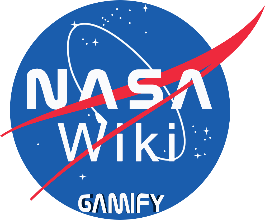
**NASA EVA**

**Gamification**

**S O F T W A R E R E Q U I R E M E N T S**

**S P E C I F I C A T I O N**

**PHASE II**



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# Revision Table

|  |  |  |  |
| --- | --- | --- | --- |
| **Version Number** | **Description of Change** | **Author** | **Date** |
| 1.0 | Initial Creation of Document | Kelli Corey | 06/19/2018 |
|  |  |  |  |
|  |  |  |  |

# 1. Introduction

## 1.1 Purpose

This software requirement document refers to the NASA Wiki Gamification Project, phase 2. These requirements describe features to be added on to the MediaWiki system and associated databases.

## 1.2 Document Conventions

In this document, NASA Wiki refers to the MediaWiki environment utilized by NASA for training and communication purposes.

As this is phase two of a multi-phase project, all requirements listed in this document are treated as having the same priority level.

## 1.3 Intended Audience and Reading Suggestions

The primary audience for this document is the project team, including developers and testers. This document is also meant to be used by the project manager, Dr. Michael Brown, and the client, Daren Welsh.

It is recommended that developers and testers focus on sections 3, 4, and 5 of this document, as they refer to the specific requirements in detail.

For the project manager and client, sections 2 and 4 are recommended, as they give a high-level overview of the project and details of the functional requirements.

## 1.4 Product Scope

This project is phase two of the NASA Wiki Gamification project. Phase two is a continuation of the work started by the phase one team. The primary focus of this phase is to build an extension that provides a consolidated infrastructure, allowing for the addition of gamification elements to the NASA Wiki environment. This phase of the project will focus on three areas of enhancement: point measurement, rewards and badges, and a leaderboard.

## 1.5 References

1. NASA Wiki Gamification: Phase 2 Project Management Plan
2. NASA Wiki Gamification: Phase 2 Stakeholder Analysis
3. NASA Wiki Gamification: Phase 2 Project Requirements
4. NASA Wiki Gamification: Phase 2 Project Charter
5. NASA Wiki Gamification: Phase 1 Handover Documentation

# 2. Overall Description

## 2.1 Product Perspective

This project is phase two in a continuing project to add gamification elements to the NASA MediaWiki environment. Phase one of the project established basic data structures and initial gamification features.

All aspects of this project will be created independent of the actual NASA MediaWiki environment due to confidentiality and security concerns relating to the content contained therein.

## 2.2 Product Functions

The following key high level project requirements are set for this phase project, but not limited to any continuation of the work on this wiki project.

* All code should be open sourced at the end of the project.
* All back-end code should be written in PHP.
* Front-end code may be written in JavaScript, JQuery, and CSS.
* A relational database such as MySQL, MariaDB, PostgreSQL, SQLite and others should be supported.
* All code should be stored in GITHub.

## 2.3 User Classes and Characteristics

The NASA Wiki tool is used as a primary means of communicating detailed technical and operation information across departments at NASA. Therefore, it is of the utmost importance that the content in the wiki is up-to-date and accurate. Because of this focus, the various users have been grouped into two primary categories: Editors and Readers.

Editors are subject-matter experts who update and modify articles on the NASA Wiki that are related to their work assignment or knowledge area. This project focuses on encouraging engagement of these users to make more frequent and higher-quality updates.

Readers are users who access the NASA Wiki in order to learn about a particular topic. This project focuses on engaging these users with the content, and to allow these users to provide feedback on the quality of the content created by Editors.

At any given time, a particular user may be an Editor, a Reader, or both.

## 2.4 Operating Environment

* MediaWiki version 1.27.4
* Meza install bundle at <https://github.com/enterprisemediawiki>
* PHP version 5.6
* MariaDB/ MySQL 5.5.59
* Installation instructions will be provided for Linux and Windows platforms at the end of the last milestone.

## 2.5 Design and Implementation Constraints

* The project is bound to the requirement specifications highlighted under the project scope.
* The project must be executed within the timeframe under the project schedule.
* The actual NASA wiki is not available to the team due to firewalls and access-control mechanisms in place for security purposes. Consequently, the team has to download and install a local version in order to test.

