REDCap Flex Upgrade Changelog - June 23, 2020

New Features

- New options for Alerts & Notifications - A "Trigger Limit" setting was added to Step 1 in the Add/Edit Alert popup that allows users to define where and to what extent within a record that the alert will be triggered. Its options include "only once per record", "only once per event", "only once per instrument regardless of the event", and others that are displayed if the project contains repeating instruments/events

- Projects that are in "Analysis/Cleanup" status can now optionally have their project data set as "Locked/Read-only" or "Editable" (see the top of the Project Setup or Project Home page). This will give users more control to prevent data collection from happening while in this project status.

- Mark a project as "Completed": If users are finished with a project and wish to make it completely inaccessible, they may mark the project as Completed. Doing so will take it offline and remove it from everyone's project list, after which it can only be seen again by clicking the Show Completed Projects link at the bottom of the My Projects page.

- DAG Switcher - Users assigned to Data Access Groups (DAGs) can optionally be assigned to multiple *potential* DAGs, in which they may be given the privilege of switching in and out of specific DAGs on their own whenever they wish.

- Record-level locking feature - This feature allows users to lock an entire record (as opposed to locking individual instruments) so that none of the record's data can ever be modified unless someone with record-level locking/unlocking privileges goes and unlocks the record again.

Bug Fixes / Improvements

Version 9.6.0

- Change/improvement: Added four new redcap_log_event database tables for new projects to improve server performance when REDCap is querying logging data for a project. Note: This will not improve performance when querying the logging records of existing projects but only applies to projects created after upgrading to v9.6.0 or higher.

- Change/improvement: To protect the performance of the REDCap server, safeguards have been added to prevent users from running more than five Data Quality rules simultaneously for a given project. If this is detected, REDCap will automatically kill all but the newest five Data Quality rule requests that are still running and will display an error message on the page explaining this.

- Minor security fix: REDCap now automatically removes the "X-Powered-By" response header produced by the REDCap server so that it doesn't reveal the server's PHP version (the default behavior), which is considered to be a minor security issue.

- Bug fix: If the record ID field has min/max validation, it would mistakenly prevent records from being created on the "Add/Edit Records" page and "Record Status Dashboard" if a record ID was entered in the correct format but whose value was out of range. It should allow the creation of the record even when out of range. (Ticket #60352)

- Bug fix: If any Alerts & Notifications get triggered via the Alerts DataDiff cron job (because an alert has conditional logic that contains datediff+today/now), then it might not perform all piping correctly if any field variables are piped into the email subject, email content, or are used for recipients or attachments.

- Bug fix: If an alert is set to be triggered "Using conditional logic during a data import or data entry" and is set to send "Just once", then if the conditional logic has become true when importing or entering data for a repeating instrument, it would mistakenly keep sending a new notification every time the record is saved (assuming the logic is still true). Instead it should only send it once (per repeating instance).

- Bug fix: If any Alerts & Notifications get triggered via the Alerts DataDiff cron job (because an alert has conditional logic that contains datediff+today/now), then they might mistakenly only get scheduled once per record rather than for all events and all repeating instances within a given record. Warning: This fix might inadvertently cause the cron job to schedule/send any alerts that were supposed to have been scheduled/sent in the past but mistakenly were not sent because of this bug. There is unfortunately no way to prevent this.

- Bug fix: When attempting to change the version of an External Module while using Firefox, it would mistakenly fail due to a JavaScript error. (Ticket #76009)

- Change/improvement: The TinyMCE library was upgraded from v4.7.2 to v4.9.2.

- Bug fix: The act of deleting a custom record status dashboard would mistakenly not get logged on the project's Logging page.

- Bug fix: When exporting data into SAS, it would result in errors upon loading into SAS for multiple choice fields that contain only numerical codings (including True/False, Yes/No, and form complete status fields) and also for number/integer fields, but only if Missing Data Codes are not utilized in the project.

- Bug fix: Some CSS (i.e., affecting "a.btn") was added to REDCap's styling in a recent version that was mistakenly overriding some Bootstrap CSS, which might negatively affect some REDCap plugins, hooks, or modules. (Ticket #75943)

- Bug fix: If the setting "Domain whitelist for user email addresses" is enabled and Table-based authentication is being used, then the "Set Up Password Recovery Question" popup would mistakenly fail to enforce the domain whitelist if a user attempts to modify their primary email address in that popup. (Ticket #75990)

- Bug fix: For users with visual impairments that are using screen reader software on survey pages, there are certain conditions, such as if the Text-To-Speech feature is enabled on that survey, where screen readers might not be able to interpret all the labels on the page correctly.

- Bug fix: When viewing a project's Logging page using Internet Explorer or Edge browser, if the username is long as displayed in the logging table, it might cause some of the columns in the table to overflow onto each other, thus making them nearly unreadable. (Ticket #76109)

- Bug fix: False positives may appear as discrepancies when running Data Quality rule F in a longitudinal project when fields have branching logic that does not have a unique event name explicitly prepended to all field variables in the logic. (Ticket #66789)

- Bug fix: When attempting to add a new user on the User Rights page in a project, if a user being searched for has a first or last name that contains undecipherable/mangled characters, then it would fail to return any users in the auto-suggest list as the user types the user's username. (Ticket #76053)

Version 9.6.1

- Major bug fix: If the Twilio telephony feature has been disabled at the system level on the Modules/Services Configuration page in the Control Center, then when adding/editing an alert on the Alerts & Notifications page in a project, the "Email From", "Email To", and "Subject" settings would mistakenly not be displayed and thus would prevent users from creating or editing an alert. (Ticket #76266)

Version 9.6.2

- Improvement: If the Custom Record Label and/or Secondary Unique Field are being used in a project, their values will now be displayed on the Calendar page when viewing the Day or Agenda tab for any calendar event connected to a record in the project.

- Improvement/change: On the Alerts & Notifications page, users may now edit a deactivated alert. This is especially useful if a user is setting up part of an alert and wishes to make incremental edits to the alert prior to re-enabling it.

