Revised Self-Report Assessment of Functional

Visual Performance (R-SRAFVP) Application

Requirements Specification

Version 1.0

Kirk Hedlich

Dr. Byron DeVries

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# Purpose

## Audience & Intended Use

The Revised Self-Report Assessment of Functional Visual Performance (R-SRAFVP) application is intended to be used by medical professionals for Activities of Daily Living (ADL) assessment used to determine how vision impacts daily activities. The materials for understanding the theory and use of the assessment can be found in the R-SRAFVP Toolkit from the University of Alabama Birmingham (*R-SRAFVP Toolkit*, n.d.). The R-SRAFVP application is not a substitute for understanding or learning how to use the R-SRAFVP as part of patient treatment. The R-SRAFVP application is meant to aid medical professionals by automating data entry, scoring and use of the R-SRAFVP. It provides clinicians a tool to automate visual assessment documentation for patients.

## Scope

The scope of the R-SRAFVP application is the ability for users to generate individual assessments for patients.

* Assessments entered through the application follow the *R-SRAFVP Form* (*R-SRAFVP Toolkit*, n.d.) for question flow, question scoring and output like the form.
* Users who do not authenticate (login) into the application will be limited to creating, exporting, and resetting assessments. Additional functionality will require users to authenticate (login) into the application.
* Users who do authenticate into the application will have access to extended functionality for saving, view lists of saved assessments, recalling, updating, locking, and deleting assessments.
* Authenticated users will only have access to their own assessments.
* Access between users for assessments will be prevented (ex: reassigning assignments between users or sharing of assessments for viewing from within the application).
* Assessment data (i.e., patient characteristic data, question answers and scoring data) generated by application users will not be tied to users or patients identifying data to mitigate HIPAA concerns for compliance and privacy.
* Any identifying users or patient data will be minimized and anonymized as much as possible to mitigate HIPAA concerns for compliance and privacy.
* The assessment data gathered from all users is intended for long term review for improvement of the R-SRAFVP itself by special permission and for researchers only.

## Constraints

The R-SRAFVP application is meant to be a cross platform application. The General Requirements section lists the possible breadth of use by platform and browser. As such, the ability to test every possible Platform/Browser combination to determine good use is improbable, if not impossible by this creator. Therefore, the application will be tested and verified to work on a small breadth of devices/Browsers before general use.

## Dependencies

None

## Permissions

To create and distribute the R-SRAFVP application, special permission has been obtained by the following parties.

* Permission for the development and publication of the R-SRAFVP application was granted by Dr. Mary Warren (author of the R-SRAFVP).
* Permission for the development and publication of the R-SRAFVP application was granted by Dr. Elizabeth Barstow (on behalf of the University of Alabama Birmingham, for use of the R-SRAFVP).

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# General Requirements (GR)

1. The application and user assessments must be internet accessible.
2. In the event the application has no internet access, the application shall be able to make use of offline functionality (ex: create/reset/export an assessment). Other functionality requiring online access (ex: login, saved assessments, viewing saved assessments, etc.) may not be usable until internet access is re-established.
3. The application must be developed using a responsive user interface so that it will work on and adapt to mobile, tablet and desktop platforms and screen sizes. The minimum platform widths are listed here by platform for when the screen should adjust to a larger/smaller size:
   * Phone width, 360 pixels
   * Tablet width, 768 pixels
   * Desktop width 1280 pixels
4. The application must work on the following browsers: Google Chrome™ v72+, Microsoft® Edge v80+, Apple Safari v12+. The intent is to have the application work on browser versions that are 3 years old or newer. Listed below are browser usage statistics taken on Sept 9, 2021 for the different platforms the application must work on (“Browser Market Share United States of America”, n.d.).
   * Mobile browser usage: Safari 53%, Chrome 41%
   * Tablet browser usage: Safari 44%, Chrome 31%, Android 24%
   * Desktop browser usage: Chrome 59%, Safari 18%, Edge 12%
5. The application shall have a splash page which includes the name of the application with version and release date.

# Interface Requirements (IR)

None

# Functional Requirements (FR)

1. On startup, the application shall clear all saved data for the active assessment.
2. On shutdown, the application shall clear all saved data for the active assessment.
3. The application shall clear all saved data for the active assessment when the user logs out of the application.
4. The application shall only have one (1) active assessment at a time for any user.
5. The application shall maintain the active assessment data until it is replaced (ex: different assessment is recalled, the active assessment is reset, application is restarted, user logs out, etc.).
6. The application shall “auto-save” any changes made to the active assessment field values, question answers, or comments.

