

UCSF REDCAP UPGRADE TO LTS VERSION 8.10

FUNCTIONALITY CHANGES

1 SUMMARY

On January 8, 2019, UCSF will upgrade its REDCap instance from version 8.5.x to 8.10. This is a regularly scheduled release of the REDCap LTS platform, incorporating both new features and non-critical bug fixes implemented over the last six months. Users should carefully review the long list of itemized updates in this document; changes which we believe are most likely to directly change workflow or potentially break API interconnects are highlighted below, but this may vary depending on your use cases.

2 INTERACTION

2.1 NAVIGATION AND DASHBOARDS

- **Improvement:** The Record Status Dashboard will now remember the user's last selection for the "page number" drop-down and the "records per page" drop-down, so that when they return to the dashboard in that project in the future, it will already have their last selections pre-selected for those two drop-downs. Note: It already remembers the user's last selection for "dashboard displayed" and "data access group". (Ticket #48913)
- **Change:** If a user loads a data entry form without a record in context, in which it displays the Incomplete/Complete Records drop-downs for choosing a record (this page can only be navigated to by clicking the "Show data collection instruments" link on the left-hand project menu and then selecting a form), if the project exceeds 25,000 records, it will truncate the drop-downs so that they only display the last 25,000 records ("last"=those at the end when viewing an ordered list of all records). This is to improve performance by preventing the page from having to output so much HTML to the client.

3 PROJECT SETUP

3.1 USER MANAGEMENT AND DATA ACCESS GROUPS

- **Improvement:** A Data Access Group can no longer be deleted if one or more records are still assigned to it. If a user attempts to delete a DAG that contains records, it will prevent such and display an error message.

3.2 PROJECT SETUP AND DATA DICTIONARIES

- **Change:** When exporting a data dictionary, it will now automatically prepend the Field Annotation column with a single space character if the value begins with an "@" sign. This is to prevent issues when loading the data dictionary into Microsoft Excel, which uses "@" to denote

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the beginning of an equation. When the data dictionary is re-uploaded back into REDCap, the extra space will be subsequently removed to maintain the integrity of the initial value in the data dictionary as it was exported.

- **Change:** Dashes/hyphens can now be used as the raw coded value for multiple choice fields.
- **Improvement:** Under the "PDF Customization Options" section in the Additional Customizations popup on the Project Setup page, a new option has been added: "Display or hide the Secondary Unique Field value (if enabled) at the top right corner of the PDF". This option will be useful, for example, when sending the PDF to a survey participant, in which the Secondary Unique Field value should not be known or viewable to the participant.
- **Improvement:** When copying a project, a new checkbox has been added to the Copy Project page to copy "all report folders". In the previous version, it would always copy all reports and report folders if the "all reports" option was checked, but now it allows reports to be copied without copying report folders, if need be.
- **Change:** Users that do not have "Project Design and Setup" privileges will no longer be able to navigate to or view the Project Setup page in a given project. Since such users cannot effectively perform any actions on the Project Setup page (i.e., everything on the page is disabled), it does not make much sense for them to be able to access it at all. (Ticket #52327)
- **New feature: Many project components added to the Project XML file** – When downloading the Project XML of metadata or metadata+data on the Project Setup->Other Functionality page, it now provides checkboxes to allow users to incorporate the project components listed below in the XML file. This means that all these things will be easily transferable now when exporting/importing the Project XML to create a new project on the same REDCap server or on a different REDCap server. Note: The server on which a project is being created using a Project XML file must also be on REDCap 8.10.0 or higher in order for these components to be added, otherwise it will simply ignore these components when creating the new project.
 - Data Access Groups (including DAG assignments for records if data is included in the XML file)
 - Data Quality Rules
 - User Roles
 - Surveys and survey settings (including a survey logo, if used)
 - Automated Survey Invitations
 - Survey Queue
 - Reports
 - Report Folders
 - Record Status Dashboards
 - DDP Field Mappings (for DDP Custom and DDP on FHIR) – administrator must still enable DDP in the project manually
- **Change:** When granting a user access to a project via the User Rights page, in which the "notify user via email" checkbox is checked, it now includes a link directly to the project in the resulting email to the user, whereas previous versions only included a link to the main REDCap home page.
- **Improvement:** New options added to Secondary Unique Field functionality - In the "Additional Customizations" popup on the Project Setup page, users may now choose to optionally display the Secondary Unique Field's value in conjunction to displaying a record name on various project pages (in previous versions it was always displayed regardless). If left unchecked, the uniqueness of the value will still be checked during data entry or import, but the Secondary Unique Field's value will not be displayed next to the record name anywhere (e.g., in record lists,

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record status dashboards, reports). A second option has also been added that dictates whether or not the field label of the Secondary Unique Field will be displayed next to the value (if the value is set to be displayed next to a record name).