- Improvement: A new setting "Utilize the Display Name in all outgoing emails?" was added to the "Configuration for Outgoing Emails" section on the Control Center's "General Configuration" page. This setting allows administrators to disable the email Display Name feature in all outgoing emails from REDCap. This feature might need to be disabled if your institution is having a disproportionate amount of emails not being received due to email servers blocking them, sometimes due to the usage of the display name. This setting is enabled by default when upgrading or installing REDCap. (Ticket #75941)

- Change/improvement: The TinyMCE library was upgraded from v4.9.2 to v5.1.5.

- Bug fix: External Modules could not be enabled if the user was using Internet Explorer. (Ticket #76276)

- Bug fix: When exporting data into SAS, it would result in errors upon loading into SAS for datetime fields if Missing Data Codes are not utilized in the project.

- Bug fix: When exporting data into SAS, it would mistakenly not apply choice label formats onto multiple choice values when loading into SAS.

- Bug fix: If a REDCap plugin, hook, or external module is calling REDCap::saveData() from outside the scope of the project in which it is saving the data, then if any Automated Survey Invitations in the project have conditional logic, then those ASIs might not get triggered successfully because in most cases the logic will never evaluate to TRUE. (Ticket #75607)

- Various fixes and updates for the External Module Framework

- Bug fix: When clicking the table header for a date or datetime field in a report, in which the dates/datetimes are in either MDY or DMY date format, it would mistakenly not sort the values correctly in the report. (Ticket #76377)

- Bug fix: If the Survey Confirmation Email setting has been enabled at the bottom of the Survey Settings page for a data collection instrument, and then a user disables it by setting its drop-down value to "No" and then saves the page, then even though the setting does get properly disabled upon save, if a user re-opens the Survey Settings page again later, it would mistakenly display the Survey Confirmation Email setting as still being enabled - even though it is not. (Ticket #76354)

- Bug fix: If the User Settings option "Allow normal users to move projects to production?" is set to "No, only Administrators can move projects to production," and email notifications are enabled for administrators to receive these user requests via email, then if a user requests that a project be moved to production but then cancels their own request on the Project Setup page, an administrator could still move the project to production afterward if they click the link received in the email (however, this could not be done via the To-Do List interface). This could cause some projects to have all their data mistakenly deleted if the requesting user clicked the wrong option in the "move to production" dialog and didn't notify the admin immediately afterward so that the admin would not approve their request. From now on, if the admin clicks the link in the email and the user has already cancelled the request, it will display an error to the admin and prevent them from approving the deleted request. (Ticket #76068)

- Bug fix: When executing a custom Data Quality rule in a longitudinal project, in which the rule's logic references fields on multiple events, in certain scenarios it might mistakenly display a false positive discrepancy from another unrelated event that is not referenced in the logic. (Ticket #76090)

- Bug fix: When viewing a project's Calendar page, the Agenda tab might mistakenly display "No calendar events to display" even though one calendar event is being displayed.

- Bug fix: When accessing the "Help & FAQ" page via the top nav bar on the My Projects page and Control Center pages, the search box at the top of the "Help & FAQ" page would be mostly obscured when initially loading the page, thus making it unusable until you scrolled down the page some to reveal it.

- Change: In the Add/Edit Alert popup on the Alerts & Notifications page, the Alert Expiration option has been moved upward in the popup so that it is now part of Step 2.

- Bug fix: In the Add/Edit Alert popup on the Alerts & Notifications page, the "Add Attachments" button in the popup would mistakenly not do anything, thus preventing users from adding attachments to their alerts. (Ticket #76541)

- Bug fix: The email Display Name will no longer be utilized for the "REDCap access granted" emails and "Verify your email address" emails that are sent to users from REDCap because the Display Name for these particular emails were causing them to get disproportionately flagged as spam by many institutions' email servers, thus preventing users from receiving them. (Ticket #75941)

- Bug fix: When using the CSV import functionality for the field mapping page of the Clinical Data Pull (CDP) feature, it would mistakenly not allow composite mapping of fields (i.e., many-to-one or one-to-many mapping) and thus might ignore some field mappings included in the CSV import file.

- Bug fix: If data had been entered into multiple instances of a repeating instrument or repeating event and then that instrument or event was later set to no longer be repeating (while there still exist other repeating instruments/events in the project), then the orphaned data from the repeating instances might mistakenly get included and displayed in reports or data exports. And in some cases, this orphaned data might cause Data Quality rule H to behave erratically, such as stating that there are some discrepancies to fix, but after clicking the button to auto-fix them, it would say that "0" were fixed.

- Bug fix: For many popup dialogs whose content is obtained from an AJAX call that returns a JSON-encoded payload, there are some cases where the popup might fail to open if there are certain non-Latin/UTF-8 characters in the text that will be displayed in the popup (e.g., Field Comments dialog, Survey Login dialog, Survey Queue Setup dialog, Edit Matrix Fields dialog). A new process has been added to most of these places to ensure that at least some of the content gets displayed in the dialog popup rather than never being able to open the dialog at all. (Ticket #76619)

- Bug fix: If an alert has been created in which its content/message contains one or more Smart Variables that allow you to provide custom text, such as survey-link, form-link, and survey-queue-link (e.g., [survey-link:prescreening:My Custom Text]), then if the Smart Variable's custom text contains a forward slash "/", then it would mistakenly prevent the alert's notification from being sent.

- Bug fix: If Missing Data Codes are enabled in a project, then the Missing Data Codes "M" icon on a data entry form would mistakenly be displayed and would function even when the entire form is disabled due to limited user rights or if viewing an un-editable survey response. Note: Clicking an option in the Missing Data Codes popup would change the value of the associated field, but since there would be no way to save that value, it would never affect any data. (Ticket #76688)

- Bug fix: When a user requests changes in a production project, the display name for the "Review & Approve Project Changes" email sent to the REDCap admin gets set to the project contact name instead of the user's first and last name. (Ticket #76685)

- Bug fix: If exporting a report in JSON format via the REDCap API, in which the report has filter logic defined and contains many thousands of records that will be returned, the beginning of the JSON string returned in the API response might mistakenly get malformed and begin with "[,{" instead of "[{". (Ticket #76602)

- Bug fix: When importing data via the API in "EAV" format for a repeating instrument or repeating event, many of the normal checks that ensure that the fields "redcap_repeat_instrument" and "redcap_repeat_instance" have valid values where mistakenly getting bypassed and thus not performing all the necessary checks to ensure the best data quality during the import. For example, importing a field

on a repeating instrument but leaving the "redcap_repeat_instance" field blank would not return an error but would instead assume the value is "1", which should not be assumed. (Ticket #75854)

Version 9.6.3

- Major bug fix: If the Twilio telephony feature has been disabled at the system level on the Modules/Services Configuration page in the Control Center, then when adding/editing an alert on the Alerts & Notifications page in a project, the alert's Email From, To, CC, BCC, and Subject values would mistakenly all get set to a blank value when saving a new or existing alert. (Ticket #76760)

- Change/improvement: The text box fields for logic have been increased in size and made resizable for the following places: the Survey Queue setup popup in the Online Designer, the Add/Edit Branching Logic popup in the Online Designer, and the Advanced Filter Logic when creating/editing reports.

