Doing the AIW File - a layman's guide to the rFactor AIWCAM Editor.

None of this is neccessarily fact you understand, it's just my experience so far . . . :-)

PREPARATION:

You'll need to download the AIWCamera editor [rFactorAIWCAMEditor1255.zip] from the 'Dev Corner' section of the rFactor site [www.rfactor.net]. Put the unzipped file [rFactor AIWCAM Editor.exe] in your main rFactor folder and double click it to run rFactor with the editor.

You also will need the 'DEV files' folder - this is essential for the AIW editor to work, but for some reason is not included with the editor. You can currently find a copy in this thread in the track modding forum at post #12 - http://forum.racesimcentral.com/showthread.php?t=254112 - Unzip this to your main rFactor folder. It contains two folders:
DEVFILES - the folder needed for the editor to work.
AIW Editor Docs - contains screenshots of the editor plus another guide to using it.

NOTE: I've now put a copy at http://www.filefactory.com/file/agb595c/n/rF_AIW_Editor_DevFiles_rar

You can also use the AIW CAM Editor by Guitarmaen to fine tune the AI. I didn't use it myself as I found I could do all I needed using the rFactor editor. Get this from rFactor Central, it's under Addons\ Mod tools. It doesn't have to be in the rFactor folder, but you need to edit the rF_AIW_CAM.conf file to point to your rFactor installation.

STARTING UP:

It's a good idea to create a new player for working with the AI, I've heard of cases where lap times etc have become corrupted or lost when using it, it's probably very rare but better safe than sorry. Set this player in regular rFactor to use one of the basic rFactor cars, not a mod car. Do it in regular rFactor as you can't change car or player when using the editor.

Start rFactor by double clicking on rFactor AIWCAM Editor.exe, you can only choose 'Testing'. When you get in the car there will be a small menu in the top left corner.

TURN OFF QUICK KEYS:

The first very important thing to do is to go to 'Unsupported/Test Options' and turn off Quick Keys.

The Quick Keys trigger actions such as 'Record a Path' or 'Record Fast lap' by means of the number pad keyboard - unfortunately these are the same as the chase camera keys and the chase camera is far the best view for most all of the AIW setup. So any time you move the chase camera it will trigger 'record fast lap' etc and be most confusing. You get your chase camera view nicely set up for what you want to do, but when you look at the menu it's saying 'Waiting to Record lap' because you've pressed the 4 key while doing so and triggered it. Then you think 'what the f***!' and your blood pressure goes up alarmingly!

BACK UP ALL THE TIME:

The second important thing is to backup your AIW file every time you make a change to it. And preferably keep a log telling you which version is which! You can either run rFactor in a window or just press Ctrl-Alt-Del to get to the desktop as usual.

Here are all the steps as far as I know. I don't know if the order is important, but it's roughly the same as each time I've seen the steps listed or shown.

RECORD MAIN PATH:

Main path waypoints will be showing all round the centre of your track from your BTB AIW file, but it's neccessary to re-record this path for the AIW editor. Line yourself up in the middle of the track just short of the start/finish and click on 'Record a Path'. It will start to record when you cross the start line. Drive around as slow or fast as you like following the existing waypoints keeping to the centre of the track, You'll be leaving a trail of fresh blue waypoints behind you as you go. When you cross the finish line click on 'add new path as main' and this will replace the original BTB waypoints. Or you can click on 'Delete all waypoints' before starting to record the main path if you prefer driving round a clear track.

RECORD PIT PATH:
Recording the pit path perhaps isn't always given the attention it deserves, I think.
Go to where you want the AI to start to divert into the pits. This should be some way before the pits and start roughly where you think the fast path [ideal line] will be on the track. This will give the AI a smooth transition into the pits and avoid sudden slowdowns etc. Click on 'Record a Path' again, and drive from there through the pits and out of the other end back onto the track, taking the line you want the AI to take through and out of the pits. Continue down the track on the pits side until you get to the apex of the first turn, stop there and click on 'add new path and mark as 1st pit'.