## 2.6 User Documentation

This phase of the project will include handover documentation detailing how to utilize the product and recommendations for the next phase of the project.

## 2.7 Assumptions and Dependencies

* The project is a phase 2 project that depends on information from the previous phase 1 project and as such assumes that the information from the previous phase, in terms of code and documentation, are complete, tested, and working.
* The project will be focused on user activity as opposed to Wiki content.

# 3. External Interface Requirements

## 3.1 User Interfaces

All work for phase two of the project will be designed to operate with the MediaWiki user interface. The current MediaWiki user interface is the object oriented user interface, or OOUI. The OOUI library is integrated in all versions of MediaWiki since version 1.23. The library can be utilized through PHP. All aspects of this project must be compliant with the OOUI in order to ensure a smooth integration with the NASA Wiki environment.

## 3.2 Hardware Interfaces

The MediaWiki environment is designed to run via an internet connection. Hardware involved may include a modem, router, ethernet cable, and other hardware potentially necessary to connect with the internet.

## 3.3 Software Interfaces

The MediaWiki environment is designed to work with all modern web browsers such as Google Chrome, Safari, Microsoft Edge, Opera, or Mozilla Firefox because users may potentially access the final product using above web browsers. Therefore, all components of the NASA Wiki Gamification product must be compatible with all modern web browsers.

## 3.4 Communications Interfaces

Because this application is designed to work over the internet, it must be compatible with IPv4 and IPv6 standards. It also must be able to function over a WAN or LAN connection.

# 4. System Features

## 4.1 NASA Wiki Gamification

### 4.1.1 Description and Priority

The NASA Wiki Gamification extension provides a consolidated infrastructure allowing for adding different elements and approaches to gamification. This extension manages the simple point measurement, badge rewards system, and leaderboard ranks system. This project has a high priority because most users do not care much about points and badges but the most reliable knowledge base so it is difficult to increase the overall number of people viewing and contributing without increasing user awareness of why their contributions are important.

### 4.1.2 Stimulus/Response Sequences

* Determines if users create a page or edit a page
* Adds 100 points for creating a page or 50 points for editing a page into user’s point store
* Adds badge into user’s badge store based on the total of earned points in user’s point store
* Determines user’s position in the leaderboard based on total of earned points
* Displays the list of users in the leaderboard with edit count, total of earned point, and user’s position information
* Allows users to view the name of the pages that users created and edited.

### 4.1.3 Functional Requirements

1. Points
   1. Users shall earn 100 points when a page is created.
   2. Users shall end 50 points when a page is edited.
2. Badges
   1. A user with 50 total points shall earn a bronze badge.
   2. A user with 100 total points shall earn a silver badge.
   3. A user with 200 total points shall earn a gold badge.
   4. A user with 500 total points shall earn a platinum badge.
   5. All badges earned shall be displayed on top of the user’s profile page in a tabular form with the earned badge images.
3. Leaderboard
   1. Users shall see a scaled leaderboard, on the profile page, showing the edit count, points earned, the user’s position in the leaderboard, and other users 100 points over and below.
   2. Users shall be able to click on the edit count to view the name of the pages created.

# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

* SQL queries used to display back-end data on the pages will be optimized to reduce response time.
* No redundant data or data not useful to the users will be displayed on the pages.

## 5.2 Safety & Security Requirements

* Users have to be logged in to access the special pages.
* The project is limited to users of the ISS operations community.
* Any other type of users will not be able to use the MediaWiki. Security is enforced through firewalls and access-control process.
* Only Admin users can modify gamification rules

## 5.3 Software Quality Attributes

The features shall fulfill the following quality attributes: Adaptability, usability, and traceability. The points, badges and leaderboard should be adaptable based on different users with different amount of points. The user Interface aspect of the features should be accessible and usable in different browsers including Internet Explorer, Google Chrome, and Mozilla Firefox. All the changes in points, and badges for users should be traceable through the database.

## 5.4 Business Rules

* User Business Rules
  + User will earn points toward contributions
  + User will earn badge toward the total of earned points
  + User will have ability to see a scaled leaderboard with the edit count, total of earned points, the user’s position, and other users 100 points over and below information
  + User will have ability to view the name of the pages that user created or edited
* Administrator Business Rules
  + Admin will have ability to add, edit, or remove the pre-defined point measurement rules
  + Admin will have ability to add, edit, or remove the pre-defined badge reward rules