- Bug fix: The Survey Confirmation Email feature might mistakenly display too many line breaks in the email text when viewing it on the Survey Settings page for an instrument or when viewing the received confirmation email in an email client.

- Bug fix: When importing data via API or Data Import Tool, it would mistakenly output a bunch of seemingly random text (e.g., "redcap_repeat_instrument, $repeat_instrument: ...") that was only meant for debugging purposes.

- Bug fix: When using a rich text editor that exists inside a modal dialog (e.g., the "Create new alert" dialog, the "Automated Survey Invitation" setup dialog), the rich text editor's "Table" menu option would not function correctly and would prevent users from adding a table to their rich text.

- Bug fix: If running REDCap on MySQL 8.0, it might mistakenly report an error that the "database structure is incorrect" in the Control Center or on the Configuration Check page when in fact the database structure is correct. This is due to the ZEROFILL attribute for numeric field types that exist in MySQL 8.0. (Ticket #76768)

- Bug fix: If the setting "Auto-suspend users after period of inactivity" is enabled, and some users who are suspended have not had any activity within the designated period of inactivity, then if the user has a sponsor and the user's sponsor puts in a request to have them unsuspended, the user would mistakenly get re-suspended within a day. (Ticket #58909)

- Bug fix: The email content text box was mistakenly too short in the Compose Survey Invitations popup on the Participant List page.

- Bug fix: When clicking the "Cancel" button on a data entry form, it would mistakenly display the alert "Are you sure you wish to CANCEL and lose all changes made on this page?" when no values had actually changed on the page, which could be confusing to users. It now only displays the alerts when values have been added or modified. (Ticket #76818)

- Bug fix: When using Missing Data Codes in a project where a field in the project has the same value as a missing data code but has the @NOMISSING action tag, it would mistakenly interpret the field value as

a missing data code in the following places: 1) the Data History popup on a data entry form, and 2) in the CSV Labels data export file. (Ticket #76813)

- Bug fix: When using Missing Data Codes in a project, if a file has been uploaded for a File Upload field and then a user clicks the "M" icon next to the field to open the missing data code choices, if they then click "[Clear value]", it would mistakenly hide the filename of the existing uploaded file, even though the user might choose to cancel the operation and not delete the file. This could be confusing to the user since it is hiding the file's filename prematurely in the process of entering a missing data code, thus making it appear as if perhaps the file has been deleted when in fact it has not. (Ticket #76810)

Version 9.6.4

- Improvement: If the "email notifications for administrators" option is enabled on the To-Do List page, then when a user cancels a "move project to production" request or a "delete production project" request, it now sends an email notification to the REDCap administrator to inform the admin that the request was cancelled so that the admin does not attempt to process it (even though the admin will be prevented with an error message if they try to process it). In previous versions, the request would have been cancelled silently by the user without ever notifying the admin.

- Change: The Configuration Check page now makes a suggestion that the PHP setting "session.cookie_secure" be set to "On" in the PHP.INI configuration file if you are running REDCap over SSL/HTTPS. Doing this is not required, but it is recommended since it improves the overall security of the REDCap system.

- Bug fix: If running REDCap on MySQL 8.0, it might mistakenly report an error that the "database structure is incorrect" in the Control Center or on the Configuration Check page when in fact the database structure is correct. This is due to the ZEROFILL attribute for numeric field types that exist in MySQL 8.0. Note: This issue was thought to have been fixed in the previous release but was not. (Ticket #76872)

- Bug fix: The project templates created during a fresh install of REDCap contained fields that mistakenly conflated the concepts of sex and gender (e.g., having "Gender" as the field label with "sex" as the variable name) and often did not provide enough inclusive options as choices. These fields in the project templates have thus been modified.

- Bug fix: When viewing a project's Logging page and the text displayed in the last table column is very long with no spaces, it might mistakenly overflow out of the table and sometimes off the page.

- Various bug fixes and changes for the External Module Framework.

- Due to changes in the default cookie settings in the Google Chrome browser (in Chrome v80 and later), any REDCap pages embedded on another website (via iframe) might mistakenly not be able to start an authenticated session successfully when logging in to REDCap. This may also affect surveys' ability to collect some data and behave correctly if the survey page is embedded on another website. REDCap now manually sets the cookie "SameSite" attribute with the value "None" by default in all compatible

web browsers for all cookies generated by PHP in REDCap. Note: This is only applicable for REDCap installations using SSL/HTTPS that have the setting "session.cookie_secure" set to "On" in the server's PHP.INI configuration file. If session.cookie_secure is not set to On, then the SameSite cookie attribute will not be added by REDCap.

- Bug fix: The main Notifications page in the Control Center and the Configuration Check page might not load completely if using PHP 5.5 or 5.6. Bug emerged in the previous REDCap version.

- Bug fix: A couple words were mistakenly not translated on Copy Project page. (Ticket #77083)

- Bug fix: If a user has clicked the "Request delete project" button on the "Other Functionality" page in a production project, after which they then click the "Cancel request" button to cancel that project-deletion request, then an administrator who is processing user requests via email notifications (as opposed to via the To-Do List) might not realize that the request was cancelled and thus might process the request and mistakenly delete the user's project unwittingly.