This will give the AI a smooth transition. They have to get back onto the fast line by the time they reach the last waypoint on the pit path. So if you make the pit exit path short, as I did to begin with, the AI will have to turn across the track to rejoin the fast path, then turn again to join it. They will 'see' this as a chicane type bend and consequently slow down for it so they will rejoin the fast path at a slow speed causing havoc with any cars on a fast lap. By running the pit exit off the racing line down to the first turn you'll ensure that the AI both keep out of the way of faster cars and rejoin the fast path without any undue change of direction to slow them down.

RECORD GARAGE PATH:
If your garage spots will be for cars that are parked in the paddock rather than in pit stalls, then you'll need a garage path. This can either be a loop off the pit lane, where it leaves the pit path at one point and re-joins it at another, or it can be an open ended path that starts in the paddock and connects to the pit path. The loop isn't really neccessary as the AI cars only ever go into the pits, they don't ever turn into the paddock from the track so the join from the pit path into the paddock is never used, only the exit.
Make sure the garage path runs between where you'll want the garage spots to be when you set them up later. Save this path as 'add new path and mark as 1st pit extension'

CONNECT PATHS:
It's now neccessary to connect up the main, pit and garage paths. I've read that it's best to join these in the order they occur on the track and have not had any problem as a result.

So, go to where the pit path leaves the main path. Select the first waypoint on the pit path [hold down your mouse button and draw a rectangle around the waypoint to select or deselect it]. A different menu will appear when you select a waypoint. Then select a waypoint on the main path a couple of waypoints before the pit path one, then click on 'Join as branch' on the menu. Do the same for the garage path end [or ends if it's a looped path] then go to where the pit path ends and join it to the main path, again selecting a waypoint a couple of waypoints after the end of the pit path. If the garage path is open ended, go and select the end waypoint and click on 'cap end of path segment'

By the way, if you get stuck on the menu that comes up when you select a waypoint, it's because you've left one selected somewhere. Click on 'Deselect All Waypoints' and the menu will revert back to the main one.

FIND CORRIDORS:
The corridors mark out the driveable area of the track for the AI to left and right of the main path. rFactor does this by marking the edge of the road material where it becomes something else, grass, wall, etc. So if your track has any other tarmac sections adjoining the track - access roads etc - these will also get marked as driveable. Not neccessarily a problem, but you can imagine areas where 'seeing' an expanse of extra

tarmac to one side or other of the track could confuse the AI. You will get a much neater result if you put a wall across these in BTB first or simply change them to grass texture while doing the AI.

To set the corridors, simply click on ‘Set corridors’ and wait while it scrolls through them. Use the ‘Show/ Hide’ menu to show corridors once it’s done. It’s a good idea to drive right round the track making sure all the waypoints have corridors and that the limits match the edge of the track. The driveable area is shown in white to the left and red to the right. Blue indicates a no-drive area. It gets confusing round the pit area as each path [main, pit and garage] has it’s own delineation and they seem to overlap crazily where they meet, but it all works out ok.

PIT, GARAGE AND GRID SPOTS:
Now we come to the laborious bit! You have to mark out where each car will go when it enters the game [garage spot] and enters the pits [pit spot] as well as the starting positions [grid spot]. It’s much easier to do these by moving the car around via the keyboard rather than driving it from one place to another. To move the car, hold down Shift, Ctrl and Alt then use the arrow keys to move the car side to side and back and forward. For smaller movements just use Shift/Ctrl + Arrows keys. NOTE: Moving the car this way does not allow for track altitude, so if you move the car while Paused, make sure you unPause before re-cording any position to allow the car to adjust it’s height.

GARAGE SPOTS:
rFactor has a curious system - at least I don’t understand it! - where 3 garage spots share the same pit. So Pit Position 1 is for Garage positions 1/1, 1/2 and 1/3, Position 2 is for Garage positions 2/1, 2/2 and 2/3 and so on. So if you want to run yourself plus 26 AI on your track for example [27 cars in all] you will need to mark 27 garage spots [1/1 to 9/3], 27 start positions and 9 garage spots.

