Scanner (various)	Component		5 - 10			Penetrating Scanners
Vectoring Engines (various)	Component	5 to 15				Maneuvering
Counter Measure System (various)	Component	10 to 40				Countermeasures
Fleet Counter Measures	Component	10 to 20				Fleet Counter.
Target Tracking Systems (various)	Component		10 to 40			Tracking
Fleet Targeting System	Component		10 to 20			Fleet Targeting
Hull Type (various)	Hull	-10 to 5	0 to 10			Various Hull Types
Military Academy	Building			+10%	+10%	Officer Training
Galactic Command Network	Wonder			+10%	+10%	Perfect Command
Kaidian Race	Race Bonus			+10%		
Ugnari Race	Race Bonus				+10%	
Wekkarus	Race Bonus				+5%	
Leaders and Admirals	Characters			Varies	Varies	
Other race specific components		Varies	Varies			

Appendix K: Research Bonus categories

This table was made using **OrnlWolfjarl's** excellent post on the Matrix forums where he did all the leg work for figuring out what bonus goes with what tech. He kindly said I could share it here in my guide. I will update over time if we find more technologies or if we find mistakes.

Bonus Category	Technologies that are affected by the Research Bonus
Weapons	<ul style="list-style-type: none"> ● Planetary Weapon Arrays (like Massive Railgun Batteries and its upgrades) ● Point Deflectors (even if tied to Shields) ● Assault Pods + Boarding Upgrades (even if tied to Troops and grouped with Starfighters in Construction) <p><i>NOT Shipboard Marines specific tech (Industry)</i> <i>NOT Starfighters (MOSTLY Construction except 1 tech)</i></p>
Troops	<ul style="list-style-type: none"> ● Troop types (infantry, tanks, special forces, PDF, etc) + Troop Production Facilities (including Cloning, Robots, Titans, etc) ● Troop Logistics ● Troop Upgrades ● Reinforced Construction (Planetary Bastion facility) + Impregnable Construction (Planetary Fortress facility) specific techs (even if tied to Armor Research and one would assume they would be tied to Construction) ● Officer Training specific tech (Military Academy facility) + Combined Military Training specific tech (Galactic Command Center wonder) (even if tied to Command Center Systems in HighTech) <p><i>NOT Shipboard Marines specific tech (Industry), NOT Assault Pods or Boarding Upgrades techs (Weapons), NOT Troop Transports (Construction)</i> <i>NOT Troop Compartment components (Industry)</i></p>
Reactors	<ul style="list-style-type: none"> ● Reactors ● Energy Collection (solar panel components) ● Advanced Energy Secrets specific tech <p><i>NOT Energy Storage techs aka Shield Enhancement (Shields)</i></p>
Shields	<ul style="list-style-type: none"> ● Deflectors & Shields ● Shield Recharging ● Energy Storage aka Shield Enhancement (even if tied to Reactors) ● Massive Shield Projection + Global Shield Reinforcement specific techs (Planetary Shield Generators Mk1 + Mk2)
Hyperspace	<ul style="list-style-type: none"> ● Hyperspace Drives ● Hyperspace Deny ● Hyperspace Facilities (Gravity Well Generator Mk1 + Mk2)
Engines	<ul style="list-style-type: none"> ● Ship Engines ● Ship Maneuvering Thrusters
Armor	<ul style="list-style-type: none"> ● Ship Armor ● Damage Control <p><i>NOT Planetary Bastion + Planetary Fortress specific techs (Troops)</i></p>

<p>Construction</p>	<ul style="list-style-type: none"> ● Ship & Station Hulls ● Starfighter Bays & Starfighters (except Advanced Starfighters specific tech) ● Fuel Transfer components (attached to Civilian Ship Hulls) ● Construction Yard components (attached to Spaceport/Construction Ship Hulls) <p><i>NOT Advanced Starfighters specific tech (High Tech)</i> <i>NOT Docking components (Industry)</i></p>
<p>Industry</p>	<ul style="list-style-type: none"> ● Mining ● Transport Systems (Troop & Passenger components) ● Storage Systems (Cargo Bay & Fuel Cell components) ● Docking Bays ● Crew Systems ● Advanced Mining Research (Galactic Mining Center) ● Shipboard Marines specific tech (even if tied to Assault Pods in Weapons) ● All Colonization techs (Colonization component, Planet Suitability upgrades, Terraforming) (even if tied to Sensors) ● Networked Entertainment (Holographic Network facility) + Virtual Reality (Reality Adjustment facility) + Total Immersion specific techs (Holographic Universe wonder) (even if tied to Recreation Systems in HighTech) ● (Zenox) Archival Facilities specific tech (Galactic Archives wonder) ● Genetic Mastery specific tech (Koloros Medical Facility wonder) (even if tied to Medical Systems in HighTech)
<p>Sensors</p>	<ul style="list-style-type: none"> ● Targeting ● Countermeasures ● Sensors ● Scan & Scan Jamming ● Exploration Sensors (Colonization belongs to Industry, even if it branches off here) ● Stealth (including Espionage Academy facility)
<p>HighTech</p>	<ul style="list-style-type: none"> ● Commerce Systems ● Medical Systems (also see Industry) ● Recreation Systems (also see Industry) ● Research Systems ● Command Center Systems (NOT in Industry, like Crew Systems) ● Governance Facilities ● Advanced Starfighters specific tech (even if tied to Starfighters in Construction) ● Advanced Construction (Advanced Shipyards facility) + Accelerated Construction (High Speed Shipyard facility) + Component Replication (Bakuras Shipyard Complex wonder) specific techs (even if tied to Construction) ● Any facilities or wonders not mentioned in other categories (which means most of them)

* Diplomacy *does not* have a specific research bonus category. Basic, Effective, Advanced, Complete Diplomacy for every species, Galactic Diplomacy, etc.