Version 9.6.5

- Improvement: Adaptive and Auto-scoring instruments (i.e., PROMIS assessments) that have been downloaded from the REDCap Shared Library may now have their survey responses deleted via the Delete button at the bottom of the data entry form when viewing the survey response. In previous versions, if an Adaptive and Auto-scoring instrument had been partially completed or the wrong one had been taking accidentally, there was no way to remove the existing response since the whole response was locked afterward. Now the "Delete data for THIS FORM only" button appears at the bottom to allow users to remove the response if they wish to add another to replace it. (Ticket #77086)

- Major bug fix: Some specific server installations (most notably Linux servers running PHP 7) would result in many fatal PHP errors when running or enabling external modules, thus making the REDCap installation mostly unusable in some cases. A patch has been issued to the External Module Framework to fix this. Bug emerged in REDCap 9.6.4 (Standard).

- Bug fix/change: Email Alerts converter has been removed - The Email Alerts external module has diverged from Alerts & Notifications in both its feature set and its back-end storage structure to the point where the option to convert alerts from the Email Alerts module into Alerts & Notifications is no longer a viable or reliable option, and in some cases the converter has caused major issues on some installations by not successfully converting alerts correctly. To prevent further damage, the EA->A&N converter will be removed from the user interface (it exists as a green button at the top right of the "Configure Email Alerts" page, which opens a dialog popup). This change will not in any way affect the functionality of the Email Alerts external module or the Alerts & Notifications feature, and they will both continue to function and exist separately with no conflict to each other. NOTE: This fix/change is only relevant if you have the Email Alerts external module installed on your REDCap system. REVERTING BACK: If for some reason you want to expose the EA->A&N converter feature to use it again, you may execute the following SQL query on the MySQL database, after which the green converter button will appear again in all projects where the Email Alerts module has been enabled: UPDATE redcap_config SET value = '1' WHERE field_name = 'email_alerts_converter_enabled'; WARNING: Please be aware that

no guarantee is given regarding the success of the EA->A&N converter if you choose to re-enable it and use it. It is HIGHLY recommended that you leave it disabled.

- Bug fix: Certain types of cookies created by REDCap were not getting stored correctly in a user's browser if the "session.cookie_secure" setting is set to "On" in the server's PHP.INI configuration file while using a version of PHP lower than PHP 7.3.0. For example, this would likely prevent the Google reCAPTCHA feature from working successfully on public surveys, thus preventing survey participants from taking those surveys. This bug emerged in the previous release.

- Bug fix: When a user adds a full REDCap survey link (as opposed to using the [survey-link] smart variable) into the rich text editor when composing a survey invitation (i.e., in the "Compose Survey Invitations" popup or "Automated Survey Invitations" popup), the warning dialog that suggests to remove the hard-coded survey link would mistakenly get displayed multiple times on top of itself, thus making it impossible for the user to actually close them all and forcing the user to refresh the page. (Ticket #77086)

Version 9.7.0

- Change/improvement: By popular demand, the "Send test email" link/feature has been re-added to all the following places where emails are composed: Email Users page in the Control Center, Automated Survey Invitations setup dialog, Compose Survey Invitations dialog for Participant List, Compose Survey Invitation dialog at the top right of data entry form, and the Confirmation Email setting on the Survey Settings page.

- Major bug fix: Most non-project types of actions by users were mistakenly not being logged in REDCap due to a query that failed when inserting a new row into the redcap_log_event database table. All project-level logging was correctly being logged, but non-project activities (such as creating users, resetting passwords, etc.) were mistakenly not getting logged. Bug emerged in REDCap 9.6.0 Standard. (Ticket #77584)

- Bug fix: On the Activity Log page in the Control Center, the popover that appears when mousing-over the gear icon next to each logged event would mistakenly stay visible, even when the user mouses-off of the gear icon. (Ticket #77044)

- Bug fix: When putting the cursor in the Variable Name text box in the Edit Field dialog in the Online Designer, if the variable name is longer than 26 characters and the project is currently in production status in Draft Mode, it might mistakenly pile several different dialogs on top of each other and make it impossible to close them all. This is often exacerbated if clicking the "X" icon or Escape key when attempting to close the dialogs. (Ticket #75072)

- Bug fix: It might mistakenly report an error that the "database structure is incorrect" in the Control Center or on the Configuration Check page when in fact the database structure is correct. And if the "Easy Upgrade" feature is enabled, the "Auto-Fix" option would fail if attempted. This issue is due to a previous fix that was meant to address idiosyncrasies in MySQL 8.0 but did not fully, and in fact the previous fix caused issues with installations that were not running MySQL 8.0. So this should now fix the issue on all versions of MySQL where these errors are occurring. (Ticket #76872)

- Change: In a production project where repeating instruments/events are enabled, if a user opens the Repeating Instrument/Event setup dialog on the Project Setup page, in which one or more checkboxes are checked already in the setup, a warning dialog with red text will be displayed to inform the user that unchecking any of the checkboxes might cause data to be orphaned and thus will cause any data already collected from repeating instances to disappear indefinitely from the user interface, reports, and exports. This warning will help users to be aware of this possibility that might affect their data and thus might have otherwise caused confusion. (Ticket #66801)

- Bug fix: When viewing the Project Modification Module for a production project in Draft Mode, it might mistakenly display false positives for field changes as if some fields are being modified when in fact they are not. This can happen if the old field attributes and new field attributes are the same except that one has Windows newline characters (which represent line breaks in text) and the other has Linux newline characters, or vice versa. So the text looks the same on the page, but REDCap thinks they are different and thus flags them as yellow on the page. When comparing them, it no longer pays attention to what type of newline character is being used. (Ticket #76811)

- Change: At the top right of the main Control Center "Notifications" page, it now displays the following server info: PHP version, MySQL/MariaDB version, and the web server OS type (Windows vs Linux/Unix).

- Bug fix: If a field's branching logic contained the datediff() function with a literal date (e.g., "01-01-2020") as one of the first two parameters in the function, in which the date value was either in MDY or DMY date format, then certain server-side logic-parsing operations (e.g., Data Quality rule A and B, the use of branching logic in downloaded PDFs) would fail to work correctly.

