

**IMAT 5119**

*Fuzzy Logic*

**Player Performance Capability, in PVP Multiplayer Matches of Shooter Games**

*Fuzzy Inference System*

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# Abstract

As the nature of this document, an advisory-based fuzzy logic application is explored for the domain of computer games, where a Mamdani-styled fuzzy inference system (FIS) has been purposed for advising a player’s performance capability, in the featured player-versus-player (PVP) multiplayer sessions, of the domains shooter-concentrated genres. For the FIS designed, the rule base, defuzzification method and membership functions (MF’s) that are configured for regulating the computation of crisp outputs values, from input that is passed to the system, will be discussed in their relation to optimally advising a player about their performance capability, that is forecast for a range of dynamics, specific to the players natural competence, intended to equip weaponry specification and the description of the virtual environment that the session will expose the player to. This will be accompanied by the relevant evaluation procedures, that were purposed for settling the configuration submitted.

# Introduction

Fuzzy logic is conceptually recognised as an “extension of Boolean” [1], or “multivalued logic” [2], that “aims at modelling the imprecise modes of reasoning” [3], which are fundamental to the “human ability to make rational decisions in an environment of uncertainty and imprecision”; this enables a “condition to be in a state other than true or false” [1], to formalize human reasoning for scenarios and subject matters that present “inaccuracies or uncertainties”, like when one attempts to represent the “meaning of propositions expressed in a natural-language, when the meaning is imprecise” [3]. Given its opposition to the “crisp, deterministic, and precise in character” applications of binary-based logics [4], fuzzy logic, which is “almost synonymous” [2] with fuzzy set theory [1][4], appeals to the “unsharp boundaries” [2] of object-to-class belongingness, that is formally recognised as membership (*μ*), for representing the “matter of degree” that an object belongs to a class, as opposed to its binary alternatives that do not cater for “partial truths” but abide by ‘The Law of the Excluded Middle’ [5][6], alternatively. In support of “intermediate truth values” [3] that represent an items ‘degree of membership’ to a class, or set, “linguistic variables” [1][2] being closely related to “human intuition”, are often adopted for defining fuzzy sets, that exist “to deal with imprecise, inconsistent and inexact information” [7], or data, that resides between the “crisp” [8] boundaries, or “unit interval [0, 1]” [9] of clear [1], classical sets; for which, fuzzy sets are recognised as being “classes of objects with a continuum of grades of membership” [7].

***Available in Appendix A***

A fuzzy inference system, or FIS, is a formality of fuzzy logic applications which is “based on the fuzzy techniques oriented towards information processing, where the usage of classical sets theory and binary logic is impossible or difficult” [10]; their “main characteristic involves symbolic knowledge representation in a form of fuzzy conditional (if-then) rules” [11][10], which are purposed for determining a systems crisp outputs, that become of data comprehensive formats, and are computed from a series of crisp data that is input to the system, initially [12]. Whereby, a conventional structure of a fuzzy system, typically comprises “four functional blocks: the fuzzifier, the fuzzy inference engine, the knowledge base and the defuzzifier” [10]. Preliminarily, crisp data is passed as input to a system, which is subject to the “fuzzification” procedure, which entails the “nonfuzzy” data being “assigned to the appropriate fuzzy set”, or as otherwise known, the “process of calculating the value of crisp or insert a membership degree value” [12], to which it belongs to a fuzzy set, and thereby becomes “fuzzified” [2]. Proceeding from the input data being fuzzified, their values are then “mapped into linguistic values of the output variable by means of the appropriate method of approximate reasoning” [10], this within the inference engine, utilises the systems “knowledge base” containing the bespoken “collection of fuzzy conditional rules”, to calculate [12]. Which then enables the defuzzifier to “assign the representative crisp data to the resultant output fuzzy set” [10], also known as the “aggregate output fuzzy set” [2], through the “defuzzification” [10] procedure, that further transforms the fuzzy set into “a single number” [2], the crisp value, of where “it becomes one degree of membership with the premises crisp” value [12].

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Given a fuzzy systems purpose, to provide a “basis from which decisions can be made, or problems discerned” [2], for this project, a Mamdani-styled FIS [12] has been purposed and developed as an advisory-based application of fuzzy logic, in which seeks to appropriate output for determining a player’s performance capability, in PVP multiplayer sessions, for the shooter genre focuses of computer games. For which, the inference system developed, features a knowledge base and multitude of MF’s to address. A system for the application proposed, is justified for enabling players to acknowledge their potential to perform well against competing players, when within in a lobby state, that precedes a player loading into the multiplayer sessions, or “rooms” [13] of shooter games; this summarily purposes to indicate their ability to eliminate opponents [14] and to interact, assault and defend objective focuses, or “conflict points” [15] if any, for the range of multiplayer modes available to a player to engage with [16]. For which, as the archetypes, or “genre conventions” [17] of shooter games, there are prevalent focuses upon a player’s “motor coordination” [18] requirement, the “level design” [14], or the environment exposed to the player, as well as the “weapon type” [19] that the player wields. All said focuses have been purposed as the FIS’s input variables, which collectively represent the attributes that comprise a player’s performance capability, for the genre of computer games mentioned; where the performance capability projected for a player, features as the systems output variable.

***Available in Appendix C***

Whereby, for each of the motivations revealed for the systems input variables, the motor coordination requirement of a player, is typically known by “shooting before being shot” [18], which can be settled as a player’s weapon accuracy, that determines how efficiently the player is able to establish, minimise and maintain a steady “vertical and horizontal movement of a weapon when firing” [21], thus dictating the number of “shots that land on target”, to “kill enemies” [18]. Level design, acknowledged as the “areas for player-vs.-player combat to occur” [14], can be disciplined as the “size of the arena”, which typically associates the “amount of cover available in the arena” also, for the player to seek protection from “enemy fire”. Lastly, weapon types, recognised by the genres “patterns in weapon design” [22], can be represented by few of many “universal weapon patterns”, that are: “how much damage the weapon deals”, determining the player’s time-to-kill (TTK) [23] capability, the “firing rate” of the weapon [22], deciding the “the number of rounds fired per minute” (RPM) [24], that exponentially affects the TTK aptitude of a player, as well as how “the weapon affects the player’s movement” [20], which regulates “how deftly a player can move, as well as aim their weapon” [25], that correlates with the rate at which a player is able to evade projectiles and manoeuvre into cover, and the rate at which the player is initially able to establish a stable weapon accuracy, with a given competitor.

Undoubtedly, there are several other attributes for the genre in focus, in which are recognised to impact a player’s performance capability [22], however, they are regarded as being less significant due to their irregularity across the genre’s subsidiaries; one of which being the “special effects that the weapon has on the enemy”, whereby, provided that the first-person shooter (FPS) sub-genre borrows weapon categorizations from “real-world patterns”, for adhering to “behavioural realism” [26], said special effects are not apparent and thereby cannot factor a player’s performance capability. Moreover, if all potential attributes were to be considered, the FIS would present an overwhelming complexity to overcome, with respect to the configuration of the systems knowledge base; this would yield non-universal, or incompatible outputs for all the focused genres subsidiaries, for which the advice determined, would assume to be inadequate for appropriately determining a player’s performance capability. Therefore, the FIS developed simplifies the domain for the most recurring, and thereby applicable conventions, for enabling a player’s performance capability to be universally decided; this amounts five input variables for the system, and one output.

# System Overview

## Design Architecture

For each of the input variables derived to factor a player’s performance capability, each must employ a series of membership functions, a unit of measurement and series of intermediate ranges, that are cohesively applicated to “determine the degree to which crisp inputs belong to each of the appropriate fuzzy sets” [2]; the fuzzification process. Said requirements have been settled as:

1. ***Player weapon accuracy (control %)*** – representing a player’s ability to control the “sway and recoil a weapon has” [25]. The range of ‘0’ to ‘100’ is configured for the variable, as a percentage, which enables a players weapon accuracy to be understood from a comparative perspective, that is the number of “shots that land on target” [14], to the number of shots, or bullets that do not; this range is linguistically mapped as: ‘very poor’ (‘0’), ‘poor’, ‘average’, ‘good’ and ‘very good’ (‘100’), which are commonly used terms to describe a players weapon accuracy, or accuracy generically, as can be exemplified by “poor accuracy” [27][28]. Both “Trapezoidal” [29] and “triangular-shaped” [30] MF’s are used in combination, to appropriate the degree of membership that crisp inputs pose to the boundary and intermediate fuzzy sets, abovesaid.
2. ***Elected map size (metres²)*** – representing the “size of the arena (length, width)” [14] that a player is exposed to and “navigates”, as a “virtual 3D environment” [31]. The gamut configured for the variable borders ‘30’ and ‘500’, as metres squared, which enables the players environment, or “map”, to be understood as area coverage, or as “gameplay per square meter” [32], in which is the “area available” [14] for the player to exist in. Where ‘30’ indicates the smallest possible map, as a map cannot exist with no area (‘0’), and ‘500’ indicates the largest possible map; this range is linguistically mapped as: ‘very small’, ‘small’, ‘medium’, ‘large’ and ‘very large’, that are regularly used descriptions of area coverage, for instance, “large area” [33] generically and “large open spaces” [34] game-wise. Both Trapezoidal and triangular-shaped MF’s are applied, to govern the degree of membership that crisp inputs present to the boundary and intermediate fuzzy sets, listed.
3. ***Weapon damage falloff (metres)*** – representing the “damage an enemy takes when shot by the weapon” [25], relative to the range being shot from, or simply “damage depending on the distance from the point of impact” [35]. The range of ‘0’ to ‘100’ is settled for the variable, as a unit of metres, which enables a weapons damage capacity to be understood as a constant value than diminishes over distance, or as otherwise recognised by the real-world principle of “maximum effective range” [36], that is the “practical range a weapon can be used at to engage a target”. Where ‘0’ indicates a non-projecting weapon that issues damage through “melee” [22] encounters, and ‘100’ indicates a weapon that “deals high damage at a long range”; this range is linguistically mapped as: ‘very close’, ‘close’, ‘medium’, ‘far’ and ‘very far’, which are frequently spoken terms to infer a distance or range, for example, “close range” both generally [37] and game-wise [19]. Trapezoidal and triangular-shaped MF’s are used in sequence, to regulate the degree of membership that crisp inputs pose to the boundary and intermediate fuzzy sets, itemized.
4. ***Weapon fire rate (RPM)*** – representing how “rapidly the weapon can shoot” [25] projectiles. The range ‘0’ to ‘2000’ is configured for the variable, as rounds-per-minute [24], which enables a weapon’s “firing rate” [22] to be acknowledged by “the number of rounds fired per minute” [24], or in simpler terms, the number of projectiles that a weapon can emit within a minute duration. For which, ‘0’ represents a non-projecting weapon, catered for the “melee weapon” [22] classification, and ‘2000’ represents a weapon facilitating a very “high firing rate” [22]; this range is linguistically mapped as: ‘very slow’, ‘slow’, ‘medium’, ‘fast’ and ‘very fast’, which are terms recognised for describing a weapon’s firing rate, or pacing generally, as is demonstrated by “fast fire rate” [38] and “fast pace” [39]. Only Trapezoidal MF’s are applied, for settling the degree of membership that crisp inputs pose to the boundary and intermediate fuzzy sets, abovesaid.
5. ***Weapon mobility (level %)*** – representing how “carrying the weapon affects the player’s movement” [22]. The range ‘0’ to ‘100’ is supplied for the variable, as a percentage, which enables weapon mobility to be acknowledged as the capacity of player-weapon agility, or as the level of “how deftly a player can move, as well as aim the weapon” [25]. Where ‘0’ implies a stationed and immobile means of weapon operation, such as a “mounted turret” [14], and ‘100’ implies a “fast, aggressive, and agile” [40] mobility; this range is linguistically mapped as: ‘very slow’, ‘slow’, ‘medium’, ‘fast’, and ‘very fast’, which are terms generally used to pronounce one’s physical mobility, as is affirmed by “slow mobility” [41]. Both Trapezoidal and triangular-shaped MF’s are applied, to govern the degree of membership that crisp inputs present to the boundary and intermediate fuzzy sets, listed.

Through each input variables fuzzification, inference and defuzzification [10][12], the FIS can output a crisp value for every combination of crisp input value, which characterizes a player’s performance capability.

***Available in Appendix D***

## Design Considerations

As the primary design consideration for the FIS, given that the system is purposed to compile performance potentials for players in all orientations of shooter games, it was significant to ensure that the variables constituting to a player’s performance capability, were universal or conventional [17] to both major and minor genres of the games; thereby enabling the system to be applicated broadly, for which players can be advised accurately, nonetheless. Secondarily, as the systems output, it was obligatory to repute the output as a potential or capability, provided that the performance projected for a player can only be consultative and not definitive, which aligns with the series of external factors affecting player performance capability, that are: the “dexterity and precise timing of control inputs” [42], “logical thinking and problem solving”, as well as “strategic planning and management of complexity”, which are natural competences of players, that vary in practise for all individuals.

## Variable Configuration Justification

1. **Player weapon accuracy (control %)**

As the initial input variable of the system, player weapon accuracy purposes to model a player’s capability to emit projectiles at their competitors, positively, as a ratio representing the number of projectiles, or bullets a player lands on their target [14], contrary to the number of bullets that a player does not. Whereby, the more bullets that a player lands on their enemies [18], the fewer number of bullets will miss, thus the player can be recognised as being more accurate, which assumes a that shorter duration is required to “take an enemy from full health, down to zero” [43]; this expresses a player to be more performatively capable, where “the shorter the TTK, the smaller the window of retaliation, and the quicker an enemy goes down”. Inversely, an increasing number of bullets that overlook a player’s competitor, enables the player to be acknowledged as being less accurate, which assumes a longer TTK, that “means both survivability and escapability are emphasised” [44] for the enemy; this further presents a player’s enemy with a “greater chance for breaking line of sight, repositioning and, more satisfyingly, retaliation”, at which the player is ultimately less capable in engaging “firefights” [22].