- Improvement: A "Copy existing choices" link was added to the "Add Matrix of Fields" popup on the Online Designer page (just like the same link in the "Add New Field" popup on that same page) to copy the choices from an existing multiple choices field to that matrix of fields. (Ticket #46680)
- **Improvement/change:** When a user copies a project via the "Copy the project" button on the Other Functionality page, it now logs the PID (project_id) and project title of the new project in the copied project, and it now also logs the PID and project title of the originating project in the newly created project. So now it should be much easier for users to see if someone copied a project, and if so, determine which project is the one that had been created from the original. (Ticket #47208, #42783)
- **Improvement:** If one or more External Modules are enabled in a project, it now allows the user to choose if they want to copy over the module configuration settings when copying the project. In previous versions, it would always copy the settings without asking, even though the modules were disabled by default. So now users have a choice.

4 DATA COLLECTION AND MANAGEMENT

4.1 SURVEYS AND FORMS

- **Change:** Changed the text "Manage Survey Participants" to "Survey Distribution Tools", which more clearly describes the pages in that section.
- **Change:** When composing a survey invitation and clicking the "Preview" tab, instead of displaying the survey link as "Sample Survey Link" or "SURVEY TITLE", it now displays the actual survey title as the link text. Additionally, when clicking the "Send text email", this same thing now occurs in the email that is received. (Ticket #38955)
- **Change:** When viewing a partially completed or fully completed survey response on a data entry form, the text color and background color of the red box near the top of the page have been changed to reflect the state of the response more accurately (i.e., it is no longer displayed as a red box, which often evokes a sense of there being an error). If the response is partially completed, it is displayed as an orange box, whereas if it is fully completed, it is displayed as a green box. The box color is thus consistent with the color instrument status icons used.
- **Change:** When viewing a partially completed or fully completed survey response on a data entry form, the process of displaying the number of contributors to the response in the red box near the top of the page was resulting in very slow page loads in many circumstances. To provide a better user experience for this, it now displays a "View all contributors" link instead, which can be clicked to reveal the users who have contributed to that response.
- **Change/improvement:** Elements on survey pages have been modified to work better for accessibility purposes, such as with screen readers.
- **Change:** The alert that is displayed on a survey page or data entry form that notifies the user that an unvalidated text field begins or ends with extra spaces has been disabled so that it no

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longer notifies users when this occurs. This is due to reports of general annoyance by several users at the feature. This feature may possibly be re-added in the future and modified to be more user friendly, but for now it has been disabled for all projects indefinitely.

- **Change/improvement:** When composing a survey invitation on the Participants List page or via Survey Options on a data entry form, the "From"/sender drop-down list now displays all the email addresses (primary, secondary, and tertiary) of all users in the project, which is how the setup dialog for Automated Survey Invitations has always behaved. In previous versions, these two places would only allow the user to choose from the current user's email addresses as the "From"/sender address. This provides more flexibility, and establishes greater consistency between all the interfaces for scheduling survey invitations.

4.2 DATA QUALITY RULES

- **Improvement:** Smart Variables are now able to be utilized in Data Quality rule logic. Note: In many cases, Smart Variables in the logic may cause Data Quality rules to take much longer to complete, which is due to the fact that the logic has to be re-evaluated for *every* item being processed by the DQ rule, whereas normally the logic only needs to be evaluated just once at the beginning of when the DQ rule is executed.
- **Improvement:** Data Quality rule H (i.e., "Incorrect values for calculated fields") and auto-calcs (i.e., the process of calc fields being triggered by data imports or cross-form/cross-event calculations) can now handle Smart Variables that are used inside calculated field equations. In previous versions, such calc fields could only successfully run while on a data entry form or survey page.
- **Change:** Data Quality rules A and B have always ignored checkbox fields. But since a checkbox field can be set as "required", in which it produces an error message if no checkbox option is checked, then DQ rule A and B appear to be inconsistent with regard to whether a checkbox field can truly be empty/blank. To make these consistent when interpreting the missingness of checkbox fields, DQ rules A and B will no longer ignore checkboxes but will return discrepancies for a checkbox if it has no options checked. (Ticket #53120)