* Auto-save means the user does not have to save the information by selecting an option, the application will save all changes on the device until cleared (ex: application startup/shutdown, user log off, assessment reset, etc.).

1. The application shall provide any user the ability to create a new assessment.

* Any user means the user does not need to be logged into the application.
* By creating a new assessment, the application shall clear the active assessment’s fields, questions and comments to their default state.
  + The default state for field values means no values.
  + The default state for question answers means no answers.
  + The default state for comment fields means no values.

1. The application shall provide any user the ability to update an active assessment data.

* Any user means the user does not need to be logged into the application.
* Locked assessments shall not be changed.

1. The application shall provide any user the ability to export the active assessment to a PDF to the user’s device to a default download location.

* Any user means the user does not need to be logged into the application.

1. The application shall provide any user the ability to reset the active assessment back to default values.

* Any user means the user does not need to be logged into the application.

1. The application shall provide authenticated users the ability to save the active assessment.

* Saved assessments shall only be associated (link) to the authenticated user which saved the assessment.
* Saved assessments shall not be shareable from within the application between any users.
* Saved assessments shall not be transferable between users from within the application.

1. The application shall provide authenticated users the ability to recall a saved assessment from a listing of saved assessments and make it the active assessment.

* Recalling an assessment means to make the selected assessment active which includes clearing all active assessment data and loading the selected assessments data as the active assessment.

1. The application shall provide authenticated users the ability to update a saved assessment for a change in status (ex: Initial to Progress or Initial to Discharge) from a listing of saved assessments.

* The user determines which saved assessment to update with the type of updated wanted (ex: Progress, Discharge)
* The system copies the saved assessment values to a new active assessment
* The assessment type is updated to the wanted type
* The saved assessment is not changed but the user must save the new assessment to keep the changes

1. The application shall provide authenticated users the ability to lock a saved assessment from a listing of saved assessments to prevent any further changes.
2. The application shall provide authenticated users the ability to delete a saved assessment from a listing of saved assessments.

* Deleting an assessment means the header section of an assessment is no longer connected to the body and scoring sections of an assessment.
* In addition, the header section of the assessment is removed from the system.
* The body and scoring sections of an assessment data are retained in the system for research purposes.
* The assessment data is locked and no longer accessible to the user which created it.

1. The application shall provide authenticated users the ability to be granted special use permissions.
2. The application shall provide special use users the ability to view an aggregated listing of saved assessments in the system. The aggregated listing shall be across all users which saved assessments in the system.
3. The application shall provide special use users the ability to export one to many assessments from the aggregated listing of saved assessments in the system.

## Functionality Restrictions (FR)

1. The application shall only allow users to create, access, view, use, modify or delete their own assessments from within the application.
2. The application shall not allow assessments to be reassigned to a different user.
3. The application shall not allow assessments to be shared across users from within the application.
4. The application shall not allow assessments to be deleted by any other user than the creator of the assessment or Admin user.

## Assessment Requirements (AR)

Reference: Use the *R-SRAFVP Form* document from the R-SRAFVP Toolkit as a point of reference for the following requirements.

1. Every assessment shall contain a header, body, and summary section.
2. The assessment header section shall contain the following data field and whether the data is required or optional.

|  |  |
| --- | --- |
| Data Field | Data Needed |
| Therapist’s name | Required |
| Patient reference (ex: Name, Medical Record Number, etc.) | Optional |

1. The assessment body section shall contain the following data field and whether the data is required or optional.

|  |  |
| --- | --- |
| Data Field | Data Needed |
| Location info (ex: state) | Optional |
| Patient’s Sex (Male/Female) | Required |
| Patient’s Age | Required |
| Patient’s Eye Diagnosis (exact listing is tbd) | Optional |
| Patient’s Co-Morbid Conditions (exact listing is tbd) | Optional |
| Assessment date | Required |
| Assessment type: Initial, Progress, Discharge | Required |
| Assessment question answers with question reference number | Required |
| Question comments | Optional |
| Section comments | Optional |

1. The assessment summary section shall contain the following data field and all calculations are required.

|  |  |
| --- | --- |
| Data Field | Data Needed |
| Total questions marked not applicable (NA) | Required |
| Total uncalculated points | Required |
| Adjusted total points | Required |
| Client’s total score | Required |
| R-SRAFVP score | Required |
| Impairment percentage | Required |
| Medicare G-Code modifier | Required |
| Assessment comments | Optional |

1. Every assessment shall contain the same sections, question, and question reference number from the R-SRAFVP assessment.

