With the arrival of the Apocrypha expansion in early 2009, the exploration system in Eve was dramatically redesigned, in order to me much more intuitive and easier to pick up, whilst still providing the depth needed to make it a fully functional 'mini profession' where people specialising in the skills will find that locating the relevant areas, and exploiting them for their own gain will be much easier than those who simply dabble in the abilities.

With the additions of wormholes and much improved access to gas clouds for Booster manufacturing that arrived with the expansion, the explorer found many new toys to play with, however the basic five groups still remain, with 1 more representing wormholes. These are as follows:

1) Unknown sites – Combat type/Escalation
2) LADAR sites – Gas clouds
3) RADAR sites – Hacking skill sites
4) Magnetometric Sites – Archaeology / Salvage sites (ArcSal)
5) Gravimetric Sites – Asteroid belts
6) Wormholes

In the past, there were 4 different probe types which were specialised at finding the specific type of signature (all of them could be used to find the Unknown type sites, and Wormholes did not exist back then), however this has now been simplified to a 'one size fits all' approach with a single probe type being used to find everything and at a multitude of distances.

Skills

The skills for exploration were given an overhaul as well as the mechanics. The applicable skills, and their new effects are as follows:

Astrometrics – The base skill used to determine the available probe types you can use (i.e. you require level 5 to use the Deep Space Scanner probe, but only level 1 to use the Core and Combat probe types which make up the rest of the ensemble for exploration) as well as the number of probes you can have active in space. You can have 3 probes plus one additional one for each level of Astrometrics skill you have. You will be required to have at least 4 probes in space to track down a location. This requires Science 3 as a prerequisite, and is a rank 3 skill.

Astrometric Acquisition – This skill reduces your scan time by 10% per level. It is a rank 5 skill, but it should be noted that the base scan time on probes was reduced dramatically to 10 seconds rather than the original 600 seconds on the old version of exploration. (This skill is a rename of the old Astrometric Triangulation skill which previously affected signal strength, all skill points in that skill were transferred into this skill.) This skill requires Astrometrics 3.

Astrometric Pinpointing – This skill reduces your deviation from the intended target upon a successful scan, thereby meaning that there is less chance of you 'losing' the signal if you use a smaller ranged scan (if the deviation meant the actual signal was outside of the new scan position when you use a closer ranged scan.) This skill needs a minimum of Astrometrics 4 as a prerequisite, which can take a few days to train for, and is a rank 5 skill.

Astrometric Rangefinding – This skill is the big, important one. It is a rank 8 skill (replacing the old skill called Signal Acquisition which used to reduce scan times) which increases your scan strength by 10% per level under its current guise. Under the new system, scan strength is much more important than reducing the time to scan (see the reduction from 600 seconds to 10 seconds.) This does not need any Astrometrics level as a prerequisite, but can be trained in parallel from the start, needing only Science 3.

In addition to the change in functionality of the various skills, the bonus to Gravity Capacitor rigs and Covert Ops ships were modified to improve the scan strength of probes to make them more useful in the updated version of the exploration system. The Virtue implant set (see more on that later in the Sisters of Eve section) remains unchanged in providing a bonus to scan strength.

Mechanics

As mentioned earlier, the mechanics of the probing system have changed. Whereas in the past it would be required to use a multi spectral probe to see if there was anything available in the system, and the actual scanning operation itself was chance based, it is now possible to see if there is anything in the system with 100% certainty using the standard Core / Combat or Deep Space probes.

The probes themselves, when launched from the probe launcher appear on the system scanner window, which can be accessed from the button on your interface panel or from the default key combination Ctrl-F11 (make sure you select the system scanner tab, not directional scanner or moon analysis) – from here you can increase the size to a maximum of 32 AU for Core Probes, 64AU for Combat Probes and 256AU for Deep Space Probes by either right clicking on the probe distance in the window, or by physically dragging the edge of the sphere with your mouse.

From there you can click into the solar system map (a button is placed to the top right of the scanner window for quick access, or you can use the tool bar, or press F10) and position the large sphere you can see, via the directional arrow interface in the middle of the sphere to cover as much of the system as you can in one go. With a Deep Space probe this should be quite easy, but when using the smaller sized probes it may be necessary to launch several (remember this is limited by your Astrometrics skill) to fully cover the system. When positioning probes, you will notice that there is a darker coloured circular area on each sphere, this is the level where it intersects with the 'horizontal plane' in the solar system – the sites can appear above or below this plane, so keep that in mind when trying to cover as much of the system as you can during the initial scan.