Given the ratio: bullets hit against bullets missed, a player’s weapon accuracy can sensibly be addressed as a percentage, as accuracy is typically [45] format as, which represents the “degree of closeness of a measured or calculated value to its actual value” and translates to the players actual-versus-potential weapon accuracy. Whereby, it is potential for a player to miss all bullets that are directed at its enemies, and so ‘0%’ is used as the least or lowest accuracy possible, which can linguistically be recognised as ‘very poor’. Meanwhile, it is also potential for a player to hit targeted enemies with all bullets that are fired from a weapon, without misplacement, where ‘100%’ is the most or highest accuracy achievable and can linguistically be settled as ‘very good’ to infer. Inevitably, player weapon accuracy as an attribute, is arguably the most significant attribute when determining a player’s performance capability, as is suggested by the term “dexterity” [42], regardless of the size of the players environment, the damage falloff range, firing rate and mobility presented by the weapon that they equip, a player must be fundamentally capable in eliminating its enemies to perform well; hence player-versus-player (PVP).

***Available in Appendix E***

1. **Elected map size (metres²)**

For the second input variable of the system, elected map size reasons the potential area that a player can be exposed to and exist within, which is recognized as a map [31], or otherwise a 3D virtual environment, that features both a width and length dimension, representing the area “for player-vs.-player combat to occur” [14]; as metres squared is a “measurement of area” [46], the variable adopts this measure to represent the abovesaid descriptions of a player’s environment [32]. Whereby, the smallest size that a map can be is ‘30m²’, which benchmarks the “such a small area” [47] of an “infamous map”, featured in the “best-selling video game franchise” [48]: Call of Duty, which is recognised by the name of “Nuketown” [47]. For which, the maps area not being explicitly known, is calculated relatively [49] to determine its playable area of ‘54m²’ (‘√2,972’ square metres). Providing that the map is not the “smallest map” [50] in the series, the boundary is mitigated to support smaller environments that are acknowledged to exist, whilst still facilitating a series of “choices” [32], that enable players to “move tactically and strategically” [22]; environments of this size can thereby be regarded as ‘very small’. Whereas the largest size of a map is configured as ‘500m²’, which benchmarks the area of the “biggest map” [51] in the series, which is “said to be a 1:1 of a downtown city”, for which the area of Vatican City [52] (‘440m²’), the “tiniest state in the world”, is amplified to model. This boundary purposes to cater for maps in other recognised shooter game series also, which may surpass the numerical fidelity of the area, for the city mentioned; environments of a size as significant as a real-world city, can appropriately be referred to as being ‘very large’.

Given any size or area of a map available to a player to navigate in, assumes that there is some “amount of cover available” [14], for players to use and source as protection against “enemy fire”. A player exposed to a larger map, presumes an improved availability of cover, when compared to a smaller-scaled map. In which, alongside diminishing weapon damage and accuracy control reduction dictated by the maps scale and increasing regularity of longer-ranged enemy encounters, players and their enemies alike, are significantly less capable to perform well, given that a larger environment “increases challenge and slows the pace” of gameplay; this also factors a players “health and ammunition” being restocked, through using cover for “remaining protected” and to strategically manoeuvre around the environment also, without, or taking minimal deductions to health, overtime. This determines a player’s TTK potential to be significantly longer, than a large environments counterpart. Whereby, smaller-scaled maps as exemplified prior, project an enhanced performance capability for a player, providing that diminishing weapon damage is less obvious over shorter distances, weapon accuracy is more controllable at shorter ranges, there are more opportunities for enemy encounters, and there are typically less cover features to be protected by; this resorts to a player’s TTK potential being significantly shorter than a large environment by comparison.

***Available in Appendix F***

1. **Weapon damage falloff (metres)**

Featured as the third input variable for the system, weapon damage falloff purposes to model a player’s weapon damage distribution, relative to the distance from the player than an enemy resides at, or alternatively “damage depending on the distance from the point of impact” [35]. Whereby, all weapons available for a player to equip, “diminish in strength over distance” [22], however, some weapons deal “high damage at long range”, and some deal “low damage”, or no damage at long range; to indicate a weapons damage, or “maximum effective range” [36], the variable utilises the measure of metres, as a “common unit of distance” [53]. In which, weapons that issue higher damages at longer ranges such as “sniper rifles” [22], are acknowledged to have ‘very far’ effective damage ranges, where they deal a “very high amount of damage per shot”. Oppositely, weapons that issue lower or no damage at longer ranges such as “sub-machine guns”, “shotguns” and “knives”, are acknowledged to have ‘medium’, ‘close’ and ‘very close’ effective damage ranges, at which they “fire continuously but deal low damage”, or for the melee category specifically, deal “high damage” but at very “close range”. For determining the range of the linguistic intervals listed, ‘0m’ is settled for inferring an “extremely close-range of combat”, as appropriated by ‘very close’, which purposes to address the melee classification of weapons. Whereas ‘100m’ is settled for inferring the maximum effective range, or ‘very far’ range, which is justified in accordance with the player’s elected map size, at which ‘100m’ enables a weapons damage falloff to be ignored, for a map considered ‘very small’ in size, whilst for a map considered ‘very large’ in size, weapon damage falloff is factored, and forces a player to inflict low or no damage to enemies, “in areas with long distances”; this encourages a player “to move tactically and strategically, minimizing distance in firefights before starting them”.

Given the boundaries provided for a weapons effective damage range, a player who wields a weapon inflicting higher damages at longer ranges, is assumed to be more capable in performing well, as their TTK potential is significantly shorter, than a player that wields a weapon inflicting lower damages. However, given said weapons “slow firing rate along with its difficulty in aiming”, the player wielding the weapon that is purposed for long-range combat, must demonstrate a weapon accuracy that allows the enemies to be eliminated, before “pushing then towards cover” and “forcing them to search for alternate routes”; that could later disadvantage the player at closer ranges, as close combat weapons feature a “large area of effect, that reduces the need for high accuracy”. Meanwhile, a player who wields a weapon inflicting low damages at longer ranges, is assumed to be less capable in performing well, as a player relies upon “minimizing the distance in firefights before starting them”, which entails using “cover as much as possible” to “engage targets at short range”; this enables a player’s opposition to be advantaged positionally, where they can use “long-range weapons while remaining protected”.

***Available in Appendix G***

1. **Weapon fire rate (RPM)**

As the fourth input variable of the system, weapon fire rate reasons to represent how “rapidly the weapon can shoot” [25] when it is equipped by a player, or specifically, how many projectiles a player’s weapon can emit within a given duration; aligned with said duration, RPM as a military and associated term [24], as well as a unit of measure recognised within shooter games [54], is used to represent a weapons fire rate as “the number of rounds fired per minute”. Whereby, RPM is considered to correlate with the rate at which an enemy can be eliminated, as an effector of a player’s TTK potential, relative to the number of bullets that a player’s weapon is able to fire, in “quick succession” [22]; in which a weapon with a “high firing rate”, is able to be “fired in a quick and inaccurate manner as a means of hastily eliminating one or few enemies”. For the range determined to model a weapons fire rate, the slowest rate of fire that a weapon can feature is settled as ‘0 RPM’, which accommodates the melee classification of weaponry, as non-projectile weapon focuses, that thereby do not have a firing rate and can be interpreted as ‘very slow’. Meanwhile, the fastest rate of fire that a weapon can feature is settled as ‘2000 RPM’, which translates to being ’33 rounds per second (RPS)’, that accommodates the capacities of “mounted turrets” [55][22], and near that of some “machine guns” [35], which typically address performance balancing through shooting “faster but making less damage”.

Given the range configured for a weapons fire rate, a player who wields a weapon with a slower rate of fire, is assumed to be less competent in performing well, as their TTK potential can be significantly longer than a player that wields a weapon that “fires in a quick manner” and “heightens the pace” of gameplay. As well, providing that most slower firing weapons are either very long-ranged, such as “sniper rifles”, or oppositely, “extremely-close ranged” like melee weapons, “both survivability and escapability are emphasised” [44] for the opposition of the player, where the player’s opposition will be permitted more time to evade projectiles and avoid attempts of being rushed by the player [19][22]. Meanwhile, a player who wields a weapon with a faster rate of fire, is assumed to be more competent in performing well, as a player presumes to equip an “assault weapon”, or to be “operating a turret” [35]. In which, assault rifles are recognised “weapons that fire fairly accurately and quickly” [22], and “given their versatility, skilled players can confidently move through areas with little to no cover”; meanwhile, turrets are recognised to protect players, where many classifications of “weapons are unable to harm” them, whilst typically being “more powerful than standard weapons” [35] also.

***Available in Appendix H***

1. **Weapon mobility (level %)**

Featured as the final input variable of the system, weapon mobility purposes to model a player’s traversal capability and weapon responsiveness collectively, as otherwise known as “how deftly a player can move, as well as aim the weapon” [25]. For which, all weapons present varied mobilities for player’s, this is exemplified by weapons that “deal high damage at a long range”, such as sniper rifles, that incur “low movement frequencies” [19] which forces players to be “slow moving”, and less able to aim their weapon sharply; weapons of said classification are situated to “engaging enemies from a long distance” [22], and therefore do not require nor rely on mobility, unless exposed to “targets in close vicinity”. To infer a player’s weapon mobility, percentage is settled to represent the ratio of the players mobility when a weapon is equipped, compared to its potential, universal mobility when a weapon is not equipped; although mobility factors a player’s traversal capability, a unit of velocity [56] such as miles per hour (MPH), would not be valid for representing the rate at which a player is able to “ADS (aim down sight)” [25], or aim the weapon. Whereby, the most immobile state a weapon could impose for a player is ‘0%’, or ‘very slow’ mobility, which accommodates for when a player is “operating a turret” [35], that is “mounted” [14] to a surface, or any other weapon type that is “placed in a stationary location” [22]. Whereas the most mobile state a weapon could provide for a player is ‘100%’, or ‘very fast’ mobility, which caters for the melee weapon classification, that features “hand-to-hand weapons, such as knives or bare hands”; this enables players to have a “high movement range, high movement frequency and high attack frequency” [19].

Given the boundaries presented for weapon mobility, a player that wields a weapon imposing a very slow mobility is assumed to be more capable in performing well, as it is presumed for the player to equip or be stationed at a “power weapon” [22], in which “gives the player a clear advantage over other available weapons by being incredibly powerful” and allowing engagements at “long range”, as sniping weapons, assault weapons and turreted weapons satisfy. However, when exposed to other “players in close-quarters”, a very slow mobility infers that a player is less competent in accurately aiming the weapon, as more time is required for a player to ADS, alongside the “difficulty in aiming the weapon accurately”, nonetheless; this forecasts the player to be eliminated often, if the elected map size is ‘very small’ or ‘small’, at which the player is alternatively considered less capable in performing well. Meanwhile, a player that wields a weapon imposing a very fast mobility is also assumed to be capable in performing well, as the player can “avoid being exposed to fire” better, where there exists a “greater chance for breaking line of sight, repositioning and, more satisfyingly, retaliation”, through being able to seek and “use cover carefully” and more often. Faster weapon mobilities further enable players to embed their natural “strategic planning” [42] capabilities, as they permit the player to “move tactically and strategically” [22] throughout their environment, for “minimizing distance in firefights”. However, a faster mobility presumes that the player wields a “close blast”, “sidearm” or “melee weapon”, which dictates that a player is disadvantaged at longer ranges of engagement, as dealing “low damage” infers, for which a player relies on mobility and areas “with lots of cover” to compensate for; this inevitably “slows down the pace of the level and heightens challenge”, for which the player becomes less capable in performing well, when exposed to environments that are ‘large’, ‘very large’ or feature “large open areas” [14].

***Available in Appendix I***

1. **Player performance capability (potential %)**

As the only output of the system, player performance capability is purposed to represent a player’s competence to eliminate opponents [14] and to interact, assault and defend designated objective focuses, or “conflict points” [15] in their environment, for attaining the ultimate goal, that is “winning against another player” [57], or team. For which, the output variable considers a player’s weapon accuracy, damage falloff, fire rate, and mobility, as well as the size of the map elected for the players participation, as input, to determine. Whereby, to measure the performative capability or competence of a player, percentage is targeted for representing the ratio of the players potential performance, against the players maximum potential performance, in which is deemed appropriate, as there does not exist a unit of measure recognised for representing competency, nor could any other existing unit of measure sensibly infer it, with a numerical fidelity that permits intricate comparison. As a ratio, the least capable a player can be projected performatively, is ‘0%’, or ‘very low’ potential, which is settled to infer a player remaining within an idle or “inactive” [58] state, upon loading into the multiplayer session, or “room” [13] of the relevant game, where the player is not involved with the session and may not exist in the environment to be eliminated, either. Alternatively, a player may lack a natural capability to address the genre requirements for “dexterity and the precise timing of control inputs” [42], for eliminating its competitors, which further suggests that a player is entirely or mostly incapable of establishing and maintaining a weapon accuracy focused on them, where all or most projectiles emitted from the players weapon, do not “land on target” [14]; resulting in the player being eliminated, recursively. Meanwhile, the most capable a player can be projected performatively, is ‘100%’, or ‘very high’ potential, which is settled to infer a “skilled player” [22], that is able to “confidently engage two, maybe three” competitors simultaneously and eliminate them, even when “moving through areas with little to no cover”; this assumes at minimum, that a player has ‘good’ or ‘very good’ weapon accuracy and equips a weapon which has a ‘far’ or ‘very far’ effective damage range, thus enabling a player to “attack opponents who are behind cover”, “defend a small area” and resultingly win.

***Available in Appendix J***

# Experimental Design and Evaluation

## Initial Fuzzy Inference System Design: MATLAB

For the development of the FIS submitted, the software application MATLAB R2020b [59] was utilized as instructed and in support of the fuzzy logic toolbox package [60] available, “for analysing, designing, and simulating systems based on fuzzy logic”. In which, enabled a FIS to be devised, featuring a knowledge base, or rule base, a range of membership functions and series of input and output variables, to function collectively as an advisory-based application of fuzzy logic. Whereby, to implement the system described throughout this document, the “command-line functions” of the toolbox were targeted, as opposed to the “Fuzzy Logic Designer app” that offers a graphical user interface (GUI) for development alternatively, given self-interests as a programmer, to want to learn the implementations of fuzzy logic systems, syntactically, by means of a programmatical approach; this process was favoured for implementing the systems knowledge base also, where possible rule combinations could be considered numerically, in a binomial format, thus enabling the system to consider all supported, possible inputs of player attributes, for determining an appropriate, potential performance capability of a player.

