ID	Title	Description	Priority	Estimated	Status	Comments
1	Behavior Tree Structure	Behavior Tree structure that includes the 4 basic nodes, Actions, Conditions, Selectors and Sequences. The composite pattern should be used, and the Behavior Tree structure should be easily be reused for any application, not just specifically for DEFCON.		n/a	Completed	n/a
2	Defcon 5 basic placement behavior	All 3 types of buildings - Radas, Silos and Airbases should be placed based on a random policy. The placement should be independent of the choice of country that the AI is assigned.		n/a	Completed	n/a
3	Defcon 4 Fleet Composition and Placement	Fleets should be randomly placed, and composed, during Defcon4 into allocatable sea regions. The fleet composition should be extensible, allowing different number of units, and also be able to vary the the unit composition to allow a mixture of fleet types and numbers. For the initial implementation, fleets of specific types are created, each with the maximum number of allocatable units - 6		n/a	Completed	n/a
4	Defcon 3 AirOrders and Fleet movement	Airbases should be able to send fighters to perform scouting duties. Fleets are to be able to move randomly around the map to explore and perform scouting. No attacks are performed, except if retaliating.		n/a	Completed	n/a
5	Defcon 2 Fleet and Air Attacks	Fleets should attack enemy fleets or buildings, same for bombers/fighters. The enemies are randomly chosen	Medium	n/a	In Progress	Enemies are currently not being selected explicitly.
6	Defcon 1 Silo Attacks	Silo attacks on random buildings or cities	Medium	n/a	Completed	n/a
7	Memory Module Perception	Memory Module should contain a perception of the entire world and all of it's objects, units and activity. This will make it easier for the Behavior Tree to perform checks and actions, rather than making API calls directly from the nodes. This should allow the Behavior Tree to check for conditions easily by working with the memory module.	High	n/a	In Progress	Progress for this is made iteratively.
8	Load/Save Function	Behavior Trees should be stored in an XML format and read when the game is launched, at runtime, where the behavior tree is constructed. This will allow having multiple trees, localised testing and easier BT management	High	10-Feb-09	Completed	A basic implementation should be achieved that allows the behavior trees to be saved, visualised (if needed), loaded. A further implementation allowing the use of Decorators to link up multiple behavior treees into one would be the natural next step once this has been done.
9	Convert existing Trees	Existing Behavior Trees for Defcon5 to Defcon1 should be converted to XML format, and should be working together with the save/load function	High	10-Feb-09	In Progress	This would serve as a test to ensure that the save/load abilities are working correctly. This process occurs throughout the course of the project - the Estimated date depicts the date to which at least DEFCON 5's behavior trees have been completed
10	Script for statistics	Script to run multiple Defcon games continuously, allowing for the evaluation of the AI's performance. This should be extensible to information of the game, eg. Winning score, no. of planes lost, no. of units lost, to be collected. This would be used to evaluate the fitness of the behavior trees	High	n/a	In Progress	This is an iteratively developed process since different types of data are collected based on the different areas of evolution. Currently working with Robin to extend API to be able to harvest required information.
11	State/Strategy Implementation for Nodes	Extend the current behavior trees to associate with each high level behavior, a state, in which the behaviors are to receive a higher priority. The nodes should have an associated priority, which would allow selectors to perform priority selection. This would also involve the organisation of states-behavior relationships that would reset the priorities	High	10-Feb-09	Completed	Basic implementation into core Behavior Tree implementation expected
12	State/Goal directed placement of structures	The 3 buildings - Radars, Silos and Airbases should be placed based the strategies determined from the Strategy Policy. This will provide the basis of meaningful placement of the buildings, allowing them to maximise the fitness function values. This will be the basis of evolving the placements later.	Low		Not Started	Tentative plans for coordinating the placement of structures based on distance from cities, distance between one another and territorial coerage. These distances are to be set as variables to be used for an evolutionary approach to determining the optimal values bsed on a local fitnes function eg. number of enemies located, total area coverage
13	State/Goal directed Composition of Fleets	Research and implement the policies that determine the composition of fleets. Fleet composition can be evolved based on its survival rate (no. of remaining units) and attack rate (no, of destroyed enemies)	Low		Not Started	n/a
14	Fleet movement coordination behavior	Implement the 5 behaviors as proposed by Robin into Behavior Trees, associating them with strategy policies. This will determine the movement and location of the fleets. This would consist of 'Idle', 'Await Opponent', 'Avoid Opponent', 'Move Direct' , 'Move Intercepting Opponent'	Low		Not Started	n/a
15	Evolving the placement of structures	Multiple games will be run, with the placement of structures evaluated based on a fitness function. This occurs on two levels - the first level would involve finding an optimal placement for each type of building on its own - the second level will involve finding the optimal positions to be placed for all 3 structures.	High	24-Feb-09	In Progress	Placement of Silos is the priority. Plans to evolve the Silo placement based on the fitness functions (Lifetime, Defense Value and Attack Value)
15	Evolve the movement of Fleets	Multiple games will be run, with the aim of allowing fleets to determine the best position to move to move to in order to proceed to attack the enemy cities or structures.	High	24-Feb-09	In Progress	Placement of Silos is the priority. Plans to evolve the Silo placement based on the fitness functions (Lifetime, Defense Value and Attack Value)