* Section 1: HEALTH MANAGEMENT & PERSONAL GROOMING containing 7 questions
* Section 2: MEAL / LAUNDRY PREPARATION containing 6 questions
* Section 3: FINANCIAL MANAGEMENT containing 3 questions
* Section 4: USING THE TELEPHONE containing 2 questions
* Section 5: READING containing 4 questions
* Section 6: WRITING containing 3 questions
* Section 7: FUNCTIONAL MOBILITY containing 4 questions
* Section 8: PERSONAL PREFERENCE ACTIVITIES containing 4 questions

1. The application shall default every question answer to “blank” on reset.
2. The application shall only allow one answer to each question.
3. The application shall allow the user to answer any question with an answer from the R-SRAFVP rating scale (0, 1, 2, 3, 4, N) or blank.
4. The application shall have the ability to add comments to any question.
5. The application shall have the ability to add comments to any section.
6. The application shall have the ability to add comments to the entire assessment.
7. The application shall allow users to alter any question’s answer until locked.
8. Each question shall have help information available to the user (a description of what the measure means, ref: use the R-SRAFVP document to help with each questions help information).
9. Each question shall have a quick reference for what the possible answer options mean (ref: use the R-SRAFVP document to help with answers’ quick reference information).

## Assessment Calculations/Scoring (AC)

Reference: Use the *READ ME FIRST R-SRAFVP Instructions* document from the R-SRAFVP Toolkit as a point of reference for the following requirements.

1. To calculate Total questions marked not applicable (NA), the application shall count the number of questions marked as “N” or “n”.

**Formula**: Total questions marked not applicable (NA) = count of questions with “N” or “n”

1. To calculate the Total uncalculated points, the application shall multiple the Total questions marked not applicable (NA) by the maximum points value for a question.

**Formula**: Total uncalculated points = Total questions marked NA \* 4

1. To calculate the Adjusted total points, the application shall count the number of questions NOT marked as “N” or “n” (meaning questions have a value or are blank) and multiple the total count by the maximum points value for a question.

**Formula**: Adjusted total points = Total questions NOT marked (NA) \* 4

1. To calculate the Client’s total score, the application shall sum the values from the questions NOT marked as “N” or “n” (meaning questions with a value or are blank).

**Formula**: Client’s total score = SUM (all question values NOT marked (NA))

1. To calculate the R-SRAFVP score, the application shall calculate the quotient by dividing the Client’s total score by the Adjusted total points.

**Formula**: R-SRAFVP score = Client’s total score / Adjusted total points

1. To calculate the Impairment percentage, the application shall calculate the difference by subtracting the R-SRAFVP score from 100%.

**Formula**: Impairment percentage = 100% - R-SRAFVP score

1. To determine the Medicare G-Code modifier, the application shall compare the Impairment percentage to the modifier table and assign the proper designation (Quick Reference Chart: Descriptors of G-Codes and Modifiers for Therapy Functional Reporting, Mar. 2019)

|  |  |
| --- | --- |
| Modifier | Percentage Range |
| CH | 0% |
| CI | 1-19% |
| CJ | 20-39% |
| CK | 40-59% |
| CL | 60-79% |
| CM | 80-99% |
| CN | 100% |

## Assessment Output (AO)

1. The application shall be able to export an assessment in a Portal Document Format (PDF) file type or Comma Separate Value (CSV) file type.
   * Only within a PDF export, the application shall highlight the questions with a score of 0-2 in a red background.
   * Only within a PDF export, the application shall highlight the questions marked as “N” or “n” in a white background.
2. The application will format the assessment export as close as possible to how the assessment is presented in the application: sections, fields, values, questions with answers and comments.
3. An exported assessment shall contain all data as defined in the Assessment Requirements (AR1-AR5).

## Help Requirements (HR)

Reference: Use the *R-SRAFVP Task Description* document from the R-SRAFVP Toolkit as a point of reference for the following requirements.