Fundamental to the system functionality, the initial configurative state of the FIS’s development featured three MF’s, that were: Gaussian [61], Trapezoidal and triangular-shape, each of which were purposed for modelling the membership of passed data, to each fuzzy set that is settled for every input and output variable of the system. For which, Gaussian, resembling a bell-shaped curve, offered the system a normal-based distribution, that was initially acknowledged useful for sensibly representing units of measure, derived from ratios, percentages, or other probabilities alike; whereby, the MF was settled for modelling fuzzy sets used to represent a player’s weapon accuracy, weapon mobility and the systems resultant performance capability. However, Gaussian MF’s were abandoned from the final state of the FIS developed, upon realising the linear relationships between said variables, which cannot be represented with variance [62] or an accelerative manner of membership adjustment, but a sustained or constant adjustment, alternatively. Whereby, both Trapezoidal and triangular-shape MF’s were purposed instead, to represent the nature of the variable relationship described, for every fuzzy set constituting to each of the systems variables; this yielded more expected outputs from the system, upon evaluating the system with a series of arbitrary populated input data. Originally, triangular-shaped MF’s were implemented to represent a linear adjustment in membership degree, as described, that determines a “triangle peak” [30] to be prevalent, at which data can be recognised to have a maximum degree of membership to a fuzzy set; this was figured to be sensible for representing both the elected map size and weapon damage falloff of a player’s weapon, as both variables consider fluidity within size and effective range, which can be represented by gradual inclines and declines in membership degree. For this rationale, triangular-shape MF’s were mostly settled for the intermediate fuzzy sets of input variables. Whereas, Trapezoidal MF’s alike triangular-shape MF’s, were also purposed to represent linear adjustments in membership degree, however, they additionally offer a “top” [29] or plateau, for representing a sustained maximum degree of membership to a fuzzy set, in which a more gradual-based distribution was acknowledged useful for representing the boundaries of variables, where data situated below or beyond specific values, can be regarded as a definitive member of either bordering fuzzy set. For the FIS’s initial design and output evaluation, see ***Appendix K***.

***Available in Appendix L***

## Rule Base Ratification

As a “rule-based system” [2], a knowledge base must be populated to infer a player’s performance capability, through supporting a means for “approximate reasoning” [10], to determine the competency of a player, relative to the combination of crisp input data that is passed to the system initially [12]. For the systems configuration, there are possibly ‘3,125’ unique combinations of “if-then rules” [11], this is dictated by: five possible player weapon accuracies, five possible sizes of map that can be elected, five possible weapon effective damage ranges, five possible weapon fire rates and five possible weapon mobilities, all supported by the systems input variables. However, most of the rules constituting to the systems knowledge base could be substituted for aggregate rules, that alternatively combine and “interpolate” unique combinations of rules, to “minimize the number of fuzzy if-then rules, which are needed to describe an input-output relation” of the system; this enables the system to be “simpler, cheaper and more robust”, where the system settles ‘440’ rules alternatively, that inevitably amounts to an ’85.92%’ reduction. To note, for comprising a “hierarchy of fuzzy if-then rules”, aggregate rules are passed higher weightings than compared to unique rules, for which they assume higher precedence and importance to a player’s performance capability; all rules configured for the system utilise the ‘and’ (product) operator for settling the antecedent that determines the associated consequent [64], where every player performance capability output by the system, depends on all input variables, or alternatively one, to appropriate a sensible and accurate projection.

As the highest-weighted aggregate rules, firstly, if the players weapon accuracy is considered ‘very poor’, it is assumed that the player will demonstrate a ‘very low’ performance capability, given that the player is incapable of landing shots on target, thus not eliminating opponents as previously described. Secondly, opposing ‘very poor’ accuracy, if the players weapon accuracy is considered ‘very high’, it is assumed that the player will perform well and demonstrate a ‘very high’ performance capability, where the player is able to land most, if not all shots on target and thereby is capable in eliminating opponents with ease; this was formerly detailed also. Thirdly, if the elected map size is ‘very large’, it is presumed that the player will demonstrate a ‘very low’ potential to perform well, provided that all weapon fire diminishes at longer ranges, more cover is assumed to be available in the environment and the pace of gameplay resultingly plummets, inferring that a player will experience fewer oppositional encounters, as realised before. Lastly, if the players weapon mobility is ‘very fast’, it is assumed that the player will demonstrate a ‘very high’ performance capability, given that the player is able to evade projectiles more often and quickly, to establish and use cover hastily, as well as to manoeuvre nimbly around the environment, that allows a player to route through said environment strategically, and minimise the distance between enemies, before initiating engagements. As the principal policies of the system, if any of the rules are fired, all other compatible, lower-weighted rules implemented for the system, are ignored, and therefore not fired. Whereby, a player’s performance capability is instead, directly determined and output.

For the second highest-weighted aggregate rule, if the players weapon effective damage range is ‘very close’, it is assumed that a player wields a melee weapon or another extremely close ranged combat weapon, in which presumes that a player will demonstrate a ‘very low’ performance capability, given their reliance on the presence of cover, to source as protection and minimise the distance between their competitors over time, where the player is only able to eliminate opponents in very close vicinity; this is referred to in previous sections of this document. Proceeding as the third highest-weighted aggregate rules, firstly, if the elected map size is ‘very small’, it is assumed that the player will demonstrate an ‘average’ performance capability, as both the player and competitors are presented with similar advantages, where weapon damage is not affected, weapon mobility becomes insignificant, higher weapon accuracies are not as necessary to attain eliminations, and both parties are able to experience higher frequencies of engagements, when compared to any other size of environment. Secondly, if a player’s weapon mobility is ‘very low’, it is assumed that a player will demonstrate a ‘high’ performance capability, as the player presumes to be operating a stationary weapon, such as a turret, or wields a long-ranged high damage weapon alternatively, for which the player is capable in engaging enemies at longer encounters. However, the player assumes slower mobility, which hinders the players capability to perform well when within close vicinities of competitors, and so the player cannot be projected a ‘very high’ potential; both criteria are mentioned prior, also. Featured as the last and lowest-weighted aggregate rule, if the players weapon fire rate is ‘very slow’, it is once again assumed that the player wields an extremely close ranged combat weapon, or alternatively a long-ranged weapon which emits projectiles very slowly in succession, at which a player’s competitors are presented with a higher chance of evading rushed assaults, and projectiles at longer ranges, given more time would be available to react to said stimuli and the damage inflicted would be insignificant. Thereby, a player would presume to demonstrate a ‘low’ performance capability. For the linguistic notation of the knowledge base settled for the system developed, see ***Appendix M***.

## System Evaluation

Purposed for evaluating the crisp outputs distributed by the system devised, a series of crisp input data catered to each of the systems input variables, was arbitrarily derived, for being passed to the system initially and then subjected to inference before a corresponding crisp output could be computed. Undoubtedly, said procedure exists to infer the suitability and compatibility of the systems configuration, for generating advice identical to what a player’s performance capability is expected to be; this facilitates the potential to revise the systems rule base, active membership functions, active defuzzification method and variable ranges, for rectifying the optimal configuration of the system and its subsequent advice that is distributed to a player.

Fundamental to the data’s populace, a separate document being a spreadsheet file (‘.xls’ extension), was created for containing the data in a tabularised format and column-wise order, that is: player weapon accuracy, elected map size, weapon damage falloff, weapon fire rate, weapon mobility and the expected performance capability of a player, relative to the values submitted for each of the variables listed. In which accompanied by an iterative statement in the systems command-line implementation, each row of the data populated in the table, could be read-in to the system and evaluated to return a crisp output, per row or combination of crisp input data passed; this process could be visualised by configuring console output, displaying each value of the input and output variables of the system, for every evaluation iteration succeeded (see ***Appendix N***). Upon each crisp output being computed, the data is then written to a separate spreadsheet file for enabling conclusions to be developed, regarding the number of expected player performance capabilities, that match with the performance capabilities distributed by the system; this distinction is presented as a ratio, that is purposed to infer the accuracy of the systems active configuration. For this practice, a series of ‘30’ unique crisp input combinations are populated; this sample size provides a satisfactory amount of variation in input data, to appropriately model the systems accuracy.

***Available in Appendix O***

## Defuzzification Method Ratification

Alongside the membership function and knowledge base alterations mentioned, throughout the FIS’s development cycle, the active defuzzification method used to defuzzify the “aggregate output fuzzy set” to a “single number” [64] (crisp output), was also alternated to establish the better suited method, for enabling the system to compute the most expected performance capabilities of players; the “five built-in defuzzification methods supported” by MATLAB are: centroid, bisector, middle of maximum (MOM), smallest of maximum (SOM) and lastly, largest of maximum (LOM). Providing that the centroid defuzzification method is recognised for being “the most popular defuzzification method” and being “good enough for most applications” [65], the initial defuzzification method trialled was inevitably centroid; where the method “returns the centre of gravity of the fuzzy set along the x-axis” and unexpectedly the worst outcomes also, this is in accordance with the system evaluation procedure, where the centroid method returned the least number of expected performance capabilities of players, and is evidenced in both initial and final state configurations of the system.

***Available in Appendix P***

Secondly, the bisector method was then trialled for the system, which is known to “find the vertical line that divides the fuzzy set into two sub-regions of equal area”, that sometimes can “coincident with the centroid line”; this projected a similar volume of expected outcomes as the centroid method, which is evidenced by the evaluation procedure, as being truthful. Although an advancement from the centroid method is noticed, the bisector method failed to determine ‘60%’ or more of the expected performance capabilities of players, which reveals to be a considerable incompatibility for the system; this result was prevalent for both initial and final state configurations of the system.

***Available in Appendix Q***

Proceeding from the bisector defuzzification method, the smallest of maximum method was then trialled for the system, which is recognised to be the smallest value of the “aggregate fuzzy sets plateau, at its maximum value”, or in simpler terms, is the smallest value of the aggregate fuzzy sets maximum degree of membership. Comparatively, SOM was observed to be a significant improvement for the system, when compared to both centroid and bisector methods, this is evidenced for both initial and final state configurations of the system. However, for the purpose of maximising the accuracy of the system, SOM was only able to yield ‘80%’ of the expected performance capabilities of players, at most; thereby, SOM was also regarded as a considerable incompatibility for the system and was resultingly neglected from its final state configuration.

Advancing from the SOM method, yet similarly alike, the middle of maximum method was trailed as the systems defuzzification method thereafter, which alternatively, operates on the mean value of the aggregate fuzzy sets maximum degree of membership, or plateau, as opposed to the smallest; this projected all values returned by the system, to be larger than the crisp outputs computed by the SOM method. Whereby, many of the crisp outputs distributed by the SOM method, were acknowledged to be smaller than their expected value range, which inferred that the MOM method would yield more expected performance capabilities for players, given its operation on larger values by comparison, and was evidenced by the evaluation process conducted, to be correct. In which, the MOM method was successfully able to return all ‘30’ expected performance capabilities of players, in use of the systems final state of configuration, where even the initial state of the systems configuration, was able to yield ‘90%’ of the expected outcomes also, which universally poses to be an improvement on the systems accuracy, when compared to the defuzzification methods trialled previously.

Lastly, as the only defuzzification method remaining to be conferred, the largest of maximum method was then trialled for the system, which also shares a similar means of operation to the SOM and MOM methods, where it alternatively operates on the maximum or largest value of the aggregate fuzzy sets maximum degree of membership, or plateau. Given the naming relation between each of the defuzzification methods trialled prior, it was presumed for the values computed by the system, to exceed those of the MOM method and thereby overlook the expected performance capabilities of players, when the aggregated fuzzy sets were recognised, intermediate intervals of the systems input variables. Once more, these predictions prevailed to be valid, as can be noticed from the evaluation process undergone. Whereby, instead of yielding the ‘100%’ accuracy achieved by the MOM method, the LOM method was not capable of yielding ‘70%’ or more of the expected performance capabilities of players, which determines the defuzzification method to be less suited and compatible with the system devised; the LOM method was thereby abandoned for the MOM method, which settles to be the optimal defuzzification method of the system. For the results obtained from the defuzzification method evaluation process, of the initial and final state configurations of the FIS submitted, see ***Appendix K*** and ***Appendix S***.

***Available in Appendix R***

# Critical Reflection

In response to the performance and rigour of the FIS devised, the system is believed to be an accomplished advisory-based application of fuzzy logic, for the domain of computer games, in focus of the shooter genre and its subsidiaries; whereby, it is evidenced throughout the evaluation procedures purposed for the system, that the FIS is able to compute performance capabilities for players, who present variation in their natural abilities to control weaponry, the specifications of weaponry they equip and the scales of virtual environments that they are exposed to, which can be mapped and therefore correlated with their expected performance capabilities, for yielding an absolute degree of accuracy (‘100%’). Accountable for the applications accomplishment, it is evident that the evaluation procedure fabricated, has been beneficial for settling the optimal configuration of the system submitted, whereby, the series of membership function, defuzzification method and knowledge base modifications, have enabled the FIS to yield said accuracies, for when computing its crisp outputs. In this relation, it is inevitable that the active defuzzification method implicates the most significant effects on the values computed and output by the system, which has been realised and learned for future, potential fuzzy logic application development. Furthermore, providing the ’85.92%’ rule reduction in the systems knowledge base, it can also be acknowledged that a system can aggregate rules to fulfil its purpose nonetheless, whilst evolving to be ever more efficient and decreasingly complex. Aligned with the distinction between the initial and final configuration states of the FIS, it has also been realised that each membership function used to represent a variables fuzzy sets, has a specific purpose and represents relations between variables uniquely, for which has become a consideration for future fuzzy logic application developments, too; this has been emphasised with relevance to the improved accuracy yielded by the system, which was contributed to by substituting the Gaussian MF’s purposed originally, with triangular-shape and Trapezoidal MF’s alternatively, to conform to linear progressions and membership degree adjustments, that better represent and model the membership calculations of the systems fuzzy sets.