- Bug fix: Data Quality rule F would use a bit too much web server memory while processing. (Ticket #77606)

- Change: If using WebDAV for file storage and the WebDAV connection file on the web server cannot be read by REDCap for some reason (e.g., due to a file/folder permissions issue), then it would prevent much of REDCap from working correctly and not give any clue as to what was causing it, making it difficult to troubleshoot. To prevent this issue, it now fails more gracefully and provides an error message on what the exact problem is in this particular case.

- Bug fix: If exporting a report to a stats package (SAS, SPSS, R, Stata) in which the first instrument in the project is enabled as a survey and the record ID field is the only field from the first instrument that is included in the report, then the resulting syntax file for the stats package would mistakenly reference the survey timestamp field of the first instrument, and since that timestamp field would not be included in the CSV data file in the export, it would cause errors to occur when loading the exported data into the stats package. (Ticket #77574)

Version 9.7.1

- Change: If REDCap is running on a version of PHP that is not one of the currently supported versions of PHP (according to https://www.php.net/supported-versions.php), it will display a warning in the Server Info section at the top right of the main Control Center page that recommends that PHP be upgraded soon to one of the supported versions.

- Bug fix: There is a small chance that a cron job might have multiple simultaneous instances running of the job when there should only ever be one instance of it running. This mostly applies to External Module cron jobs since most internal cron jobs in REDCap have built-in ways of preventing issues with this.

- Bug fix: When using the operators "&&" and "||" in place of "and" and "or", respectively, in report filtering logic, it would mistakenly fail to filter the report correctly. Bug emerged in the previous version. (Ticket #77738)

- Change: In the Online Designer's Edit Field dialog, the textarea boxes (field label, field choices, and action tags) are now slightly bigger and are all resizable.

- Bug fix: Reports were loading unexpectedly slowly in certain cases where report logic was being used when data from repeating instruments/events were being displayed in the report.

- Bug fix: Reports that contained the record ID field and also contained fields from repeating instruments/events were mistakenly displaying blank rows in the report (i.e., all fields in the row were blank *except* for the record ID field) if the report contained filtering logic that evaluated as TRUE on the first repeating instance. If the filtering logic did not evaluate as TRUE on the first repeating instance (but perhaps on other repeating instances), the blank row would not be displayed, as expected.

- Bug fix: When creating a new project using a super API token via the Create Project API method using a Project XML file, it would mistakenly output some junk code in the API response that was only meant for debugging purposes. (Ticket #77798)

- Bug fix: When using a logic tester to validate if logic has correct syntax (e.g., when creating a Data Quality Rule, adding report filter logic), if the logic contained certain Smart Variables, it would mistakenly say that the logic is not correct syntax when it actually is correct. (Ticket #77741)

- Bug fix: When using certain Smart Variables inside the the Custom Label for Repeating Instruments, it might mistakenly replace the Smart Variable with a blank value rather than the correct value when displaying the custom label in the repeating instrument tables on the Record Home Page and in the drop-down of repeating instances at the top of data entry forms. (Ticket #77575)

- Bug fix: If any Automated Survey Invitations get triggered via the ASI DataDiff cron job (because an ASI has conditional logic that contains datediff+today/now) in a longitudinal project, then invitations might not get successfully scheduled if the conditional logic refers to a field on an event for which its instrument has not been designated. For example, if we have logic such as "[event1][field1] = '2'", and field1's instrument is not designated for event1, then invitations would never get scheduled by the ASI datediff cron job when attempting to process this logic. (Ticket #77812)

Version 9.7.2

- Bug fix: The logic parsing algorithms in REDCap might mistakenly fail and not return accurate results when the logic contains an empty/blank value (represented as two quotes/apostrophes) on either side of an "=" operator or an "<>" operator, such as ' ""<>"" ' or ' ""=1 '. While such logic is less likely to be entered in this form by a user, some logic could end up in this form prior to parsing after certain Smart

Variables in the logic are replaced by literal values during the logic-processing phase. This means that logic used in certain Data Quality rules or report filter logic, among other places, might not behave accurately. Bug emerged in REDCap 9.5.11 (LTS) and 9.7.0 (Standard).

- Change: When viewing reports, it now displays "report execution time" in seconds near the top of the report. This denotes the total server execution time that it took to create the report. Note: This does not account for the rendering time of the report (i.e., via JavaScript), which can sometimes take several seconds or more (if the report is large) for a user's web browser to actually render the report's HTML on the page.

- Bug fix: Users could mistakenly access the Online Designer and Data Dictionary pages in an Inactive project and thus could make field changes, which should only be allowed while in Development or Production status. (Ticket #66286)

- Bug fix: If an administrator is processing a "Delete Project" user request for a production project, then it might mistakenly not display the "Delete Project" prompt when loading the project's Other Functionality page while processing the request.

- Bug fix: If a field on a form or survey has the @DEFAULT action tag, and that same field has its value being piped into somewhere else on the same page, then when the form/survey is initially loaded with no data saved for it yet (i.e., has gray status icon), the piping of the default value would mistakenly not occur when the page is initially loaded but only after the field's value is modified while on that page.

- Bug fix: If using Table-based authentication, and a user was somehow added to a project even though the user has not yet had a REDCap user account created for them, then when attempting to delete the user from the project or modify their user rights, it would always return an erroneous error message, which prevents the user from being modified or deleted from the project.

Version 9.7.3

- Change/improvement: Inclusion of the SweetAlert2 JavaScript framework for displaying custom dialogs.

    Note to External Module creators: The SweetAlert dialogs may be used by external modules as of v9.7.3 and higher.

    It is worth noting that Internet Explorer 9 and 10 are not supported by SweetAlert2. So if users are using IE 9 or 10, the SweetAlert dialogs will not be displayed for them.

- Change: To wean users off of using Internet Explorer 9 and 10, any users using IE 9 or 10 will see a thin, yellow banner at the top of all project pages, which will inform them that their browser is not fully compatible with REDCap and thus will encourage them to upgrade to IE11 or use another browser. Technically, IE 9 and 10 will be supported till July 2020 in Standard Release, but this warning is mostly preemptive in preparation for that.