4.3 LOGGING

- **Improvement:** A new "Filter by event" option was added to the Logging page: "Record deleted (only)". This allows users to display only the logged events in which a record was deleted in the project.
- **New features relating to Data Privacy (e.g., GDPR)** – The new settings listed below are available on the "Edit a Project's Settings" page for a given project. Thus these must be enabled by a REDCap administrator on a per-project basis
 - (optional) **Delete a record's logging activity when deleting the record** - If enabled, this will delete all the data values and actions logged for the given record being deleted as seen on the Project Logging page. Note: For multi-arm longitudinal projects, this feature will delete the record's logging for the given record only in the current arm. This feature can be used to aid in compliance with GDPR or similar regulations that require 'right to erasure'.

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- (optional) **Auto-delete all Data Export Files in the File Repository that were created more than X days ago** – To enable this setting, an administrator may set a value from 1 to 999 to set the number of days after which all Data Export files will get automatically deleted from the project's File Repository. This feature can be used to aid in compliance with GDPR or similar regulations that require 'right to erasure'. NOTE: This will only delete files under the Data Export Files tab. No other types of files in the File Repository will be deleted.
- (optional) **Custom footer text for survey pages** - Custom text may be provided (including HTML-formatted text) that will be displayed either via a modal dialog or inline at the bottom of all survey pages in the project. This could potentially be used for display a data privacy statement or other similar things that should be displayed on the same page where data is collected. Note: This is only display on survey pages.

5 EXPORTS AND REPORTS

5.1 EXPORT/IMPORT STANDARDS

- Change: When exporting data in CSV format (raw data or labels) on the "My Reports & Exports" page, it now maintains all double quotes in free-form text, whereas previous versions would replace all double quotes with single quotes in a CSV export. Note: When exporting to stats packages, it will still replace double quotes with single quotes for compatibility purposes.
- Change: When exporting data to SPSS, date and datetime fields are now represented as A500 and text fields as A1000 in the SPSS syntax file, whereas previously they were all represented as A30000, which could cause very slow processing when loading the data into SPSS. (Ticket #37115)
- Change/improvement: When importing data via the Data Import Tool, if a CSV data file is re-uploaded on the second page after the initial attempt (e.g., due to errors displayed after the first attempt), it now hides all the error messages on the page after clicking the Upload File button to re-upload the file. Thus it resets the page so that the user does not get confused thinking that the previous errors apply to the current upload if the re-upload process takes a while. (Ticket #52518)
- Change/improvement: When importing data via the Data Import Tool and an error is detected in the data file, the header text of the error message has been changed slightly to prevent confusion so that users more clearly understand that the file was not fully uploaded. (Ticket #52519)

5.2 REPORTS AND EXPORTS

- **Improvements related to viewing or creating reports**
 - New report option that will combine checkbox options into a single column of only the checked-off options. Previously, any checkbox fields in a report would have their choices represented as separate columns in the report, but with this new setting, they can now all be represented as a single column with comma-delimited values and comma-delimited labels. Note: If data is exported to a stats package on a report using this