Providing more time was available for the FIS’s development, it would be beneficial to feature more input variables and potentially, subsidiary FIS’s, to improve the reliability and diversity of the system, in support for the many other factors constituting to a players performance capability, in shooter games; as previously discussed, said implementation would amass severe complexities and would require cautious considerations for the systems elected rule base, providing that a vaster series of rule combinations would be possible, as more variables being appended to the system would dictate. In continued mention of the systems rule base, more time would potentially enable more aggregate rules to be derived also, in attempt to condense the systems knowledge base further; this would present improved computational benefits and less logical complexity, that would enable the expansions projected for the system, to be simpler within their development and or integration. In which, the systems architecture would prevail to be increasingly more robust.

Given the FIS’s real-world focuses on contemporary shooter game conventions, it is feasible that the system submitted, could be integrated as a tool within contemporary shooter game productions, in which players would interact with, to acknowledge their chances in performing well in multiplayer sessions, before loading into them; this would enable players to establish a desired level of challenge, to cater for their satisfaction(s) in gameplay experiences. Alternatively, the system could also be integrated into an external software application, for mobile and other interactive platforms, to allow players to seek advice about their performance capability, as a remotely-driven convenience instead. Nevertheless, the FIS in its accomplished state, offers compatibility with real-world applications.

# Conclusion

Summarily, the system planned, developed, and submitted, is believed to be a successful candidate to fuzzy logic applications, that are purposed for and fundamental to the distribution of advice; whereas already expressed, I believe the system can establish an involvement within real-world software applications, as it has been designed for, specific to the domain of shooter games. Undoubtedly, throughout the development cycle of the FIS, a multitude of knowledge relevant to fuzzy logic systems, their components and their programmatical implementation has been acquired, alongside the intricacies of video game theory, particular to the major and minor genres of contemporary shooter productions. Inevitably, this assignment concludes an accomplished approach to FIS development, for the criteria instructed. For the systems implementation, see ***Appendix T***.

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# Appendices

***Appendix A:***

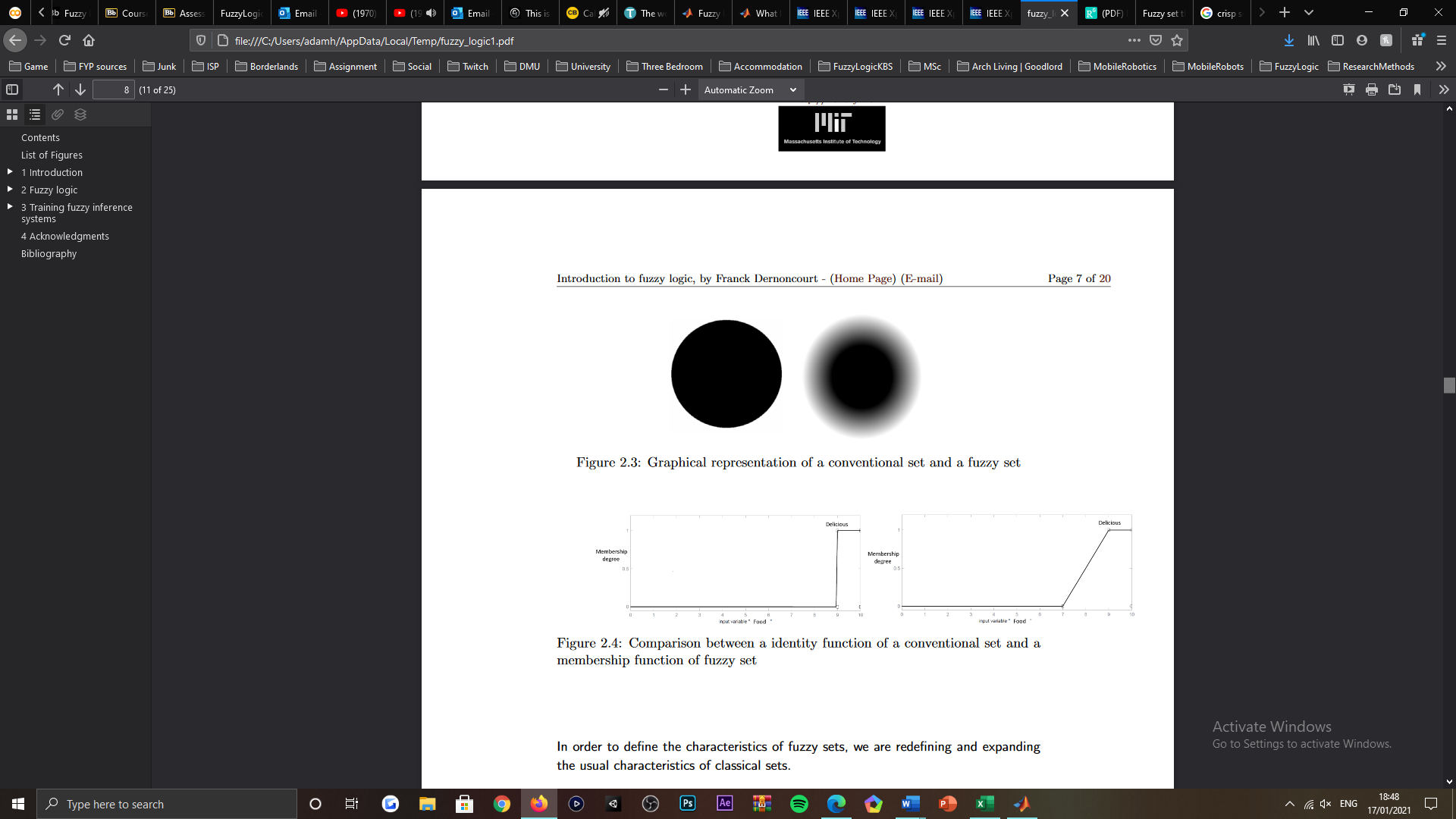


Figure 1: Conventional classical (left illustration) and fuzzy (right illustration) set visualisation [1].

***Appendix B:***

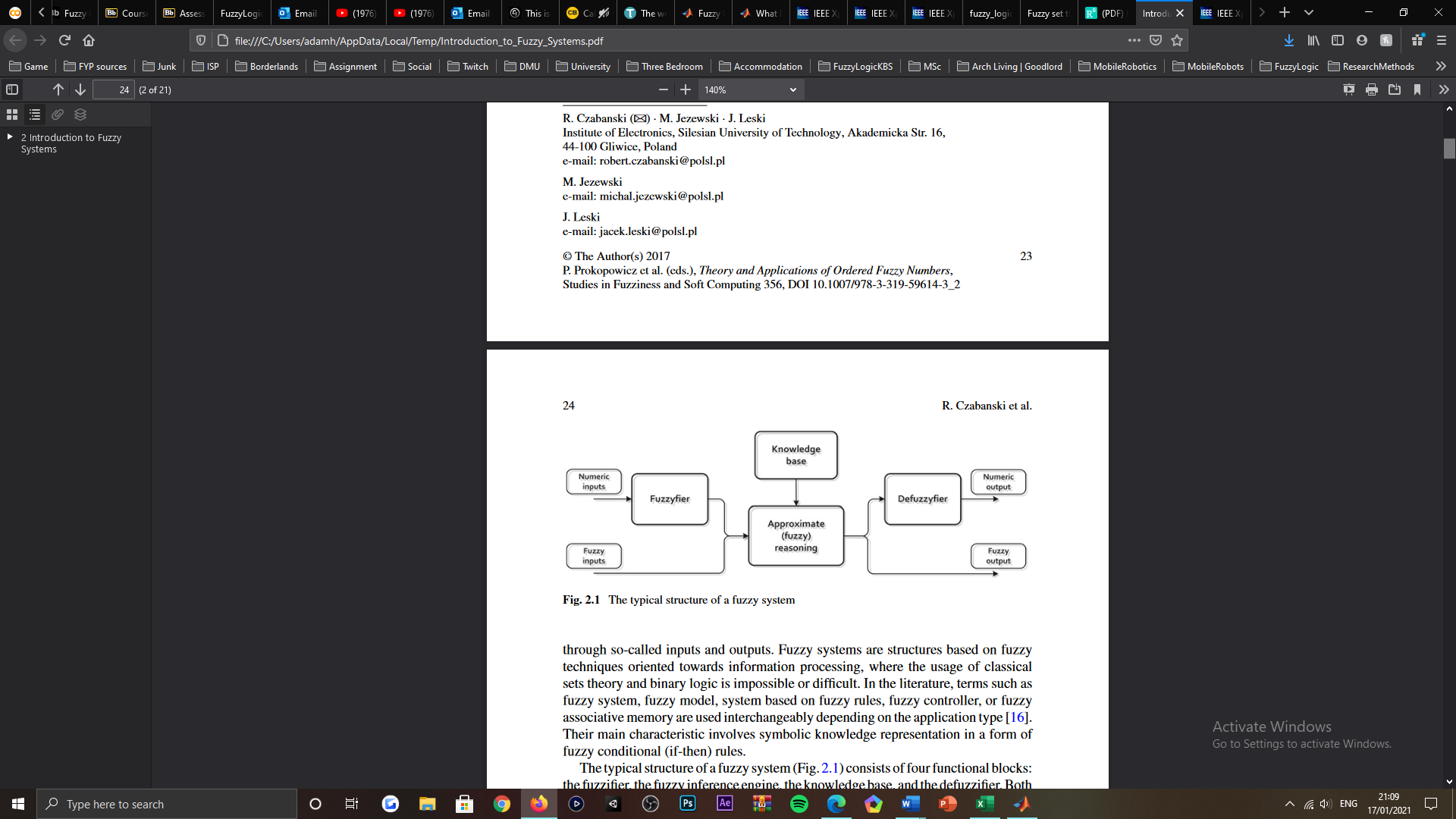


Figure 2: Conventional fuzzy inference system (FIS) architectural structure [10].

***Appendix C:***



Figure 3: Call of Duty: Black Ops Cold War, domination multiplayer mode, player capturing (interacting) with an objective site, or conflict point referred to as 'zone C' [20]. Player weapon and subjected environment also illustrated.

***Appendix D:***

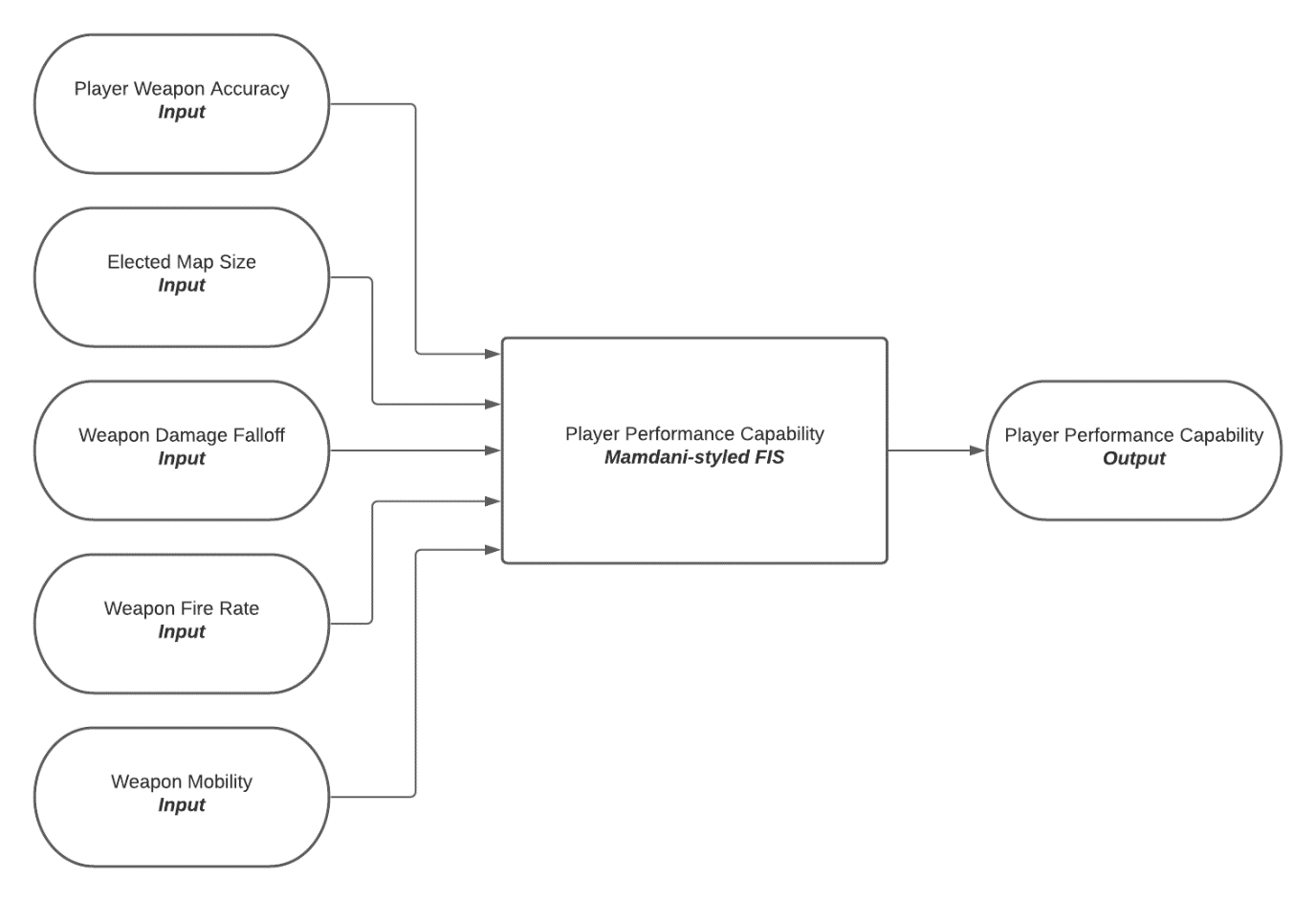


Figure 4: Mamdani-styled FIS, player performance capability FIS, system architectural design visualisation.

|  |  |  |  |
| --- | --- | --- | --- |
| ***Player Performance Capability FIS, Input Variable Specification*** | | | |
| ***Variable Name*** | ***Variable Range*** | ***Variable Linguistic Intervals*** | ***Membership Function(s)*** |
| Player Weapon Accuracy | 0 – 100  (control %) | Very Poor, Poor, Medium, Good, Very Good | Trapezoidal, triangular-shape |
| Elected Map Size | 30 – 500  (metres²) | Very Small, Small, Medium, Large, Very Large | Trapezoidal, triangular-shape |
| Weapon Damage Falloff | 0 –100  (metres) | Very Close, Close, Medium, Far, Very Far | Trapezoidal, triangular-shape |
| Weapon Fire Rate | 0 – 2000  (RPM) | Very Slow, Slow, Medium, Fast, Very Fast | Trapezoidal |
| Weapon Mobility | 0 – 100  (level %) | Very Slow, Slow, Medium, Fast, Very Fast | Trapezoidal, triangular-shape |

Table 1: Player performance capability FIS, input variable specification, variable ranges, linguistic intervals, and membership functions.

