## Terminology

Blueforce – Player or Allied army

Redforce – hostile player

Capability - unit, building, or upgrade

Research – upgrades of unit or building capabilities purchased through an already built building

Strategy – A discrete collection of Capabilities in particular ratios designed to gain dominance over an opposing player with a bias towards land, hybrid, or air combat

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| --- | --- | --- | --- |
| ID | Requirement | Test Method | Target |
|  | *The system shall represent the relationships and dependencies between units, buildings, and upgrades* | Visual |  |
|  | *The system shall, given a Capability, determine what must be built or researched and what could be built or researched relative to other units, buildings, and upgrades* | Automated |  |
|  | *The system shall, given a partial view of an enemy base, determine what must be built or researched and what could be built or researched relative to other units, buildings, and upgrades* | Automated |  |
|  | *The system shall maintain a set of coarse strategies based on common play styles* | *Visual* |  |
|  | *The system, given a representation of redforce Capabilities, suggest a strategy that the redforce is using* | *Automated* |  |
|  | *The system shall, given multiple of a Capability detected, adjust the probability of each possible strategy* | *Automated* |  |
|  | *The system shall, given ground truth and a predicted strategy, update the probabilities for the strategy based on Capability overlap* | *Automated* |  |

## Requirements

## Test methods:

For each unit type, generate research trees and validate

For each building type, generate research trees and validate

For each upgrade type, generate research trees and validate

For each pair of unit and building, generate research trees and validate

## Target Metrics:

1000 Matches with and without inference engine (enemy team set to random)

Compare win/loss ratio of base NOVA and inference NOVA

Split AI into each strategy and generate W/L ratio on a per-strategy basis

Measure accuracy of predictions versus reality (jakkart index?)

## Functional Components:

Game Interface (BWAPI + NOVA)

Rules Engine

Inference Engine

Tree Builder

Admin

Test Driver

Software Requirements:

Nova Master GIT pull

BWAPI 4.20

BWTA 2.2

Visual Studio 2017 (v141)