After positioning for optimal coverage, hit the analyse button (the left most one on the scanner interface) and wait whilst the probes warp to position – in this system, the probes move around rather than being static – and once they are there, they perform a scan which will take at most 10 seconds.

Any results will be reported in the window at the bottom of the scanner interface. It is 100% guaranteed that if there are any signals in the system, they will be picked up, though the signal strengths themselves could be less than 1%, so if there are no signals picked up, its worth moving on to a new system.

It is very likely that you could potentially get some green, 100% strength spots show up at this stage. These are the 'Cosmic Anomaly' type combat sites which were introduced to be found using the on board scanner – these can be located either using the on board scanner still (which has a limited range and requires your ship to move around to scan an entire system) or just pick them up using the scan probes. One hit with a probe will reveal their location.

After you have identified that there is a signal in the system, the next step is to track it down and improve the signal strength to a high enough degree that it can be identified, and ultimately warped to.

Locating a site

This is where the complexity of the new system begins to show.

Firstly, it is important to note that it is impossible to locate an exploration site with only 1 probe. As an absolute minimum, 4 are required. Due to the system that Eve uses for scanning down a

'location in space' which is called Trilateration.

This system works similarly to a real-world GPS receiver, where a given location can be tracked down by a known distance from several points, and the interaction between those points which will eventually isolate one location which is the one you are looking for.

As an example, if you need to find a location, and you know your probe is a certain distance away from it, but you are unsure in which direction, the probe can be at any point on a circle with radius of that distance from your target.
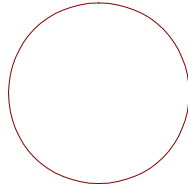
If a second point is also a known distance away from the target in a different direction, that also has a circle, and from that, you can see that the potential locations have been reduced to 2, specifically where the 2 circles cross.
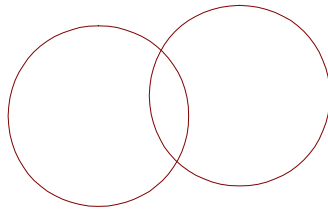
By providing a third location, again at a known distance away from the target, a third circle can be drawn, which pinpoints the location to one of the two previously discovered spots, and thereby finalises the place where the location must be.

The location is found where the three circles intersect
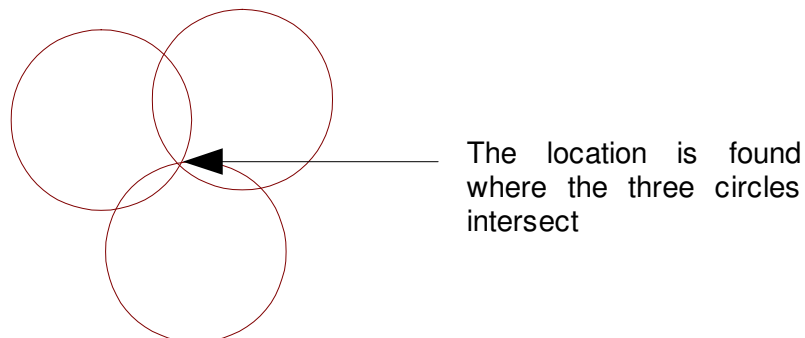
Eve is a little more complex than this system in that it works in three dimensions, so each of these circles is replaced by a sphere, and there can be depth to the system as well.

Firstly, when you perform a scan, and have a (presumably low strength) signal, you can click on that signal from the scanner window to be shown a red sphere, similar in appearance to the range indicator of the scan probe. This determines the approximate location in space. It is likely that if you have good skills, this sphere could be quite small, so you can most likely reduce the probe scan distance from 32AU for example to 4AU or even smaller if you are lucky.

The next step is to place several probes (at least 4) around the identified red sphere so that it is fully encompassed by on all sides by other probes scan areas. Note that if the red sphere is quite close to one of the size cut offs, you should move up to the next larger size of probe scan distance so that there is a bit of distance from the probe location (centre of the sphere) and the edge of the circle, as if the distances from the probes to the each other and the site you are trying to find it too

low, it can cause issues with locating the site, as the angle of the direction that the probe is coming from in relation to the target also makes a difference to the end result. As this system works in 3 dimensions, it can be quite useful if you have the skills to deploy 6 probes to put one above the group of probes and one below the group to ensure that the potentially variable height is taken care of as well.