***Appendix E:***

|  |  |  |
| --- | --- | --- |
| ***Player Weapon Accuracy, Input Variable*** | | |
| ***Linguistic Interval*** | ***Variable Range (control %)*** | ***Membership Function*** |
| Very Poor | 0 – 20 | Trapezoidal |
| Poor | 10 – 30 | triangular-shape |
| Average | 20 – 50 | triangular-shape |
| Good | 40 – 70 | triangular-shape |
| Very Good | 60 – 100 | Trapezoidal |

Table 2: Player performance capability FIS, player weapon accuracy configuration.

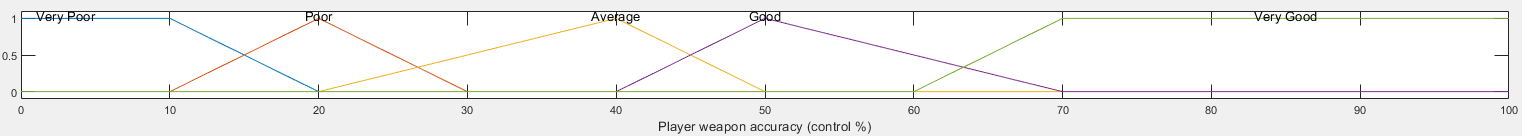


Figure 5: Player weapon accuracy, input variable interval range and membership function visualisation.

***Appendix F:***

|  |  |  |
| --- | --- | --- |
| ***Elected Map Size, Input Variable*** | | |
| ***Linguistic Interval*** | ***Variable Range (metres²)*** | ***Membership Function*** |
| Very Small | 30 – 60 | triangular-shape |
| Small | 40 – 120 | triangular-shape |
| Medium | 100 – 200 | triangular-shape |
| Large | 170 – 350 | triangular-shape |
| Very Large | 250 – 510 | Trapezoidal |

Table 3: Player performance capability FIS, elected map size configuration.

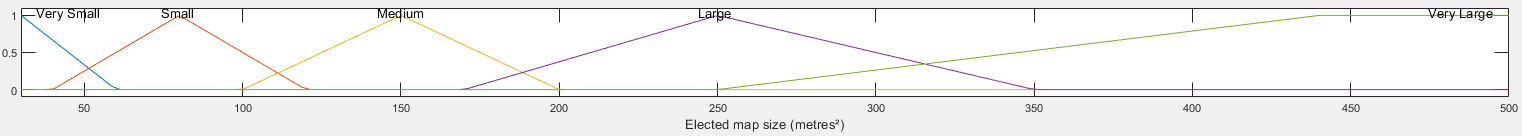


Figure 6: Elected map size, input variable interval range and membership function configuration.

***Appendix G:***

|  |  |  |
| --- | --- | --- |
| ***Weapon Effective Damage Range, Input Variable*** | | |
| ***Linguistic Interval*** | ***Variable Range (metres)*** | ***Membership Function*** |
| Very Close | 0 – 20 | Trapezoidal |
| Close | 10 – 30 | triangular-shape |
| Medium | 20 – 60 | triangular-shape |
| Far | 50 – 80 | triangular-shape |
| Very Far | 70 – 100 | Trapezoidal |

Table 4: Player performance capability FIS, weapon effective damage range configuration.

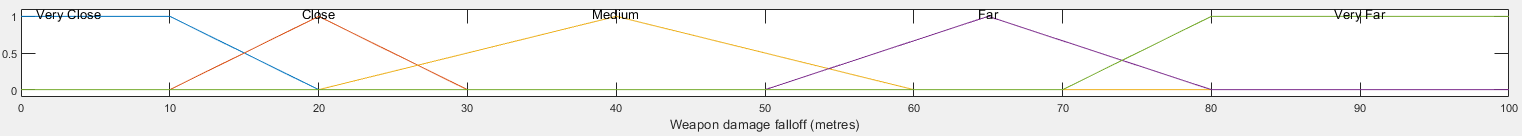


Figure 7: Weapon damage falloff, input variable fuzzy set distribution and membership function configuration.

***Appendix H:***

|  |  |  |
| --- | --- | --- |
| ***Weapon Fire Rate, Input Variable*** | | |
| ***Linguistic Interval*** | ***Variable Range (RPM)*** | ***Membership Function*** |
| Very Slow | 0 – 180 | Trapezoidal |
| Slow | 120 – 420 | Trapezoidal |
| Medium | 360 – 720 | Trapezoidal |
| Fast | 660 – 1260 | Trapezoidal |
| Very Fast | 1200 – 2100 | Trapezoidal |

Table 5: Player performance capability FIS, weapon fire rate configuration.

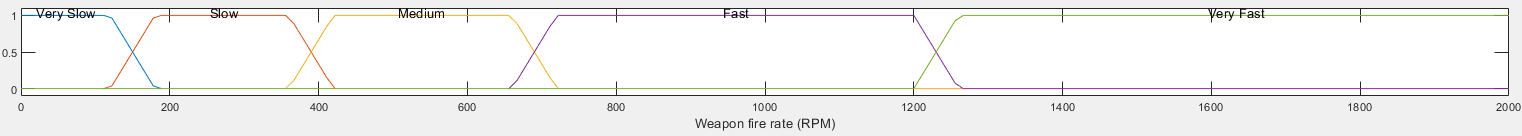


Figure 8: Weapon fire rate, input variable fuzzy set distribution and membership function configuration.

***Appendix I:***

|  |  |  |
| --- | --- | --- |
| ***Weapon Mobility, Input Variable*** | | |
| ***Linguistic Interval*** | ***Variable Range (level %)*** | ***Membership Function*** |
| Very Slow | 0 – 20 | triangular-shape |
| Slow | 0 – 40 | triangular-shape |
| Medium | 20 – 60 | triangular-shape |
| Fast | 40 – 80 | triangular-shape |
| Very Fast | 60 – 100 | Trapezoidal |

Table 6: Player performance capability FIS, weapon mobility configuration.

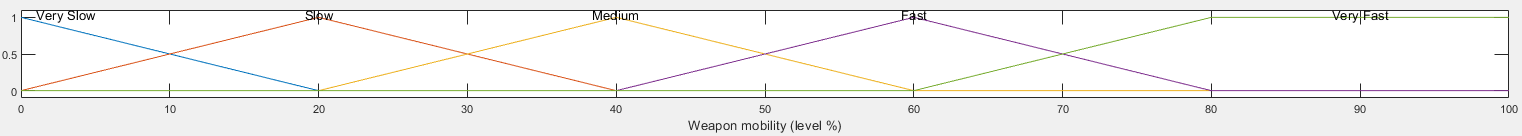


Figure 9: Weapon mobility, input variable fuzzy set distribution and membership function configuration.

***Appendix J:***

|  |  |  |
| --- | --- | --- |
| ***Player Performance Capability, Output Variable*** | | |
| ***Linguistic Interval*** | ***Variable Range (potential %)*** | ***Membership Function*** |
| Very Low | 0 – 25 | triangular-shape |
| Low | 0 – 50 | triangular-shape |
| Average | 25 – 75 | triangular-shape |
| High | 50 – 100 | triangular-shape |
| Very High | 75 – 100 | triangular-shape |

Table 7: Player performance capability FIS, player performance capability configuration.

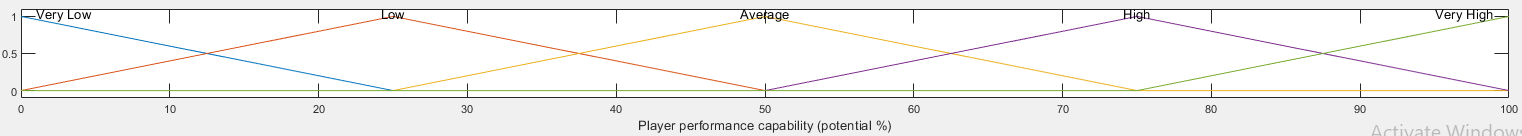


Figure 10: Player performance capability, output variable fuzzy set distribution and membership function configuration.

***Appendix K:***

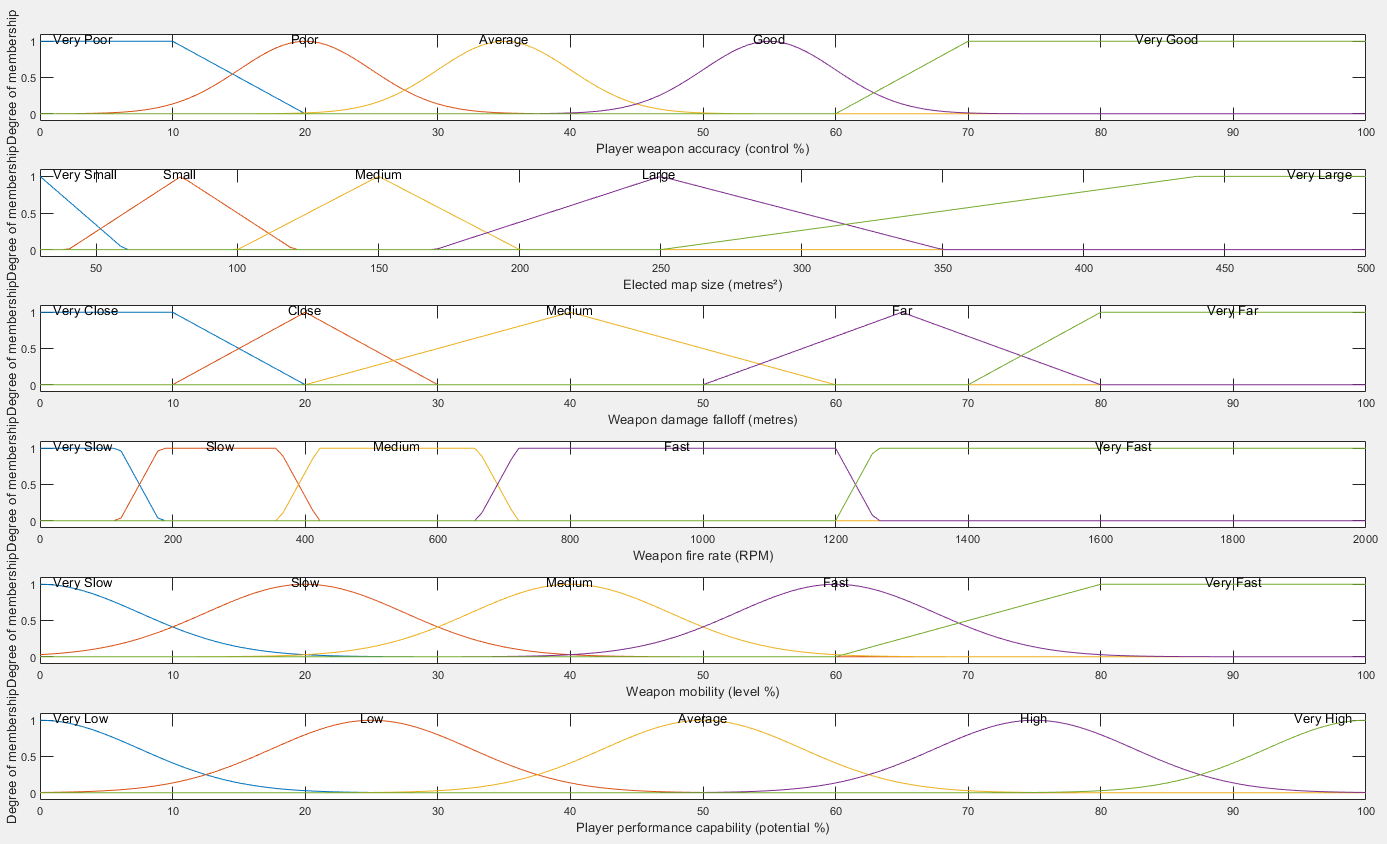


Figure 11: Player performance capability FIS, initial design configuration, plot view visualisation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Player Performance Capability: Crisp Output (Initial System Design)*** | | | | | | |
| ***Test number*** | ***Expected Competence*** | ***Centroid*** | ***Bisector*** | ***MOM*** | ***SOM*** | ***LOM*** |
| 1 | Very High | 74.651585 | 88 | 98.5 | 97 | 100 |
| 2 | Very High | 79.951865 | 81 | 93 | 86 | 100 |
| 3 | High | 59.425513 | 71 | 75 | 54 | 86 |
| 4 | Very High | 93.995706 | 95 | 98.5 | 97 | 100 |
| 5 | Low | 25.949946 | 25 | 25 | 14 | 36 |
| 6 | Very High | 46.194540 | 30 | 98.5 | 97 | 100 |
| 7 | Low | 38.450897 | 27 | 25 | 19 | 19 |
| 8 | Very High | 55.691391 | 73 | 98.5 | 97 | 100 |
| 9 | Very Low | 49.040276 | 68 | 1.5 | 0 | 3 |
| 10 | Very Low | 5.8079973 | 5 | 1.5 | 0 | 3 |
| 11 | Very Low | 29.634477 | 37 | 1.5 | 0 | 3 |
| 12 | Very High | 52.096388 | 33 | 98.5 | 97 | 100 |
| 13 | Very Low | 6.5701578 | 6 | 15.5 | 0 | 32 |
| 14 | High | 74.876331 | 75 | 75 | 53 | 87 |
| 15 | Average | 29.642861 | 51 | 50 | 39 | 61 |
| 16 | Very High | 92.704168 | 95 | 98.5 | 97 | 100 |
| 17 | Very High | 66.111075 | 79 | 98.5 | 97 | 100 |
| 18 | Very Low | 50.599380 | 69 | 2.5 | 0 | 5 |
| 19 | Very High | 80.781092 | 81 | 98.5 | 97 | 100 |
| 20 | Very High | 53.594785 | 87 | 98.5 | 97 | 100 |
| 21 | Low | 30.270147 | 27 | 25 | 4 | 36 |
| 22 | Average | 43.207505 | 46 | 50 | 37 | 63 |
| 23 | High | 61.780587 | 63 | 75 | 65 | 85 |
| 24 | Very High | 94.191977 | 95 | 98.5 | 97 | 100 |
| 25 | Very Low | 24.213360 | 23 | 25 | 20 | 30 |
| 26 | High | 50 | 50 | 50 | 0 | 100 |
| 27 | Average | 38.619777 | 38 | 50 | 35 | 65 |
| 28 | Very High | 94.190556 | 95 | 98.5 | 97 | 100 |
| 29 | Very High | 50.248497 | 45 | 98.5 | 97 | 100 |
| 30 | Very High | 66.363508 | 57 | 98.5 | 97 | 100 |

Table 9: Player performance capability FIS, crisp output values when evaluating the sample data using all available defuzzification methods in MATLAB, configured as the systems initial design.