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- option, checkbox fields will be represented as text fields in the stats package's syntax file that gets generated by REDCap.
- Report description – Users may now optionally set a description for a report, in which the description gets displayed as text below the report title on the report page. This allows users to provide instructions or explanatory text for the report. Note: HTML may be used in the description to add links or to style the text.
- Change: When exporting a report, it now includes the report's title as part of the resulting export files' file name. This should make it easier to distinguish different exported data sets if a user is exporting several reports for a given project.
- Improvement/bug fix: In previous versions it was very difficult (and sometimes impossible) to create reports with lots of fields in projects that contained >1000 total fields. In some cases, it would cause the Create Report page to be very sluggish or even to crash in some cases. This should no longer happen, and users should be able to easily create reports with thousands of fields, if they wish, with no problem.
- **New options for Data Exports**
 - **Improvement:** When exporting a report, a new "Data formatting options" section appears in the export dialog to allow users to choose the CSV delimiter character to be used in CSV Raw Data and CSV Labels exports. Options include comma (default), tab, semi-colon, pipe, and caret. This is useful in certain cases when the resulting data file needs to have another delimiter, such as a tab, for example. In addition, the two API methods "Export Records" and "Export Reports" have a new analogous parameter "csvDelimiter" that will set the CSV delimiter character if using "csv" as the format in the API request. See the API documentation for full details. (Ticket #30939)
 - **Improvement:** When exporting a report, a new "Data formatting options" section appears in the export dialog to allow users to optionally force all numbers into a specified decimal format. It will default to "Use fields' native decimal format", but provides the choices "Use period/full stop" and "Use comma" as the decimal character for all numbers. This will allow projects that have fields with period/full stop decimals (calc fields, number validated fields) and those with comma decimals (comma-as-decimal validated fields) to all be exported in the same uniform number format, thus providing greater consistency in the data being exported. In addition, the two API methods "Export Records" and "Export Reports" have a new analogous parameter "decimalCharacter" that will set specified decimal format for all numbers in the API request. See the API documentation for full details. (Ticket #30939, #34597)
- **Improvement:** A project's Record ID field can now be used as a Live Filter in any given report, thus allowing users to easily view the report for a single record.
- **Improvement:** When selecting a color for an item under "Custom survey theme options" on the Survey Settings page, the color-picker now allows users to provide the Hex color code (e.g., #0b5394) to choose the color of the item. (Ticket #8321)
- Change: The language has been abstracted to allow for translation for the popup that appears on data entry forms and survey pages when a user leaves spaces at the beginning or end of a text box's value. (Ticket #37401)
- **New feature: Report Folders** - Reports can now be organized into folders in any given project. If a user has "Add/Edit Reports" privileges, they will see an "Organize" link on the left-hand project menu above the project's reports. They will be able to create folders and then assign their reports to a folder, after which the project's reports will be displayed in collapsible groups on the left-hand menu.

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- **New feature: "Edit Access" for reports** - In addition to setting "View Access" when creating or editing a report, users can now set the report's "Edit Access" (under Step 1) to control who in the project can edit, copy, or delete the report. This setting will be very useful if one wishes to prevent certain users from modifying or deleting particular reports.
- **New feature: Report search** - A new search feature exists on the left-hand menu to allow users to search within the title of that project's reports to help them navigate to a report very quickly.

6 INFRASTRUCTURE AND API

6.1 UNDERLYING FRAMEWORKS

- **Change/improvement:** The JS/CSS front-end libraries jQuery and Bootstrap have been upgraded to jQuery 3 and Bootstrap 4.
- Various fixes and updates for the External Modules framework
- **Improvement: Performance boost** – Certain pages in projects with thousands or more records should now load much faster in most cases. This includes the Record Status Dashboard, various pages utilizing Data Access Groups, and certain reports. Reports A and B should especially see significantly faster loading (excluding when viewing "all" pages in report A or B).
- **Change:** Added the HTML tags <map> and <area> to the list of allowed tags that can be used in user-defined text (e.g., field labels, survey instructions). (Ticket #49526)
- **Change:** Upgrading the Font Awesome library to version 5.5

6.2 API AND PLUGINS

- **Improvement:** New optional parameters added to the API Export Records method to filter data returned based on when a record was created or modified
 - **dateRangeBegin** – To return only records that have been created or modified *after* a given date/time, provide a timestamp in the format YYYY-MM-DD HH:MM:SS (e.g., '2017-01-01 00:00:00' for January 1, 2017 at midnight server time). If not specified, it will assume no begin time.
 - **dateRangeEnd** – To return only records that have been created or modified *before* a given date/time, provide a timestamp in the format YYYY-MM-DD HH:MM:SS (e.g., '2017-01-01 00:00:00' for January 1, 2017 at midnight server time). If not specified, it will use the current server time.
- **New API method: "Import Repeating Instruments and Events"** – Allows users to import a list of the repeated instruments and repeating events for a project as a means of setting which instruments and events should be repeatable.
- **Improvement:** Two new parameters "exportAsLabels" and "exportCsvHeadersAsLabels" were added to the plugin/module method named REDCap::getReport. These allow developers to designate whether to output data as raw values vs labels, as well as choose to export CSV headers as labels rather than as variable names (for CSV outputFormat only). (Ticket #49173)