After another scan, you will then have one of 5 possible outcomes:

1) The signal is lost – this can happen due to deviation, and unless the site has been completed and disappeared naturally moving up to the next larger sized band, or moving the probes around a little should locate it again.
2) The result is a sphere – this can happen due to deviation meaning the location is still only picked up by 1 probes.   Move the 4 probes back around this new circle to suit and re-scan.
3) The result is a thin red oval line. This happens when 2 probes have found a location, and are intersecting along one plane. This indicates that the location is somewhere along that ring, move the probes so all 4 encompass the area of the ring and scan again.
4) The result shows 2 dots close to each other (these could be red, yellow or possibly green depending on the strength of the signal). This happens when 3 probes have located the site, which leaves 2 possible locations around the ring identified in outcome 3. Move all 4 probes so they cover these dots and re-scan.
5) You have a single red dot in either red, yellow or green. This means that the approximate location has been found by 4 probes, and now it must be narrowed down by reducing the scan size, which in turn increases scan strength and makes the signal strength increase as each scan improves.

Situation 5 means that you're almost there, and all it usually needs from then on in is tweaking the scans to get the optimal strength. This is achieved by reducing the size of the scan, and moving the probes themselves closer and closer to the suspected target location, as probe strength is higher at the probe itself. Be careful of moving the probe in too quick though, as deviation still applies and it could mean you move the probe past the location inadvertently, and lose the signal.

One very good trick that can be done with this final tweaking is to shift-select multiple probes in the scanner window and whilst holding shift, you can move all of the selected ones at once, which is useful for moving all of the probes so they can be centralised a little better on the location to hopefully improve strength, or alternatively, for resizing all probes at once, although they will manually have to be moved so their scan area covers the suspected location again, as the scan size is a radius from the central probe location, and not from one of the edges.

When you have a 100% hit, and the spot turns green (as long as there is only 1 spot) it can be warped to as with any bookmark.

Scan Strength and Equipment

Each of the probes have a different benefits. The Core probe is small, and can fit into the Core Probe Launcher (which can be fit on most ships, it only needs 15tf CPU) and ultimately has the highest strength possible from probes – at its lowest setting of 0.25 AU scan range, it has 40 strength. It cannot be used for locating anything besides exploration content however.

The Combat Probe is similar to the Core probe except it warps faster (this is somewhat inconsequential) and can be used to locate ships, drones and structures much as the older style recon probes were able to be used. It has a higher minimum scan range (0.5 AU) and but suffers in strength because of it, at only 20 strength. Though it should be noted that due to the diminishing strength as scan size is increased, the core probe also has a strength of 20 at this 0.5 AU scan distance, the core probe has the benefit of being able to easier find the really hard to locate sites which needs the additional strength and pin-sharp scan size. These are much bigger than the Core probes, and require an expanded probe launcher to be fitted, which requires 220tf of CPU.

Deep Space Probes have a very low strength, but the greatest individual scan size, reaching up to 256 AU. Their main use is to perform quick system scans at large ranges to see what is available. They need to be fitted to an expanded probe launcher due to their size, but can be used to find ships, drones and structures too.

The table below identifies the different strengths and potential maximum deviation from the target point (which is always half the scan size)

Distance	Core		Combat		Deep Space	
	Strength	Max Dev.	Strength	Max Dev.	Strength	Max Dev.
0.25	40	0.13				
0.5	20	0.25	20	0.25		
1	10	0.5	10	0.5		
2	5	1	5	1	5	1
4	2.5	2	2.5	2	2.5	2
8	1.25	4	1.25	4	1.25	4
16	0.63	8	0.63	8	0.63	8
32	0.31	16	0.31	16	0.31	16
64			0.16	32	0.16	32
128					0.08	64
256					0.04	128

Notes and Tips

Not all of the locations of a given type are identical – each site can have a range of strengths that they appear with, with lower strength sites harder to find. The harder to find sites tend to also have the greatest rewards for finding them however. It is possible that you will need higher skills to find some of the hardest to reach sites.

Once a signal strength reaches 50% during the scan, you can identify the type of site. Until then they are simply identified as 'Cosmic Signatures.' This is the major downside with this system compared to the old one, as it is impossible to determine between the 4 different site types, a combat site or a wormhole until you have partially discovered it. If you are only interested in finding one specific type of site, it can take a long time checking every one you find especially in areas like wormhole space, which have lots of signals closely packed together.