***Key***:

* Expected [GREEN]
* Unexpected [RED]

***Summary***:

* Centroid [**11 | 30**] expected outcomes
* Bisector [**16 | 30**] expected outcomes
* MOM [**27 | 30**] expected outcomes
* SOM [**24 | 30**] expected outcomes
* LOM [**19 | 30**] expected outcomes

***Appendix L:***

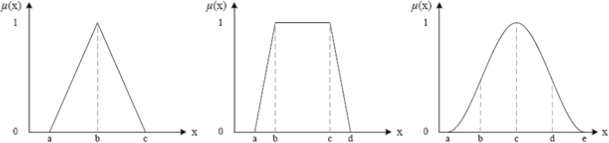


Figure 12: Membership function visualisation, triangular-shape, Trapezoidal and Gaussian (left-to-right) [63].

***Appendix M:***

'1. If (Player weapon accuracy (control %) is Very Poor) then (Player performance capability (potential %) is Very Low) (0.9)'

'2. If (Player weapon accuracy (control %) is Very Good) then (Player performance capability (potential %) is Very High) (0.9) '

'3. If (Elected map size (metres²) is Very Large) then (Player performance capability (potential %) is Very Low) (0.9)'

'4. If (Elected map size (metres²) is Very Small) then (Player performance capability (potential %) is Average) (0.7)'

'5. If (Weapon damage falloff (metres) is Very Close) then (Player performance capability (potential %) is Low) (0.8) '

'6. If (Weapon fire rate (RPM) is Very Slow) then (Player performance capability (potential %) is Low)

(0.6)'

'7. If (Weapon mobility (level %) is Very Slow) then (Player performance capability (potential %) is High)

(0.7)'

'8. If (Weapon mobility (level %) is Very Fast) then (Player performance capability (potential %) is Very High) (0.9)'

'9. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'10. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'11. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'12. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'13. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'14. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'15. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'16. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'17. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'18. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'19. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'20. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'21. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'22. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'23. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'24. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'25. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'26. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'27. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'28. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'29. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'30. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'31. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'32. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'33. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'34. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'35. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'36. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'37. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'38. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'39. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'40. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'41. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'42. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'43. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'44. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'45. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'46. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'47. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'48. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'49. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'50. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'51. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'52. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'53. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'54. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'55. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'56. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'57. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'58. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'59. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'60. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'61. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'62. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'63. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'64. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'65. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

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'67. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'68. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'69. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'70. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'71. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'72. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'73. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'74. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'75. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'76. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'77. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'78. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'79. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'80. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'81. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'82. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'83. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'84. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'85. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'86. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'87. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'88. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'89. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'90. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'91. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'92. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'93. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'94. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'95. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'96. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'97. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'98. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'99. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'100. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'101. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'102. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'103. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'104. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'105. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'106. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'107. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Low) (0.5) '

'108. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'109. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'110. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Low) (0.5) '

'111. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'112. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'113. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'114. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'115. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'116. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'117. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'118. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'119. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'120. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'121. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'122. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'123. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'124. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'125. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'126. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'127. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'128. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'129. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'130. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'131. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'132. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

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'136. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'137. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'138. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'139. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'140. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'141. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'142. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'143. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'144. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'145. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'146. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'147. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'148. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'149. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'150. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'151. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'152. If (Player weapon accuracy (control %) is Poor) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'153. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'154. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'155. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'156. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'157. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'158. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'159. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'160. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'161. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'162. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'163. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'164. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'165. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'166. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'167. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'168. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'169. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'170. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'171. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'172. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'173. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'174. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'175. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'176. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'177. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'178. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'179. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'180. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'181. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'182. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'183. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'184. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'185. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'186. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'187. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'188. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'189. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'190. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'191. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

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'194. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'195. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'196. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

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'198. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'199. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5)'

'200. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'201. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'202. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'203. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'204. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'205. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'206. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'207. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'208. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'209. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'210. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'211. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'212. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'213. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'214. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'215. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'216. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'217. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'218. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'219. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'220. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

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'225. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'226. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

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'229. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'230. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'231. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'232. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'233. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'234. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'235. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'236. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'237. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'238. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'239. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'240. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'241. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'242. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'243. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'244. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'245. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'246. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'247. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'248. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'249. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'250. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'251. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'252. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'253. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'254. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'255. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'256. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'257. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'258. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'259. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'260. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'261. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'262. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Low) (0.5) '

'263. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'264. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'265. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'266. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'267. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'268. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'269. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'270. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'271. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

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'273. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'274. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

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'277. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

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'281. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'282. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'283. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'284. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'285. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'286. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'287. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'288. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'289. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'290. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'291. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'292. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'293. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'294. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'295. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'296. If (Player weapon accuracy (control %) is Average) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5)'

'297. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'298. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'299. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'300. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'301. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'302. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'303. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'304. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'305. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'306. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'307. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'308. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'309. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'310. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'311. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'312. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'313. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'314. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'315. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'316. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'317. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'318. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'319. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'320. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

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'322. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'323. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'324. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'325. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'326. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'327. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'328. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'329. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'330. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'331. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Very High) (0.5) '

'332. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'333. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'334. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'335. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'336. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

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'338. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'339. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'340. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Very High) (0.5) '

'341. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'342. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'343. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Very High) (0.5) '

'344. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Small) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'345. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'346. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'347. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'348. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'349. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

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'358. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'359. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'360. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'361. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'362. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'363. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'364. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'365. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'366. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

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'369. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

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'376. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'377. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'378. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

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'381. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'382. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'383. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'384. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'385. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'386. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'387. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'388. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Very High) (0.5) '

'389. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'390. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'391. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Very High) (0.5)'

'392. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Medium) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'393. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'394. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'395. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'396. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'397. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'398. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'399. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

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'401. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'402. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'403. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'404. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Close) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'405. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'406. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'407. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'408. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'409. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'410. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'411. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Low) (0.5) '

'412. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'413. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Average) (0.5) '

'414. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'415. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'416. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Medium) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'417. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'418. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Average) (0.5) '

'419. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'420. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'421. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'422. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'423. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'424. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'425. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'426. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'427. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'428. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'429. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'430. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'431. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Slow) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'432. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is Average) (0.5) '

'433. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'434. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Medium) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is High) (0.5) '

'435. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'436. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is High) (0.5) '

'437. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

'438. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Slow) then (Player performance capability (potential %) is High) (0.5) '

'439. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Medium) then (Player performance capability (potential %) is Very High) (0.5) '

'440. If (Player weapon accuracy (control %) is Good) and (Elected map size (metres²) is Large) and (Weapon damage falloff (metres) is Very Far) and (Weapon fire rate (RPM) is Very Fast) and (Weapon mobility (level %) is Fast) then (Player performance capability (potential %) is Very High) (0.5) '

***Appendix N:***

1) Input(1): 80.00, Input(2) 50.00, Input(3) 39.00, Input(4) 1600.00, Input(5) 60.00 => Output: 99.00

2) Input(1): 60.00, Input(2) 100.00, Input(3) 55.00, Input(4) 750.00, Input(5) 54.00 => Output: 90.00

3) Input(1): 50.00, Input(2) 289.00, Input(3) 64.00, Input(4) 640.00, Input(5) 62.00 => Output: 75.00

4) Input(1): 43.00, Input(2) 200.00, Input(3) 30.00, Input(4) 450.00, Input(5) 87.00 => Output: 99.00

5) Input(1): 21.00, Input(2) 250.00, Input(3) 20.00, Input(4) 1260.00, Input(5) 33.00 => Output: 25.00

6) Input(1): 37.00, Input(2) 300.00, Input(3) 10.00, Input(4) 444.00, Input(5) 91.00 => Output: 99.00

7) Input(1): 66.00, Input(2) 350.00, Input(3) 0.00, Input(4) 732.00, Input(5) 43.00 => Output: 25.00

8) Input(1): 87.00, Input(2) 400.00, Input(3) 60.00, Input(4) 1879.00, Input(5) 13.00 => Output: 99.00

9) Input(1): 49.00, Input(2) 450.00, Input(3) 70.00, Input(4) 930.00, Input(5) 2.00 => Output: 1.00

10) Input(1): 12.00, Input(2) 500.00, Input(3) 80.00, Input(4) 660.00, Input(5) 53.00 => Output: 1.00

11) Input(1): 5.00, Input(2) 44.00, Input(3) 90.00, Input(4) 360.00, Input(5) 57.00 => Output: 1.00

12) Input(1): 91.00, Input(2) 95.00, Input(3) 15.00, Input(4) 120.00, Input(5) 81.00 => Output: 99.00

13) Input(1): 54.00, Input(2) 375.00, Input(3) 27.00, Input(4) 490.00, Input(5) 50.00 => Output: 5.00

14) Input(1): 61.00, Input(2) 215.00, Input(3) 83.00, Input(4) 587.00, Input(5) 40.00 => Output: 75.00

15) Input(1): 37.00, Input(2) 280.00, Input(3) 76.00, Input(4) 375.00, Input(5) 37.00 => Output: 50.00

16) Input(1): 100.00, Input(2) 167.00, Input(3) 91.00, Input(4) 1750.00, Input(5) 20.00 => Output: 99.00

17) Input(1): 90.00, Input(2) 323.00, Input(3) 79.00, Input(4) 259.00, Input(5) 10.00 => Output: 99.00

18) Input(1): 30.00, Input(2) 412.00, Input(3) 59.00, Input(4) 876.00, Input(5) 0.00 => Output: 2.50

19) Input(1): 71.00, Input(2) 269.00, Input(3) 33.00, Input(4) 1533.00, Input(5) 70.00 => Output: 99.00

20) Input(1): 95.00, Input(2) 390.00, Input(3) 36.00, Input(4) 1111.00, Input(5) 80.00 => Output: 99.00

21) Input(1): 24.00, Input(2) 168.00, Input(3) 35.00, Input(4) 433.00, Input(5) 21.00 => Output: 25.00

22) Input(1): 28.00, Input(2) 129.00, Input(3) 46.00, Input(4) 250.00, Input(5) 55.00 => Output: 50.00

23) Input(1): 34.00, Input(2) 160.00, Input(3) 87.00, Input(4) 366.00, Input(5) 38.00 => Output: 75.00

24) Input(1): 83.00, Input(2) 222.00, Input(3) 65.00, Input(4) 1333.00, Input(5) 49.00 => Output: 99.00

25) Input(1): 23.00, Input(2) 366.00, Input(3) 28.00, Input(4) 211.00, Input(5) 69.00 => Output: 5.50

26) Input(1): 56.00, Input(2) 198.00, Input(3) 63.00, Input(4) 867.00, Input(5) 57.00 => Output: 75.00

27) Input(1): 20.00, Input(2) 111.00, Input(3) 78.00, Input(4) 513.00, Input(5) 29.00 => Output: 50.00

28) Input(1): 78.00, Input(2) 85.00, Input(3) 46.00, Input(4) 846.00, Input(5) 84.00 => Output: 99.00

29) Input(1): 20.00, Input(2) 36.00, Input(3) 0.00, Input(4) 0.00, Input(5) 98.00 => Output: 99.00

30) Input(1): 100.00, Input(2) 30.00, Input(3) 100.00, Input(4) 2000.00, Input(5) 100.00 => Output: 99.00

***Appendix O:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Player Weapon Accuracy (%)*** | ***Elected Map Size (m²)*** | ***Weapon Damage Effective Range (m)*** | ***Weapon Fire Rate (RPM)*** | ***Weapon Mobility (%)*** | ***Expected Player Competence*** |
| 80 | 50 | 39 | 1600 | 60 | Very High |
| 60 | 100 | 55 | 750 | 54 | Very High |
| 50 | 289 | 64 | 640 | 62 | High |
| 43 | 200 | 30 | 450 | 87 | Very High |
| 21 | 250 | 20 | 1260 | 33 | Low |
| 37 | 300 | 10 | 444 | 91 | Very High |
| 66 | 350 | 0 | 732 | 43 | Low |
| 87 | 400 | 60 | 1879 | 13 | Very High |
| 49 | 450 | 70 | 930 | 2 | Very Low |
| 12 | 500 | 80 | 660 | 53 | Very Low |
| 5 | 44 | 90 | 360 | 57 | Very Low |
| 91 | 95 | 15 | 120 | 81 | Very High |
| 54 | 375 | 27 | 490 | 50 | Very Low |
| 61 | 215 | 83 | 587 | 40 | High |
| 37 | 280 | 76 | 375 | 37 | Average |
| 100 | 167 | 91 | 1750 | 20 | Very High |
| 90 | 323 | 79 | 259 | 10 | Very High |
| 30 | 412 | 59 | 876 | 0 | Very Low |
| 71 | 269 | 33 | 1533 | 70 | Very High |
| 95 | 390 | 36 | 1111 | 80 | Very High |
| 24 | 168 | 35 | 433 | 21 | Low |
| 28 | 129 | 46 | 250 | 55 | Average |
| 34 | 160 | 87 | 366 | 38 | High |
| 83 | 222 | 65 | 1333 | 49 | Very High |
| 23 | 366 | 28 | 211 | 69 | Very Low |
| 56 | 198 | 63 | 867 | 57 | High |
| 20 | 111 | 78 | 513 | 29 | Average |
| 78 | 85 | 46 | 846 | 84 | Very High |
| 20 | 36 | 0 | 0 | 98 | Very High |
| 100 | 30 | 100 | 2000 | 100 | Very High |

Table 8: Sample data, used to determine the output variable of the FIS (expected player competence); data is stored and loaded from the 'SampleData.xls' spreadsheet file.

