# Non-Functional Requirements

## Security

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| ID | Description |
| SEC1 | The system must authenticate users using a username and password[[1]](#footnote-2). |
| SEC2 | They system will verify that each request to the server is authenticated. |
| SEC3 | Only the password hash will be saved, and all data transmitted will be encrypted. |

## Availability

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| --- | --- |
| ID | Description |
| AVA1 | The system must be available 24 hours a day, 7 days a week, 99% of the time. |
| AVA2 | Online service must be available 24 hours a day, 7 days a week, 99% of the time. |

## Speed[[2]](#footnote-3)

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| --- | --- |
| ID | Description |
| SPD1 | The time it takes for a turn to be sent by a player and received by the opponent[[3]](#footnote-4) must not exceed 1 second. |

## Interoperability

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| --- | --- |
| ID | Description |
| INT1 | The back-end system must be able to interface with clients by sending and receiving JSON. |

## Portability

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| --- | --- |
| ID | Description |
| PRT1 | The Android client application will be available for all Android operating systems from Android 5.0 to current. |

## Usability

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| --- | --- |
| ID | Description |
| USE1 | The UI must be intuitive to navigate in that the user will be able to find what they’re looking for in the app on their first or second try. |
| USE2 | The UI must have no perceivable[[4]](#footnote-5) periods of unresponsiveness. |

## Playability

|  |  |
| --- | --- |
| ID | Description |
| PLA1 | There must be no advertisements presented in the game. |
| PLA2 | There must be no enforced limits to how many matches a user can play in any length of time[[5]](#footnote-6). |
| PLA3 | A chess match must follow and enforce all basic rules of chess[[6]](#footnote-7). |
| PLA4 | The captured pieces must be visible to the player during a match. |
| PLA5 | The player must be able to pick their pawn promotion piece from all legal options if they want. |
| PLA6 | The player must be able to set a preference setting to default pawn promotion choices to Queening. |
| PLA7 | The player must be able to review their move before they commit it if they want. |
| PLA8 | The player must be able to set a preference to make moves immediately without review. |
| PLA9 | The player must be able to resign from any ongoing match at any time regardless of who’s turn it is. |
| PLA9 | The player must be able to request a draw when it is their move. |
| PLA10 | At the end of a match, the player must be able to see the result of a match[[7]](#footnote-8), and the reason for that result. |

## Scalability

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| --- | --- |
| ID | Description |
| SCA1 | The system will be scalable to hundreds of players playing concurrently. |

## Reliability

|  |  |
| --- | --- |
| ID | Description |
| RLB1 | The online system will not experience critical failures at least 99% of the time. |
| RLB2 | The client application will not experience critical failures at least 99.99% of the time, excluding factors outside JAR Games’ control. (ex... dead battery, bad WIFI connection, no data coverage) |

## Maintainability

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| --- | --- |
| ID | Description |
| MNT1 | There must be a way for bugs to be reported by the system’s users. |
| MNT2 | Bug reports must be viewed and classified within a business week of being received. |
| MNT3 | 99% of critical defects reported must be patched within 48 hours of the report being classified as critical. |
| MNT4 | 90% of major defects reported must be patched within one business week of being classified major. |
| MNT5 | 90% of minor defects reported must be patched within one month of being classified as minor. |
| MNT6 | 90% of trivial defects reported must be patched within one year of being classified as trivial. |

## Cost

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| --- | --- |
| ID | Description |
| CST1 | All IP assets must be created or acquired legally within budget[[8]](#footnote-9). |
| CST2 | Upkeep costs[[9]](#footnote-10) minus previous profits must remain within budget. |

Change Log

* Changed version to 2.0.
* Added the 99% of the time to Availability NFRs.
* Modified the wording on the existing Speed requirement to make it more realistic and testable.
* Slightly reworded INT1.
* Added USE2 NFR.
* Added Playability NFRs.
* Lowered SCA1 requirement from thousands to hundreds.
* Adjustments to the Reliability percentages.
* Major changes to the Maintainability NFRs.
* Addition of the Cost NFR.
* Added this Change Log

1. Doesn’t apply for users that don’t use online features. [↑](#footnote-ref-2)
2. Times given are requirements for our test devices, as we can’t test our system on every target device. [↑](#footnote-ref-3)
3. This does not include delays caused by abnormal network or hardware interruptions. [↑](#footnote-ref-4)
4. No periods longer than 0.50 seconds. [↑](#footnote-ref-5)
5. This requirement does not apply for players that have been banned from online play, if such bans are implemented in the future). [↑](#footnote-ref-6)
6. The source of chess rules knowledge for this game will be FIDE Handbook’s Laws of Chess taking effect from 1 January 2018 <https://handbook.fide.com/chapter/E012018>. [↑](#footnote-ref-7)
7. The result of a match is a declaration of the winner, or the declaration of a draw. [↑](#footnote-ref-8)
8. Our total budget is 50.00 USD. [↑](#footnote-ref-9)
9. The costs of development, maintenance, and any other ongoing costs required to keep the product/service available. [↑](#footnote-ref-10)