- Bug fix: When copy-and-pasting text from Microsoft Word (or similar products) into the rich text editor used throughout REDCap, the underlying HTML that is added to the rich text editor after the paste would be extremely bloated and superfluous. Additionally, for field labels on instruments, it could cause

the text to become so long (although appearing to be normal length) that it might cause some text to be truncated when downloading->uploading the Data Dictionary. To prevent this issue, it now automatically removes a lot of the extra, hidden styling and unnecessary HTML when copy-and-pasting text into the rich text editor. (Ticket #77555)

- Bug fix: The pseudo user "site_admin" (which is only used as a default account when authentication is disabled) could mistakenly be added to a conversation in REDCap Messenger by a user. As a result, it might mistakenly send the administrators a notification email that the "site_admin" has unread messages in Messenger. Users will now no longer be able to find "site_admin" when searching for users to add to a Messenger conversation. (Ticket #78117)

- Bug fix: In the Edit Field dialog in the Online Designer, the "Enable auto-complete" option for drop-down fields was mistakenly covered up by the Choices textbox directly above it, thus making it impossible to enable or disable that option for a drop-down field.

- Bug fix: When running Data Quality rule A, B, or F for projects that are longitudinal and/or have repeating instruments/event, it might mistakenly run out of memory and return an error message to the user, even when the project doesn't appear to have a large amount of records.

- Various fixes and updates for the External Module Framework.

- Bug fix: If the Secondary Unique Field (SUF) is used in a longitudinal project in which the value of the SUF is currently blank and then a data entry form or survey containing the field is saved where the field's value still remains blank, then if the SUF exists in events that currently do not have data (i.e., it has gray status icons for all forms in the event), then it would mistakenly save a blank value for the SUF in those empty events, thus causing their form status icon to be red instead of gray, which could be confusing to users.

- Bug fix: If a custom Data Quality rule has logic that contains a field from a repeating instrument in a non-longitudinal project, then it might mistakenly not find valid discrepancies that exist for that DQ rule in reference to data from repeating instruments.

- Change: For survey participants using Internet Explorer 6, 7, or 8, rather than failing silently, survey pages now display an error message letting them know that the page is not compatible with IE 6-8 and recommends they upgrade or use another browser.

- Bug fix: On the Project Setup page of a DDP-enabled or CDP-enabled project, the step to "Set up Dynamic Data Pull (DDP)"/"Set up Clinical Data Pull (CDP)" would have its progress icon mistakenly set to "Complete!" (big checkmark icon) when the project is in production status, regardless of whether the field mapping setup had actually been completed, which was confusing. It now can only be marked as "Complete!" if the user clicks the "I'm done!" button, which is how it has always behaved while in development status.

- Bug fix: When uploading a file or signature for a File Upload field on a repeating instrument or repeating event, in which record auto-numbering is enabled in the project, then the project's Logging page would mistakenly add an unnecessary "Created Record" event immediately before the "Uploaded Document" event in the logging history.

- Bug fix: If REDCap has two-factor authentication enabled and it is set to enforce 2FA only for certain IP addresses, it would mistakenly only support IPv4 changes and would not support IPv6. It now supports IPv6 ranges/subnet masks. (Ticket #77195)

- Bug fix: If users were using Internet Explorer 11 with Compatibility View enabled, it would get logged mistakenly as Internet Explorer 7 in the redcap_log_view database table.

- Bug fix: If a project has the Data Resolution Workflow enabled, and a user clicks the "Export" button on the Resolve Issues page in the project, the resulting CSV file would mistakenly have the text comments truncated in the First Update and Last Update columns. Those should be truncated on the webpage view but not in the CSV export file.

- Change: When clicking the "View past invitations" or "View past notifications" button on the Survey Invitation Log and Alert Notification Log, respectively, it now defaults to displaying the page with the most recently sent invitations/notifications, whereas previous versions would default to the first page (i.e., the oldest sent). This change should provide a more intuitive experience for users.

- Bug fix: If logic or calculations contain a checkbox field whose variable name ends with "min", "max", or "log", then it might cause the logic/calculation to be considered invalid or syntactically incorrect while being parsed, thus resulting in an error message in many places. (Ticket #78083)

- Bug fix: In the API Playground, the "csvDelimiter" parameter was mistakenly missing as a drop-down in the user interface for the API methods "Export Records" and "Export Reports". (Ticket #77754)

- Bug fix: When viewing the "Stats & Charts" page for a user-defined report (i.e., not report A or B) that has filter logic defined, the "missing" count displayed in the descriptive stats table for a given field might mistakenly be incorrect if the report is displaying fields from a repeating instrument or repeating event. (Ticket #77050)

Version 9.7.4

- Major bug fix: A user with "No Access" Data Export privileges in a project would [correctly] neither be able to perform data exports nor access the Data Export Files tab in the File Repository, but if that user had been given the direct URL to download a specific archived data export file from the File Repository (i.e., exported by another user in the project at a previous time) or if they were simply guessing URLs through trial and error by modifying the "id" URL parameter for the "FileRepository/file_download.php" end-point, they would be able to successfully download that data file even though they have no data export privileges. Note: The user must have access to the project in order to do this. (Ticket #72652)

- Change: When the Easy Upgrade feature is displaying a list of versions for upgrading to, the word "Recommended" has been removed from the most recent version in the list because the word would inadvertently wrap to the next line and make it seem as if the second version in the list is the recommended version. (Ticket #77911)

- Bug fix: If a user is piping a field that uses the BioPortal Ontology Service, and they're wanting to pipe the field's coded value and not the choice value, then adding ":value" to the variable name (e.g., [icd10:value]) would mistakenly return the choice label and not the coded value.

- Various fixes and updates to the External Module Framework.

- Change: Added extra check on the Configuration Check page when attempting to communicate with the WebDAV server (if using it for file storage).

- Bug fix: If a user is suspended, the page displaying the notice that they are suspended when the user attempts to log in would mistakenly throw an invisible JavaScript error in the browser console. (Ticket #78850)

- Bug fix: In completed survey responses on a repeating survey, if there is somehow no Form Status value (in the back-end database) for the survey instrument or if its value was somehow set to "Incomplete" mistakenly (e.g., through direct database interaction via an external module), then if the current repeating instance of the survey that is being viewed is not the first instance, it would mistakenly set the value of the first instance of the survey to "Completed" whenever someone views the instrument/survey page.