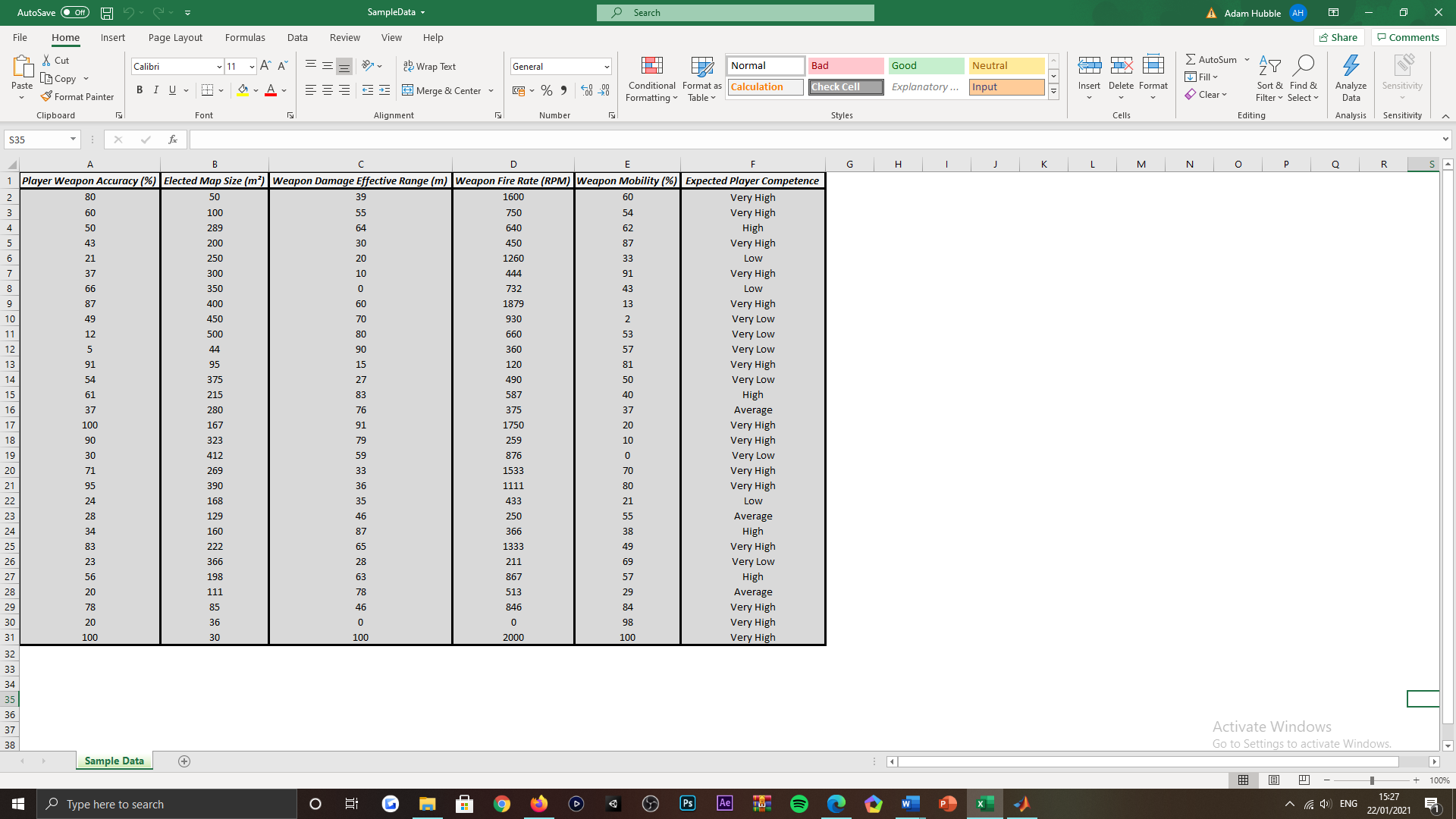


Figure 13: Sample data, visualisation of the spreadsheet file: 'SampleData.xls', used to determine the output variable of the FIS (expected player competence).

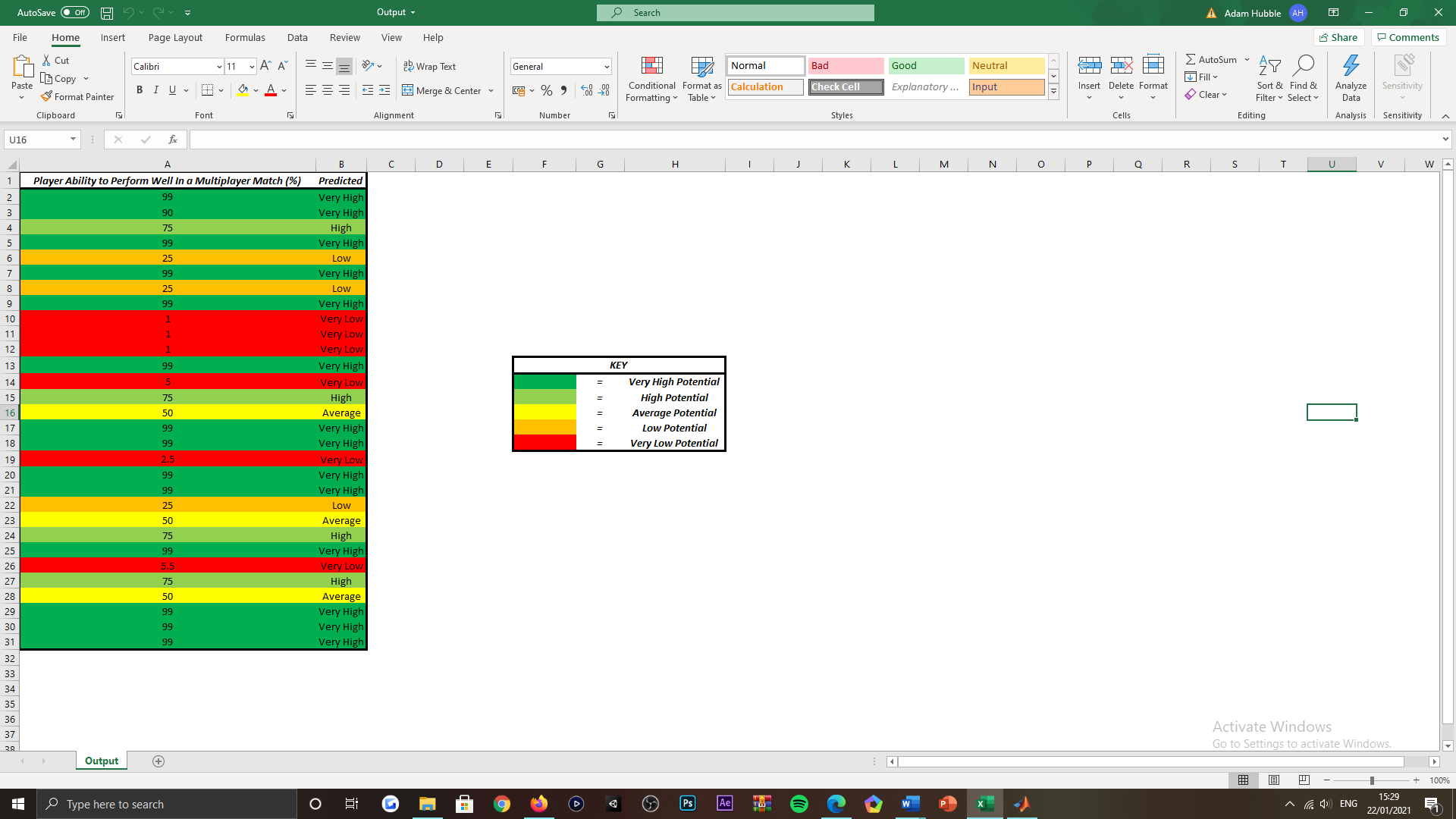


Figure 14: Sample data crisp output, visualisation of the spreadsheet file: 'Output.xls', used to present the predicted and actual (computed) player performance capabilities.

***Appendix P:***

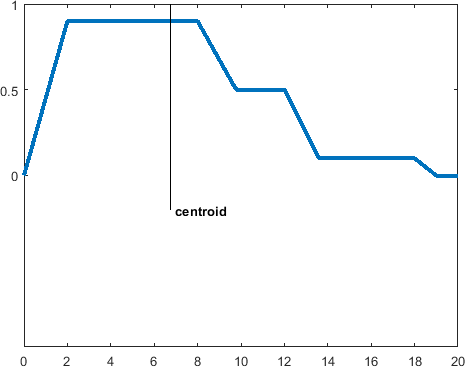


Figure 15: Defuzzification method, visualisation of the centroid method [65].

***Appendix Q:***

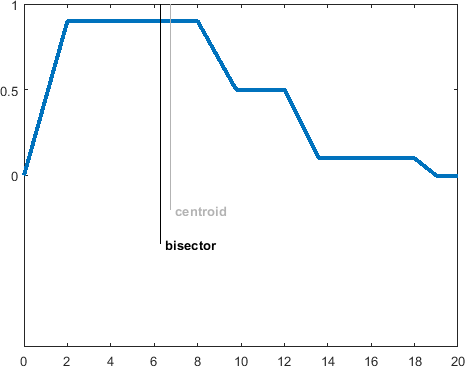


Figure 16: Defuzzification method, visualisation of the bisector method [65].

***Appendix R:***

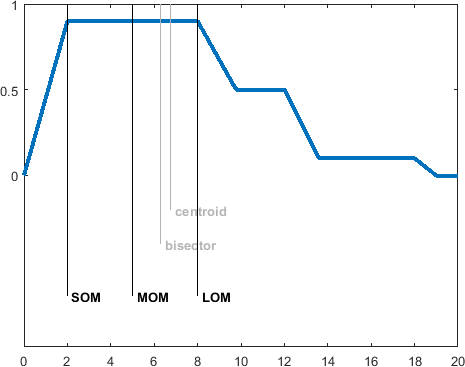


Figure 17: Defuzzification method, visualisation of the smallest of maximum (SOM), middle of maximum (MOM) and largest of maximum (LOM) methods [65].