Scan probes can now be recalled back to your cargo hold after they have been used, they are not consumed any more. This can be done via a 'return' button on the scanner interface. If you happen to be disconnected or leave the system and forget about your probes in space, there is a 'reconnect' button on the scanner interface as well, which can be used to take over your probes and let you continue to scan with them, or return them to your cargo. Note that probes that are returned to your cargo hold in this way are not stacked, and if you go to re-load the launcher, only 1 will load at a time unless you go into your cargo and stack the probes.

The exploration sites that spawn have been seen to typically appear within 4AU of a planet with regards to known space, much as they always had done prior to Apocrypha appearing. In an interview a CCP representative (Greyscale) stated that this may no longer be the case. It is believed that in wormhole space, this restriction is removed, and sites can spawn anywhere in the system. Wormhole entry sites in known space have been observed to appear within approximately 6AU of a planet.

Previously it was impossible to place a probe physically within another probes scan area. This is no longer the case.

The Sisters of Eve

The Sisters of Eve corporation are very involved in the exploration process. Many of their loyalty point store items aid the explorer in some way or another.

Sisters Scan Probes come in all 3 exploration varieties (Core, Combat and Deep Space) and the main 2 types (Core and Combat) have a 10% improved scan strength compared to the standard variety. The Deep Space Probe is not quite as useful, as that only offers an additional warp speed advantage, and is often overlooked.

In the past when the probes were consumed upon use, these were not seen as being very functional due to their high cost, however now that probes are not lost upon use (save if the pilot was killed of course, or they expire in space) they are seen as a very worthwhile investment indeed.

There is also a Sisters variant of the scan probe launcher. These probe launchers offer reduced CPU needs, reduced cycle time between launching additional probes, and most importantly, a percentage bonus to scan strength. These can be quite a significant investment but do pay off due to the faster locating of targets, If that is the priority.

Finally, there is an implant set offered by the Sisters of Eve, known as the Virtue set. These offer improved scan probe strength, and additional attributes (+2 to each attribute as with other attribute implants) but do take slots 1-5, which means that they are a direct replacement of the other attribute implants. In addition to those, there is a 6th implant (which fits into slot 6) called the Omega implant which by itself does nothing, but improves the function of other Virtue implants in your head by a factor of 25%.

Of course, this option is the most expensive of the three available from Sisters of Eve but for those pilots who are extremely interested in exploration as a career path, everything which can set you apart from the crowd is a benefit.

What to do when you get there

Combat Sites (Unknown Cosmic Signatures)

These are fairly straightforward, kill or be killed. After successfully completing the site, there is a chance that it could lead to an escalation, which is a further bookmark which appears in your journal, leading on to larger and tougher opponents. Note that within wormhole space, it seems as though these do not exist, but rather all combat sites in W-Space are of the Cosmic Anomaly type and can't lead on to escalations. All 'Unknown Cosmic Signatures' appear to be Wormhole exits within wormhole space.

Gas Harvesting Sites (LADAR Cosmic Signatures)

In known space, these spawn gas clouds which can be gathered to use as raw materials for booster manufacture. Whilst it needs 0.0 access to gather the most important parts for the best quality boosters, some of the lower grade options can be manufactured from the gas clouds that can be found in lowsec and highsec LADAR sites. These sites do not appear to despawn until the gas has been exhausted, or an undetermined time has passed. A Gas Cloud Harvester module (or ideally a few of them) are needed to be installed to your ship to gather the gas.

In wormhole space, these gas clouds are required as an integral part of the Hybrid Polymers used for Tech 3 construction.

Hacking Sites (RADAR Cosmic Signatures)

These sites require a codebreaker module to be fitted to make use of them, and once any defenders are dealt with, the hacking containers (which appear as cargo containers in the overview) can be accessed. Note that the codebreaker module is chance based, and it may take

a few cycles to open the container. Once one attempt has been made to open the site, leaving it will de-spawn the site. In known space, these sites drop things required for Invention, such as decryptors, datacores and data interface blueprints. In Wormhole space, they drop similar things, hybrid datacores and hybrid decryptors as well as R.A.M – Hybrid Tech, which are all used in the reverse engineering process to generate Tech 3 blueprints.

ArcSal Sites (Magnetometric Cosmic Signature)

This needs both a Salvager module and an Analyzer module to fully utilise the site. Anything which appears like a wreckage of a ship should be salvaged, and anything which appears much like a building should be Analysed. Much as with codebreaker modules, these are chance based and may take a few cycles to carry out their task. Note that after the first attempt of opening anything, if you leave the site, it will disappear. ArcSal sites tend to drop parts for rigs and skill books in known space, with an occasional BPC. In Wormhole space they drop the ancient relics which are used to generate the blueprints for Tech 3 construction.