1. The application shall make the help system accessible to the user, whether the user is logged in or not.
2. The application shall provide help for how to give an assessment (questions, answers, scoring, etc.) through a help type system from within the application.
3. The application shall provide information about the application through a help type system from within the application. The learning information should cover: author(s), permissions of use, licensing information, contact information, versioning, and date of release.
4. The application shall provide information how the application complies with HIPAA application compliance rules through a help type system from within the application.
5. The application shall provide information how the application complies with HIPAA privacy rules through a help type system from within the application.

## Data Requirements (DR)

1. The application shall only save data when a user is authenticated to the system (i.e., logged in).
2. Assessment data entered in the assessment header section shall be separated and linked to the data from the body and summary sections.
3. Assessment body data shall be patient agnostic, meaning no patient/clinician identifiable information shall be saved with the assessment data.
4. Assessment data, saved in the system for a given user, shall only be visible and usable by the creating user.
5. Assessment data shall not be shared between users within the R-SRAFVP application/system.
6. Assessment data shall be able to be aggregated into a large data set that spans one to many clinicians.
7. Aggregated assessment data shall only be accessible by special permission and secured login.

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# Non-Functional Requirements

## Security/Privacy (SP)

1. The application must interface to Google authentication to allow users to reuse existing credentials for logging into the application.
2. The application must interface to Facebook authentication to allow users to reuse existing credentials for logging into the application.
3. The application must provide the ability to create login credentials from within the R-SRAFVP application, not associated with an external authenticator.

## Compliance (CO)

US Department of Health and Human Services (USHHS) HIPAA Security Rule:

*“The HIPAA Security Rule establishes national standards to protect individuals’ electronic personal health information that is created, received, used, or maintained by a covered entity. The Security Rule requires appropriate administrative, physical and technical safeguards to ensure the confidentiality, integrity, and security of electronic protected health information.” (Summary of the HIPAA Security Rule, 2013)*

Based on the information from the USHHS Security Rule, existing requirements are referenced to comply with the rule to secure and guard information in the application.

* Requirements SP1, SP2, SP3, FR19, FR20, FR21, FR22 shall insure the confidentiality of any data saved within the application by not available or disclosed to unauthorized persons.
* Requirements FR1, FR2, FR3, FR11, FR12, FR13, FR14, FR15 shall insure the integrity of any data from altered or destroyed in an unauthorized manner.
* Requirements SP1, SP2, SP3, GR1 shall insure the availability of any data by accessible and usable on demand by an authorized person.

US Department of Health and Human Services (USHHS) HIPAA Privacy Rule:

*“The HIPAA Privacy Rule establishes national standards to protect individuals' medical records and other personal health information and applies to health plans, health care clearinghouses, and those health care providers that conduct certain health care transactions electronically.  The Rule requires appropriate safeguards to protect the privacy of personal health information, and sets limits and conditions on the uses and disclosures that may be made of such information without patient authorization. The Rule also gives patients rights over their health information, including rights to examine and obtain a copy of their health records, and to request corrections.” (Summary of the HIPAA Privacy Rule, 2013)*

In addition, if the data is de-identified, then there are no restrictions.

*“There are no restrictions on the use or disclosure of de-identified health information. De-identified health information neither identifies nor provides a reasonable basis to identify an individual. “ (Summary of the HIPAA Privacy Rule, 2013)*

Based on the information from the USHHS Privacy Rule, existing requirements are referenced to comply with the rule to protect personal health information (PHI).

* Requirements FR1, FR2, FR3, DR1, DR2, DR3, DR4, DR5, FR19, FR20, FR21, FR22 shall insure the privacy of any data saved within the application and de-identification in the event of access or deletion.

## Performance Requirements (PR)

None

## Usability (US)

None

## Scalability (SC)

None

## Quality (QA)

None

# References

* “Browser Market Share United States of America.” *StatCounter Global Stats*, gs.statcounter.com/browser-market-share/all/united-states-of-america.
* “Summary of the HIPAA Privacy Rule.” *HHS.gov*, US Department of Health and Human Services, 26 July 2013, www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html.
* “Summary of the HIPAA Security Rule.” *HHS.gov*, US Department of Health and Human Services, 26 July 2013, www.hhs.gov/hipaa/for-professionals/security/laws-regulations/index.html.
* *R-SRAFVP Toolkit*, www.uab.edu/shp/ot/post-professional/low-vision-gc/student-resources.
* *Quick Reference Chart: Descriptors of G-Codes and Modifiers for Therapy Functional Reporting*, Centers for Medicare and Medicaid Services, https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/G-Codes-Chart-908924-Text-Only.pdf.