- Bug fix: When adding/editing a calc field in the Online Designer, the "Valid"/checkmark indicator and "Clear calculation" link were mistakenly obscured by the calculation's equation textarea right above them. (Ticket #78545)

- Bug fix: The word "Page" used to display the page number in PDFs of exported instruments was mistakenly hardcoded instead of coming from the language translation file. (Ticket #78771)

- Bug fix: If the @DEFAULT action tag is used on a field, then users would always receive the "save changes?" prompt when attempting to leave the form without clicking a Save button, even when no field values had been changed. Instead it should only display this prompt when the form has no data (i.e., has gray form status icon) and leaving the form. It should not display the prompt every time afterward. (Ticket #78807)

- Bug fix: When attempting to add a user via the User Rights page to a project that currently has no users, it would mistakenly return no user suggestions when typing the username in the text field. (Ticket #78929)

- Bug fix: When performing a data export of a report to a stats package, in which the first instrument in the project is a survey and the report is set to output all survey-related fields (e.g., completion timestamp), then if the record ID field is the first field in the report, the resulting syntax file for the stats package would mistakenly be missing the survey completion timestamp for the first instrument, thus causing the data not to load properly into the stats package.

- Bug fix: When using the dateRangeBegin parameter for the "Export Records" API method, if the dateRangeEnd was left blank or not included as a parameter in the API request, then the API would not function correctly and would mistakenly return no data in the API response.

- Bug fix: A third-party PHP library was using code that is deprecated in PHP 7.4. (Ticket #79001)

- Bug fix: If a field on a data entry form or survey has an @HIDDEN action tag and also has branching logic, then in certain cases the field might flicker (i.e., appear then disappear momentarily) when the page initially loads. (Ticket #78697)

Version 9.7.5

- Major bug fix: Surveys and data entry forms were mistakenly displaying the "errors exist" popup relating to branching logic errors in many situations.

Version 9.7.6

- Bug fix: The Configuration Check page in the Control Center was mistakenly still checking the communication with the old bit.ly and is.gd URL shortener services, even though the newer redcap.link URL shortener has been enabled. It now instead checks the communication with the redcap.link service if the redcap.link URL shortener is enabled.

- Bug fix: If a text field that has min/max validation is changed to another field type, such as a drop-down, in the Online Designer, it would mistakenly not nullify the min/max validation values for the field when saving it as a new field type, which would cause an error to be displayed when downloading the data dictionary and then re-uploading it. (Ticket #29422)

- Bug fix: When using Live Filters in a report, if any of the Live Filter fields have choices whose label contains HTML tags, it would mistakenly display the HTML tags inside the Live Filter drop-downs at the top of the report.

- Various fixes and updates for the External Modules Framework.

- Bug fix: The PHP function for validating URLs for certain outgoing HTTP calls from REDCap might mistakenly allow certain invalid URLs to pass the validation test.

- Bug fix: If a longitudinal project with repeating instruments or repeating events contains reports with report filter logic that references fields on both repeating and non-repeating instruments/events, in which the fields on repeating instruments/events do not have anything appended to them, such as a numeral instance designation or instance Smart Variable, then the report might return incorrect results *if a field in the logic exists on both repeating and non-repeating events in the project*. This appears only to occur if the report setting "Show data for all events or repeating instruments for each record returned" is left unchecked. (Ticket #79058)

- Bug fix: If using the Missing Data Codes feature in a project that also has Randomization enabled, it would mistakenly allow the missing data codes icon to appear next the randomization field on the data entry form. The missing data codes icon should never appear for the randomization field because it is not applicable there. (Ticket #79057)

- Bug fix: If the "Import Records" API method was called or if a user was saving a survey or data entry form that triggered the calculation of calc fields on other instruments/events, then the internal record list cache in the project would mistakenly get reset in the back-end database, thus forcing the cache to be rebuilt the next time a report, record dashboard, or record list was viewed in the project. This could cause unnecessary slowness for the project and possibly affect performance of the entire REDCap server in some cases.

- Bug fix: If a new data collection instrument is added to a production project that is currently in draft mode, in which the user has submitted some field/form changes to an administrator and is awaiting

approval, it is mistakenly possible for the user to enable that instrument as a survey. Instead it should display a notice on the Survey Settings page that the instrument cannot be enabled as a survey until the project is no longer in draft mode (i.e., after the submitted changes have been approved). (Ticket #79192)

- Bug fix: When using iOS and entering data on a survey or data entry form, "number"-validated text fields would not enforce the client-side validation and would mistakenly allow non-numerical values to be entered. This has been fixed so that it will now display the number pad keyboard to allow only numbers and a dot decimal as an option. Note: If the field has "number (comma as decimal)" validation, then it will instead use the full QWERTY keyboard (this is a limitation of iOS) instead of the number pad keyboard. (Ticket #79317)

- Bug fix: In a longitudinal project, if an alert that has a field that is piped into the alert's message or subject, in which the field variable is not prepended with the unique event name, then when that alert gets triggered by saving a form/survey, it would mistakenly not pipe the field's value correctly unless the field's event's unique event name had been explicitly referenced by another field in the message text, subject text, or conditional logic.

- Change: On the User Settings page in the Control Center, the text for the setting "Allow normal users to add or modify events and arms on the Define My Events page for longitudinal projects while in production status?" has been modified for better clarity regarding how this setting behaves.

Version 9.7.7

- Bug fix: If a longitudinal project with repeating instruments or repeating events contains a report that has simple filters (i.e., fields selected via drop-down options) where a field is selected along with the "All events" option, OR if the report has advanced filter logic that references fields that exist on both repeating and non-repeating instruments/events, in which the fields on repeating instruments/events do not have anything appended to them, such as a numeral instance designation or instance Smart Variable and those fields also do not have a unique event name explicitly prepended to them, then the report might return incorrect results *if a field in the logic exists on both repeating and non-repeating events in the project*. This appears only to occur if the report setting "Show data for all events or repeating instruments for each record returned" is left unchecked. (Ticket #79058)

- Bug fix: When clicking the "Use advanced logic" link when building a report that has simple filters (i.e., fields selected via drop-down options), in which a filter field is selected with the "All events" option, when creating the advanced filter logic, it would mistakenly fail to prepend the field with "[event-name]" and thus would throw an error that says the logic is invalid when attempting to save the report.