***Appendix S:***

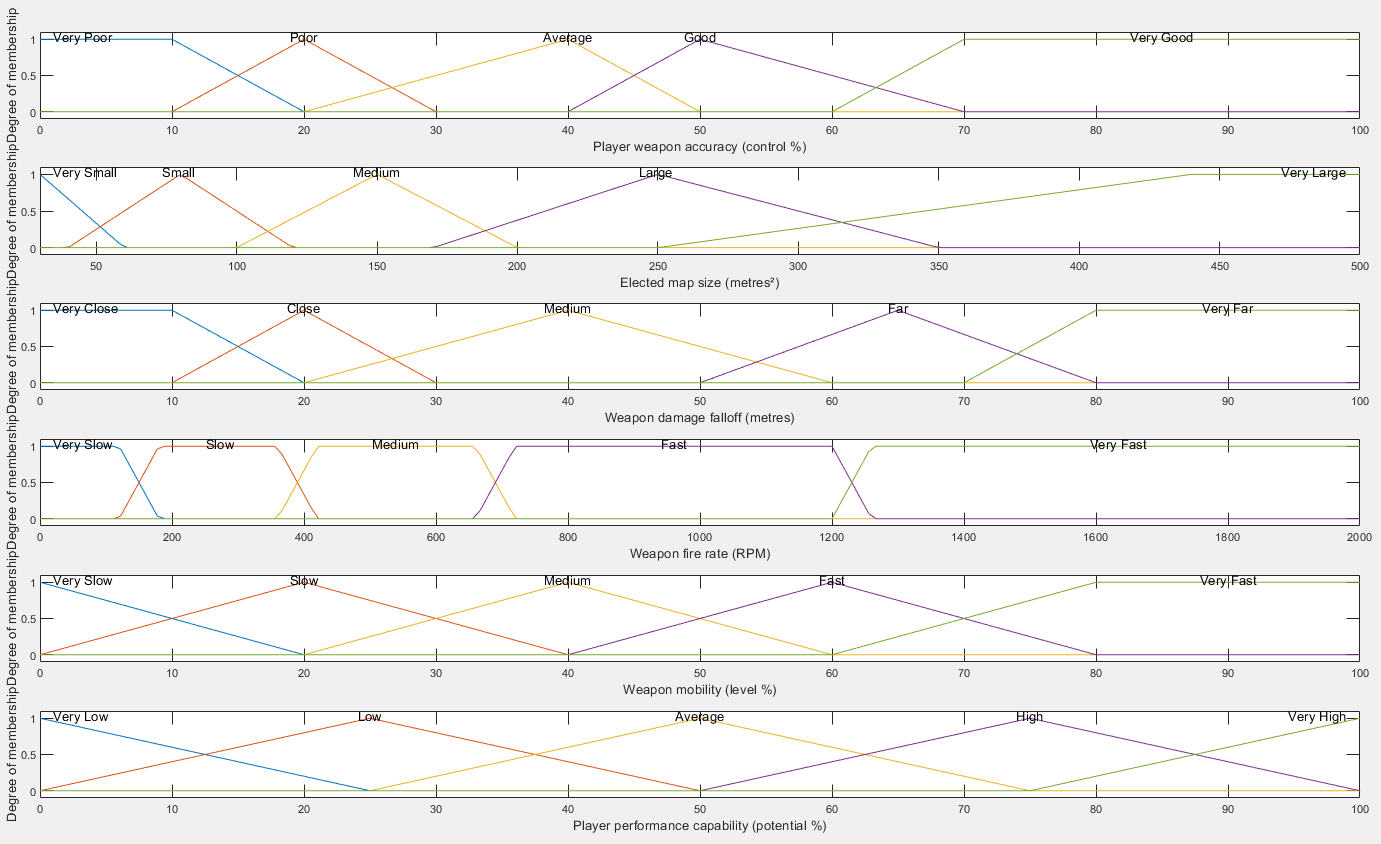


Figure 18: Player performance capability FIS, final design configuration, plot view visualisation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Player Performance Capability: Crisp Output (Final System Design)*** | | | | | | |
| ***Test number*** | ***Expected Competence*** | ***Centroid*** | ***Bisector*** | ***MOM*** | ***SOM*** | ***LOM*** |
| 1 | Very High | 73.23096886 | 83 | 99 | 98 | 100 |
| 2 | Very High | 76.82352941 | 77 | 90 | 80 | 100 |
| 3 | High | 59.45119786 | 68 | 75 | 58 | 92 |
| 4 | Very High | 91.89547582 | 93 | 99 | 98 | 100 |
| 5 | Low | 26.62508784 | 26 | 25 | 9 | 41 |
| 6 | Very High | 47.27425264 | 33 | 99 | 98 | 100 |
| 7 | Low | 41.14558432 | 29 | 25 | 20 | 30 |
| 8 | Very High | 54.67521631 | 68 | 99 | 98 | 100 |
| 9 | Very Low | 50.06251817 | 65 | 1 | 0 | 2 |
| 10 | Very Low | 8.104524181 | 7 | 1 | 0 | 2 |
| 11 | Very Low | 30.81328888 | 33 | 1 | 0 | 2 |
| 12 | Very High | 50.35777646 | 36 | 99 | 98 | 100 |
| 13 | Very Low | 9.051093098 | 9 | 5 | 0 | 10 |
| 14 | High | 75.36345679 | 75 | 75 | 56 | 94 |
| 15 | Average | 49.44874826 | 50 | 50 | 33 | 67 |
| 16 | Very High | 91.89547582 | 93 | 99 | 98 | 100 |
| 17 | Very High | 63.63163169 | 75 | 99 | 98 | 100 |
| 18 | Very Low | 51.74563967 | 66 | 2.5 | 0 | 5 |
| 19 | Very High | 80.19120586 | 91 | 99 | 98 | 100 |
| 20 | Very High | 52.75348655 | 81 | 99 | 98 | 100 |
| 21 | Low | 30.93832021 | 29 | 25 | 8 | 42 |
| 22 | Average | 42.13043478 | 44 | 50 | 30 | 70 |
| 23 | High | 72.06632653 | 73 | 75 | 59 | 91 |
| 24 | Very High | 91.89547582 | 93 | 99 | 98 | 100 |
| 25 | Very Low | 45.37763212 | 18 | 5.5 | 0 | 11 |
| 26 | High | 75 | 75 | 75 | 55 | 95 |
| 27 | Average | 37.67463521 | 38 | 50 | 28 | 72 |
| 28 | Very High | 91.89547582 | 93 | 99 | 98 | 100 |
| 29 | Very High | 50.29759559 | 46 | 99 | 98 | 100 |
| 30 | Very High | 65.10404949 | 59 | 99 | 98 | 100 |

Table 10: Player performance capability FIS, crisp output values when evaluating the sample data using all available defuzzification methods in MATLAB, configured as the systems final design.

***Key***:

* Expected [GREEN]
* Unexpected [RED]

***Summary***:

* Centroid [**14 | 30**] expected outcomes
* Bisector [**17 | 30**] expected outcomes
* MOM [**30 | 30**] expected outcomes
* SOM [**20 | 30**] expected outcomes
* LOM [**20 | 30**] expected outcomes

***Appendix T:***

clc % Clear command window

format compact % Compact command window output

file = ('SampleData.xlsx'); % Read-in the sample data input into the FIS

%---------------------------------------------------------------------------------------------------------------------%

% Player ability to perform well in a multiplayer match

%---------------------------------------------------------------------------------------------------------------------%

SampleData = xlsread(file); % Read and store the contents of the sample data file

FIS = mamfis('Name', 'Player performance capability'); % Potential of a player to perform well in a multiplayer match, mamdani-styled FIS

%---------------------------------------------------------------------------------------------------------------------%

% Player weapon accuracy (input)

%---------------------------------------------------------------------------------------------------------------------%

FIS = addInput(FIS, [0 100], 'Name', 'Player weapon accuracy (control %)'); % Player weapon accuracy (global statistic)

FIS = addMF(FIS, 'Player weapon accuracy (control %)', 'trapmf', [-10 0 10 20], 'Name', 'Very Poor'); % Very poor accuracy

FIS = addMF(FIS, 'Player weapon accuracy (control %)', 'trimf', [10 20 30], 'Name', 'Poor'); % Poor accuracy

FIS = addMF(FIS, 'Player weapon accuracy (control %)', 'trimf', [20 40 50], 'Name', 'Average'); % Average accuracy

FIS = addMF(FIS, 'Player weapon accuracy (control %)', 'trimf', [40 50 70], 'Name', 'Good'); % Good accuracy

FIS = addMF(FIS, 'Player weapon accuracy (control %)', 'trapmf', [60 70 100 110], 'Name', 'Very Good'); % Very good accuracy

%---------------------------------------------------------------------------------------------------------------------%

% Elected map size (input)

%---------------------------------------------------------------------------------------------------------------------%

FIS = addInput(FIS, [30 500], 'Name', 'Elected map size (metres²)'); % Size of map the player is subjected to

FIS = addMF(FIS, 'Elected map size (metres²)', 'trimf', [-10 30 60], 'Name', 'Very Small'); % Very small in size

FIS = addMF(FIS, 'Elected map size (metres²)', 'trimf', [40 80 120], 'Name', 'Small'); % Small in size

FIS = addMF(FIS, 'Elected map size (metres²)', 'trimf', [100 150 200], 'Name', 'Medium'); % Medium in size

FIS = addMF(FIS, 'Elected map size (metres²)', 'trimf', [170 250 350], 'Name', 'Large'); % Large in size

FIS = addMF(FIS, 'Elected map size (metres²)', 'trapmf', [250 440 500 510], 'Name', 'Very Large'); % Very large in size

%---------------------------------------------------------------------------------------------------------------------%

% Weapon effective damage range (input)

%---------------------------------------------------------------------------------------------------------------------%

FIS = addInput(FIS, [0 100], 'Name', 'Weapon damage falloff (metres)'); % Weapon damage falloff range (damage over distance)

FIS = addMF(FIS, 'Weapon damage falloff (metres)', 'trapmf', [-10 0 10 20], 'Name', 'Very Close'); % Very close effective damage range

FIS = addMF(FIS, 'Weapon damage falloff (metres)', 'trimf', [10 20 30], 'Name', 'Close'); % Close effective damage range

FIS = addMF(FIS, 'Weapon damage falloff (metres)', 'trimf', [20 40 60], 'Name', 'Medium'); % Medium effective damage range

FIS = addMF(FIS, 'Weapon damage falloff (metres)', 'trimf', [50 65 80], 'Name', 'Far'); % Far effective damage range

FIS = addMF(FIS, 'Weapon damage falloff (metres)', 'trapmf', [70 80 100 110], 'Name', 'Very Far'); % Very far effective damage range

%---------------------------------------------------------------------------------------------------------------------%

% Weapon fire rate (input)

%---------------------------------------------------------------------------------------------------------------------%

FIS = addInput(FIS, [0 2000], 'Name', 'Weapon fire rate (RPM)'); % Weapon firing rate (rounds per minute)

FIS = addMF(FIS, 'Weapon fire rate (RPM)', 'trapmf', [-100 0 120 180], 'Name', 'Very Slow'); % Very slow fire rate

FIS = addMF(FIS, 'Weapon fire rate (RPM)', 'trapmf', [120 180 360 420], 'Name', 'Slow'); % Slow fire rate

FIS = addMF(FIS, 'Weapon fire rate (RPM)', 'trapmf', [360 420 660 720], 'Name', 'Medium'); % Medium fire rate

FIS = addMF(FIS, 'Weapon fire rate (RPM)', 'trapmf', [660 720 1200 1260], 'Name', 'Fast'); % Fast fire rate

FIS = addMF(FIS, 'Weapon fire rate (RPM)', 'trapmf', [1200 1260 2000 2100], 'Name', 'Very Fast'); % Very fast fire rate

%---------------------------------------------------------------------------------------------------------------------%

% Weapon mobility (input)

%---------------------------------------------------------------------------------------------------------------------%

FIS = addInput(FIS, [0 100], 'Name', 'Weapon mobility (level %)'); % Rate of player mobility (agility competence)

FIS = addMF(FIS, 'Weapon mobility (level %)', 'trimf', [-10 0 20], 'Name', 'Very Slow'); % Very slow mobility rate

FIS = addMF(FIS, 'Weapon mobility (level %)', 'trimf', [0 20 40], 'Name', 'Slow'); % Slow mobility rate

FIS = addMF(FIS, 'Weapon mobility (level %)', 'trimf', [20 40 60], 'Name', 'Medium'); % Medium mobility rate

FIS = addMF(FIS, 'Weapon mobility (level %)', 'trimf', [40 60 80], 'Name', 'Fast'); % Fast mobility rate

FIS = addMF(FIS, 'Weapon mobility (level %)', 'trapmf', [60 80 100 110], 'Name', 'Very Fast'); % Very fast mobility rate

%---------------------------------------------------------------------------------------------------------------------%

% Player competence (output)

%---------------------------------------------------------------------------------------------------------------------%

FIS = addOutput(FIS, [0 100], 'Name', 'Player performance capability (potential %)'); % Player potential ability to perform well

FIS = addMF(FIS, 'Player performance capability (potential %)', 'trimf', [-25 0 25], 'Name', 'Very Low'); % Very low potential to perform well

FIS = addMF(FIS, 'Player performance capability (potential %)', 'trimf', [0 25 50], 'Name', 'Low'); % Low potential to perform well

FIS = addMF(FIS, 'Player performance capability (potential %)', 'trimf', [25 50 75], 'Name', 'Average'); % Average potential to perform well

FIS = addMF(FIS, 'Player performance capability (potential %)', 'trimf', [50 75 100], 'Name', 'High'); % High potential to perform well

FIS = addMF(FIS, 'Player performance capability (potential %)', 'trimf', [75 100 125], 'Name', 'Very High'); % Very high potential to perform well

%---------------------------------------------------------------------------------------------------------------------%

% Rules base and plots

%---------------------------------------------------------------------------------------------------------------------%

% Rule list for determing the players potential to perform well

% [Input 1, Input 2, Input 3, Input 4, Input 5, Output, Weight, Operator]

% 5 inputs, 5 membership functions each, 5 outputs (5 \* 5 \* 5 \* 5 \* 5 (each input combination) = 3,125 possible rules [440 in total])

ruleList = [

% Aggregate rules (generic)

% Player weapon accuracy

1 0 0 0 0 1 0.9 1; % If player weapon accuracy is very poor, then very low competence (bullets do not hit opponents)

5 0 0 0 0 5 0.9 1; % If player weapon accuracy is very high, then very high competence (bullets hit opponents most of time)

% Elected map size

0 5 0 0 0 1 0.9 1; % If elected map size is very large, then very low competence (damage dealt is low, low accuracy at range, more covered fire)

0 1 0 0 0 3 0.7 1; % If elected map size is very small, then average competence (more opponent encounters, low accuracy not really effected, damage not affected, mobility not affected)

% Weapon effective damage range

0 0 1 0 0 2 0.8 1; % If weapon damage falloff is very close range, then low competence (melee weapons)

% Weapon fire rate

0 0 0 1 0 2 0.6 1; % If weapon fire rate is very slow, then low competence (melee weapons, allows more time for opponents to evade fired bullets)

% Weapon mobility

0 0 0 0 1 4 0.7 1; % If weapon mobility is very low, then high competence (mounted turret weapons, sniper rifles, heavy machine guns)

0 0 0 0 5 5 0.9 1; % If weapon mobility is very high, then very high competence (evade opponents shots more often and quickly, quick into cover, strategic play supported)

% Unique rules (specific for purpose)

%-------------------------------------------------------------%

% Poor weapon accuracy

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FIS = addRule(FIS,ruleList); % Apply the rule list to the FIS configured

showrule(FIS) % Print the rules to the workspace

% Defuzzification method of data input to the FIS, for producing crisp output

%FIS.defuzzMethod = 'centroid'; % Centroid defuzzification method

%FIS.defuzzMethod = 'bisector'; % Bisector defuzzification method

FIS.defuzzMethod = 'mom'; % Mean of maximum defuzzification method

%FIS.defuzzMethod = 'som'; % Smallest of maximum defuzzification method

%FIS.defuzzMethod = 'lom'; % Largest of maximum defuzzification method

% Plot the membership functions of the FIS

subplot(6,1,1), plotmf(FIS,'input',1) % Plot the membership functions for input '1'

subplot(6,1,2), plotmf(FIS,'input',2) % Plot the membership functions for input '2'

subplot(6,1,3), plotmf(FIS,'input',3) % Plot the membership functions for input '3'

subplot(6,1,4), plotmf(FIS,'input',4) % Plot the membership functions for input '4'

subplot(6,1,5), plotmf(FIS,'input',5) % Plot the membership functions for input '5'

subplot(6,1,6), plotmf(FIS,'output',1) % Plot the membership functions for output '1'

for i=1:size(SampleData, 1) % For the size of the sample data fed into the FIS, do the following

evalSampleData = evalfis(FIS, [SampleData(i, 1), SampleData(i, 2), SampleData(i, 3), SampleData(i, 4), SampleData(i, 5)]); % Evaluate the sample datas set for the FIS configured

fprintf('%d) Input(1): %.2f, Input(2) %.2f, Input(3) %.2f, Input(4) %.2f, Input(5) %.2f => Output: %.2f \n\n', i, SampleData(i, 1), SampleData(i, 2), SampleData(i, 3), SampleData(i, 4), SampleData(i, 5), evalSampleData); % Output each line of data input to the FIS and the crisp output

xlswrite('Output.xlsx', evalSampleData, 1, sprintf('A%d', i+1)); % Write the crisp output to a document, for each line of data input to the FIS

end % End of the iterative statement