Mining Sites (Gravimetric Cosmic Signatures)

These are quite plentiful in Wormhole space (some would say far too many of them appear) and fairly random in known space. These are the equivalent of asteroid belts located well away from the established belts – the benefit they provide is that they typically provide access to greater quantities of ore and of a higher grade than what it usually available in the local system. A ship suitable for mining is best used to get the most from these sites.

Wormholes (Unknown Cosmic Signatures)

Wormholes are a newly discovered phenomena with the arrival of the Apocrypha expansion. They work similar to jump gates in that when you enter one, you leave the current system, but that's about where the similarity ends.

Firstly, you will notice that no matter where you leave from, you will end up in 0.0 space – wormholes are completely lawless, Concord don't know where you are, never mind how to find you, so you cant rely on them for protection.

Secondly, you will find that the local communication channel does not operate quite the same was as everyone is used to – it seems that the subspace beacons which connect to the gates do not operate this far away, and you can't get an updated list of pilots in your system... you can speak in local, and appear in the comms channel for a short while, but no one will appear unless they answer you or speak themselves first.

In short... prepare to be hunted... or do the hunting yourself.

Wormhole space is the domain of the Sleepers, an advanced technology race who like nothing more than to melt the hulls of intruders into their space. Unfortunately their salvage is very valuable for construction of Tech 3/Hybrid Tech components, and many brave pilots are willing to face potential of certain death to bring the fight direct to the sleepers themselves.

Each of the different exploration sites as identified above are available in wormhole space (see the special note in the combat sites though in regard to wormholes.) The specifics of each type of site were identified with each of the different location write ups, so I won't go into that to any great deal, but will instead refer to the differences between Wormhole space and known space.

Firstly the wormholes themselves – access to these areas is not guaranteed... each and every wormhole that arrives only lasts for a certain amount of time, and will allow a certain mass to pass through it – if either of these values are exceeded, the wormhole will close trapping whoever is intending to go through on whichever side they were on. Of course, a new wormhole, and a new exit can always be scanned out (if you have the tools and skills to do so) but the exit point may be

many systems over from where you originally left from, even appearing in known 0.0 space or lowsec from a highsec entry point.

Wormholes are identified from one of 9 different classes. Class 1 to 6 are basic wormhole space, increasing in difficulty as the number raises. Class 1 to 3 are identified by the moniker 'Unknown Space' class 4 and 5 by 'Dangerous Unknown Space' and class 6 is identified as 'Deadly Unknown Space'

In addition to this, there are 3 classes of known space wormholes, a class 7 wormhole is an exit to Highsec space, a class 8 is an exit to Lowsec space, and a class 9 wormhole is an exit to Nullsec space.

It is possible to determine the type of wormhole that you will be facing by checking out the wormhole in local space, after it's name will be a series of numbers and letters – this lists the classification, and can be cross referenced on the wormhole classification map produced by Entity:

http://0110001101101111011000110110101101101100011100101.com/eve/whtcmap.png

If the wormhole is listed as type K162, it is hard to define the class of wormhole as that is generated as an 'exit point of a wormhole' and from that you can't find out exactly where it leads except by a vague guess due to the description or jumping right in and checking out the classification when you are inside the wormhole itself.

Natural Phenomena in Wormholes

In addition to the different difficulty levels of wormholes, there is also another issue complicating the lives of pilots who enter wormholes, and that is that some of them exhibit natural phenomena which can disrupt or boost the systems of the ships that enter the space.

Whilst the effects of these phenomena (both good and bad) tend to increase in effect as the difficulty (or class) of the wormhole increases, initial expeditionary craft have begun to map the effects of these sites. Any of these natural phenomena which will effect your ship will be plainly observable from the local environment within wormhole space itself.

A good reference site with images of all of these natural phenomena and an indicator of what effects occur is http://www.starvingpoet.net/?page=SpaceEffects which you are recommended to use as a research tool if you are interested in any serious form of unknown space exploration.

There are still some issues that need to be clarified however - in a class 2 pulsar system, the Capacitor recharge multiplier should be 0.81 rather than 1.44, and there are still discussions over if the armour resistances should be bonuses or reductions (the data dump lists it as a 1.44 modifier on the capacitor, and armour resistance increases.)