If your garages will be in the paddock rather than in pit stalls, you’ll have worked out beforehand where you want them. They should be either side of the garage path. rFactor will create the join to the garage path once you have set the positions. It seems best to set them in order, 1/1, 1/2, 1/3, 2/1, 2/2, 2/3, 3/1 etc as I think rFactor fills them up in the order 1/1, 2/1, 3/1, 4/1 etc, so you’ll get the cars more spread out in the garages with a few cars rather than all huddling in one corner.

Make sure you have set the Pit, Garage and Grid spots to show in the Show/Hide menu.

Put the car where you want Garage 1/1 to be, then under the ’set grid/pit/garage’ locations menu click on ‘add garage location’ then click on ‘record pit 1 garage 1’. It will already show ‘done’ but ignore that. A black square with 1/1 on will appear at the front of your car along with a ‘Position Noted!!’ message.

Then move the car along a bit and click on ‘record pit 1 garage 2’ Keep on with this until you have all the spots you want.

PIT SLOTS:
As said before, you need one pit spot per 3 cars, so for example if you want to run 30 cars you’ll need 10 pits spots marked. Space them out equally along the length of the pits, to one side of the pit path towards the pit. Again rFactor will make the connections to the pit path once you’ve saved the pit positions. I don’t think it matters if you mark them 1, 2, 3, etc from the entry of the pits, or in reverse from the exit.

STARTING GRID:
There are two options here. You can either mark out all the starting positions you want by hand, or you can get rFactor to do it for you by setting only the first two slots.

The advantage of doing it yourself is that you can get the grid just how you want it, also if you have grid spots marked on your track you can align the cars correctly with them. The advantage of the other way is it’s much quicker!

Doing it yourself is just the same as doing the pit/garage spots. Click on ‘add start location’. Put the car on pole [pointing the right way!] then click on ‘record start loc 1’. Move to position 2 and repeat etc. Remember again at this point that if you have the game paused the car will only move laterally, not up and down. So if you don’t unpause before setting a position and the track slopes a bit you’ll get the car dropping from midair onto the track when you run the game.

For rFactor to set them automatically, go to ‘Unsupported Test Options’ and click on ‘Auto grid Gen Off’ until it sets the auto generator to the path you want - usually the main path, it will read ‘Auto Grid gen follows main’. Then go and set the 1st and 2nd grid spots as described above. rFactor will then generate a starting grid with the same steps in the grid as you have put between 1st and 2nd. It creates over a hundred of them, they go miles back round the track!

SAVING THE POSITIONS:
When you set up pit, garage and start locations, rFactor will not generate the waypoints for them until you exit and re-enter the track. So when you’ve done them - or after you do each one if you do them one at a session - save the waypoints and quit the track to the main rFactor menu. Then reload the track and save waypoints once again. This will write the pit positions etc into your AIW file.

DRIVE THE FAST PATH:
The fast path is the ideal line the AI will attempt to take whenever they can, so it’s of critical importance in getting a good AI. What you want is not speed, it doesn’t matter how fast or slow you drive it, but a line that is perhaps not even the ideal racing line for a human, but the one that presents the least amount of change of direction. The AI adjust their speed relative to the ‘corner’ they ‘see’ coming up in the waypoints ahead so it seems to me that what you need to speed them up is as wide sweeping a line as you can possibly manage, and changes I made to the fast path on my track backed me up.

Once you’ve done a fast lap, it’s interesting to turn on Fast Lap in the Show/Hide menu, put yourself in chase camera and then take the camera really high up behind the car [there aren’t any distance rules on the chase cam in rFactor editor mode, you can take it as high or low, underground even, as you want]. From on high you get a great view of whether your line is the best possible or not and where it could be improved.