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7 OTHER

7.1 SHARED INSTRUMENTS AND BIOMEDICAL ONTOLOGIES

- **Improvement:** Improved data export for biomedical ontology fields - If fields using the biomedical ontology auto-suggest feature are being exported to a stats package, it will now render those fields as multiple choice fields (rather than as free-form text fields) in the resulting stats package syntax file, in which all the cached choices for those ontologies will be output as separate choices (values and labels) for those fields in the syntax file. Note: Since some ontologies contain thousands of choices, all possible choices will not be output in the syntax file, but instead only the cached choices that have been saved in that REDCap project for those ontologies will be output as choices in the syntax file.
- **Change/improvement:** The REDCap Shared Library can now be disabled (if desired) at the project level by an administrator on the "Edit a Project's Settings" page in the Control Center. If disabled for a given project, all Shared Library buttons and all references to the Shared Library will no longer appear in the project.
- **New feature: PROMIS Batteries** – 15 batteries of instruments are now available in the REDCap Shared Library. A battery is a set of instruments that can be downloaded from the Shared Library as a bundle, in which they are meant to all be taken together one after another within a single battery. When downloading from the Shared Library, the survey auto-continue feature will be enabled for these instruments to allow a participant to automatically continue from one to another to simulate the battery functionality.
- **Change:** When viewing the "Add New Field"/"Edit Field" popup in the Online Designer, it will now ask the user to choose the ontology service that they wish to use (it did not do this in previous versions), even though there is just one to choose. After choosing "BioPortal Ontology Service", it will then display all the ontologies available for BioPortal, as it has done in the past. This extra step was added to allow for more custom ontology services to be added in the future. But for now, BioPortal is the only service currently available by default in REDCap.

7.2 DDP ON FHIR (FRAMEWORK NOT YET IMPLEMENTED AT UCSF)

- **Change:** When a REDCap administrator enables or disables either the DDP on FHIR module or the DDP Custom module, it now explicitly states this on the Logging page, whereas previous versions merely logged the action generically as "Modify project settings".
- **Change:** Added extra admin-specific error message in DDP on FHIR when a FHIR access token fails. This is to help troubleshoot access token issues.
- **Improvement:** The DDP field mapping page (for both DDP Custom and DDP on FHIR) now has a CSV import/export capability that allows users to easily import an existing DDP mapping rather than having to set the field mapping manually via point-and-click. This will save users a lot of time for those who wish to test the same mapping in multiple projects and/or on multiple REDCap installations.
- **Change:** More debugging information was added to DDP on FHIR's adjudication popup to provide more information to REDCap administrators in the event that a FHIR access token fails to pull data from the EHR.

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- Change: Added a small note on the DDP mapping page (for both DDP Custom and DDP on FHIR) that the MRN field cannot exist on a repeating instrument/event. This message is only displayed when repeating instruments/events exist in the project.
- Change: The "email" field was removed from the "DDP on FHIR" field mappings list due to potential privacy issues related to the possibility of users obtaining patient email addresses.

7.3 Misc

- Change: Added "Postal Code (Germany)" as a new field validation type.
- **Change/improvement:** When displaying the filename of an uploaded file on a File Upload field on a form or survey, if the filename is very long (>34 characters in length), it now truncates the filename with an ellipsis closer to the middle of the filename rather than at the end. This allows the file extension to be visible, whereas in previous versions it was impossible to tell what type of file it is without downloading it if the filename was long.
- Change: The footer of survey pages now says "Powered by REDCap", whereas previous versions have "REDCap X.X.X - © 20XX Vanderbilt University". For non-survey pages, the footer will remain the same.
- Change: Some language was hard-coded in previous versions. The following things have now had their text abstracted so that they are now translatable: the buttons for uploading/deleting files in the File Repository, the "Generate Schedule" button on the Schedule page, and the "Auto Logout Warning" popup. (Ticket #26708)
- Improvement: If using "Local" file storage for uploaded files, inline image attachments for Descriptive fields and also survey logos will load on the page with their proper width and height already set, which should cause shifting/disturbance on the page due to the images loading slightly later than the page itself.
- **Improvement:** A new search utility was added to the top of the "Help & FAQ" page to make finding keywords easier on the page. It allows for multiple word matches and also "exact phrase" matching. When performing the search, all matching questions/answers will be displayed on the page with the keywords being highlighted while non-matching questions/answers will be hidden on the page.
- Change: On the "Add/Edit Records" page for projects in development status, the notice that real data should not be entered into a project while in development has been moved more to the top of the page to make it more prominent as a reminder to users.
- **Change/improvement:** The "Help & FAQ" page was updated with new content.