You can fine tune it, and most probably will always need to do so. With the fast line showing, if you highlight a waypoint or waypoints on the main path and hold down the Shift key using the left and right arrow keys will move the fast path left and right at that point. Shift plus Alt plus the left and right arrows moves it in much finer increments. The Pit Path also generates it’s own Fast Path [as does the garage path] and you can adjust this in the same way by highlighting waypoints on the Pit Path and so fine tune the way the AI leave and rejoin the track.

Often when driving your fast path it will happen that you cross the start/finish at a different position on the track at the beginning and end of your lap. This will leave a ‘step’ in the fast path between the first and last waypoints. To get rid of this, with the fast path showing select around 20 waypoints on the main path either side of the step and then select ‘Normalise Curve’. The more waypoints you select the more smooth will be the transition.

The timer on all paths set over a lap is a bit of a red herring, as never does time matter, yet it always only records your fastest lap. If you mess up when setting any of your laps either slow right down so you won’t ‘beat the clock’ as it were, or there’s an option to delete your best lap and start again.

DRIVE THE LEFT PATH:
This is the path the cars will follow on a rolling start lap or under the safety car, so just drive round keeping to the left making sure you always leave enough room for another car to your right round all the corners.

The left path MUST be done after the fast path. However you can redo the fast path once you’ve done the left path. rFactor generates the right path automatically.

MARK THE SPECIAL SLOWDOWN SPOT:
This is the point at which AI cars will slow to the pit speed limit. Highlight the waypoint on the pit path immediately before your ‘Pit-In’ flag and click on ‘special slowdown’.

MARK AUX LOCATIONS:
These are the positions for the pace car. Location 1 is on the track in front of the grid as for rolling starts, location 2 is where it parks itself in the pits.

MARK TELEPORT SPOT:
The teleport spot is the point at which the pole car will be when control is handed back to the player when the pace lap is cancelled on a rolling start.

So get your car in this position - usually just short of the pole position spot I think, but don't take my word for it, I don't do rolling starts! - and click on 'Mark as Teleport Spot

Be warned here - when you click to mark the spot your car will immediately fire forwards at 50mph [or whatever it will be running at on a pace lap] fully expecting you to take control as you would in the game. It'll probably crash, but it doesn't matter.

Once again, as with the pit, garage and start locations, rFactor will not generate the waypoints for the Teleport spots until you exit and re-enter the track. So when you've done them save the waypoints and quit the track to the main rFactor menu. Then reload the track and save waypoints once again. This will write the positions into your AIW file.

RACING GROOVE:
The AIW editor is a bit odd as it does not calculate and save the racing groove automatically from the fast line. You need to go to 'unsupported/test options. and click on 'ReCalculate Groove on save' before you Save Waypoints and quit the editor to get it to save the groove. If you go back later and make changes to your AIW file you will need to do this each time, otherwise your groove will disappear again.

Also use Notepad to open your AIW file and find the line starting GrooveWidth= and set it to around 5.000. My default AIW file had it set much lower, the result was a pencil thin line on the track that was very hard to see.

SIMULATE FUEL USAGE:
This is in the 'Unsupported Test Options' menu, and sets the fuel consumption for cars on your track. It seems to be a bit of a grey area, no-one seems to know how many laps you're supposed to drive or at what speed in order to set it. It's the line in the AIW file 'FuelUse=50280.585938' or some such number, and seems to vary between 50000 and 75000 in the files I've looked at. I'm saying 'seems' here a lot as I haven't done any long runs on my track, I only ever drive a few laps to check out how the track looks so it's not something I've got into yet. Common practice seems to be to copy it from the AIW file of an ISI track and see how it goes. I guess it varies depending on circuit length so maybe choose one of similar length..

That's it I think, unless I've forgotten something.

So far as I know, you can't delete individual waypoints or paths, so if for example you decide you need to redo your pit path, you can only get rid of it by selecting 'Delete All Waypoints'. This will mean doing all the paths and corridors again, but it won't delete your pit, garage and starting positions.

Also you can do a lot by copying and pasting in Notepad :-) ie copying pit, garage positions etc from an old AIW file into a new one. Or deleting unwanted ones.

Good luck!

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