- Bug fix: When sending emails, REDCap was mistakenly attempting to employ DKIM in all outgoing emails, which might cause emails to no longer be received if hosting REDCap on certain platforms, such as AWS. To ensure emails keep sending as expected, the usage of DKIM is no longer attempted when sending emails.

- Bug fix: When sending survey invitations via the Participant List, if some invitations are sent first and then the user clicks the Compose Survey Invitations button to send another batch without leaving the

page, the survey invitation message text would appear to still be the same for the new batch as with the previous batch but instead it would actually send the default invitation text that gets loaded in the text editor when opened the first time. This could cause users to mistakenly send the wrong text in the invitation when sending multiple batches on that page at a time. (Ticket #79507)

- Bug fix: When using Missing Data Codes in a project, and a missing data code is saved for a checkbox field on a record, then that field would mistakenly be returned as a discrepancy in Data Quality rule G. (Ticket #79553)

- Bug fix: If a slider field has the "Display number value?" option checked for it, then when entering data on a survey or form, if the slider has focus put on it (either by tabbing through the survey/form, or if an instrument is opened in which the slider is the first field on the instrument), then a value of "50" would get initially displayed in the slider's associated text box even though the slider value is actually blank/null and will remain so until the slider is clicked or if the user uses their keyboard's left/right arrow keys. So seeing the value of "50" when the slider gets focus might give the impression that its value has been set when in fact it has not been set yet. This has been changed so that the text box value only changes when the slider value itself has been changed by the user, thus eliminating this ambiguity regarding the slider's current value. (Ticket #79430)

- Bug fix: While REDCap prevents users from viewing all pages of a given report at the same time if it estimates that the report contains more than 500k data points, it would mistakenly calculate the number of total data points incorrectly while determining this. (Ticket #79657)

Version 9.7.8

- Major bug fix: If a participant is taking a public survey (via the public survey link) that allows them to "Save & Return Later", in which the survey requires Return Codes to be used in order to return to the survey, then if the participant returns to the survey using the private/unique survey link (rather than the public survey link), it would mistakenly allow the participant to view their responses without having entered the return code first. However, if they clicked the "Save & Return Later" button again on the survey after returning, then the next time they return to the survey, it would correctly require that they enter a return code. This does not occur for follow-up surveys but only for public surveys with "Save & Return Later" enabled using return codes.

- Bug fix: If the feature "File Upload field enhancement: Password verification & automatic external file storage" is enabled for the system and for a given project, a file uploaded into a File Upload field in the project would be stored on the external server mistakenly using the user's filename of the file rather than the filename of the file as it is stored in the backend of REDCap. This could potentially cause naming conflicts and prevent the file from being stored successfully on the external server. It will now store the file on the external file server using REDCap's backend "stored_name" filename for the file.

- Bug fix: If entering a value on a data entry form for a field that is designated as a Secondary Unique Field, in which a value is entered that duplicates a value in another record in the project, if the user clicks the Enter key on their keyboard after typing the value (instead of clicking outside the field or clicking the Tab button), it would correctly display the error dialog popup about the duplicate value, but

the dialog would mistakenly not be able to be closed, thus forcing the user to reload the page and potentially lose any data entered thus far on the page. (Ticket #79910)

- Bug fix: When importing data via the API or Data Import Tool, an alert might not get sent/scheduled for any records that are being created during the data import if the data being imported is expected to trigger an alert. This does not affect existing records but only records that did not exist prior to the data import.

- Various fixes and updates for the External Module Framework.

- Bug fix: The Configuration Check page in the Control Center was mistakenly noting that the PHP cURL extension was "recommended" when it should instead state that it is "required". This is because so many major features in REDCap rely on cURL specifically. The warning for cURL on the Config Check page has now been modified accordingly to accurately reflect this. (Ticket #80121)

- Bug fix: The REDCap hook named "redcap_survey_complete" would get mistakenly called when a survey participant would attempt to return to a completed survey that has the "Save & Return Later" option disabled - i.e., when it displays the message "Thank you for your interest, but you have already completed this survey". (Ticket #80109)

- Bug fix: When exporting data in CDISC ODM XML format, in certain situations, the resulting XML might mistakenly omit the ending ODM tag - e.g., "</ODM>". (Ticket #80084)

- Bug fix: When a calculated field exists on a repeating event and its calculation references fields on the same event, in which one or more of those fields exist on instruments that are not designated for that event, then while the calculation would work correctly when viewing the calc field on a survey or data entry form, it would mistakenly return a ""/blank value for the calc field when performing a data import or running Data Quality rule H. (Ticket #79874)

- Bug fix: The text for the confirmation email set at the bottom of the Survey Settings page for an instrument in the Online Designer would mistakenly have extra line breaks added between all the text if the email text was saved and then the page was re-opened later and saved again, thus adding more extra space each time. (Ticket #79836)

- Bug fix: If a custom Data Quality rule has logic that contains a field that is utilized in both a repeating and non-repeating context, especially for a longitudinal project, then it might not return all the correct discrepancies. (Ticket #80102)

- Bug fix: When viewing the "Stats & Charts" page for a user-defined report (i.e., not report A or B) that has filter logic defined, the "missing" count displayed in the descriptive stats table for a given field might mistakenly be a negative number. (Ticket #79994)

- Bug fix: If using "LDAP" or "LDAP & Table-based" authentication, any user containing an apostrophe in their LDAP username would mistakenly not be able to be added as a user on a project, in which it would display a popup error message when attempting such. (Ticket #79647)

Version 9.8.0

- Change: The "Archived" project status has been removed and converted into a built-in Project Folder named "My Hidden Projects", as now seen at the bottom of each user's My Projects page. If users wish to hide any projects from their My Projects list, they may click the Organize button on that page and place the projects into that new Project Folder. NOTE: Any already-archived projects will be automatically placed there and will have their project status set as "Analysis/Cleanup" to match the projects' general behavior prior to the upgrade.

- Change: The "Inactive" project status has been renamed to "Analysis/Cleanup" status to help reinforce that cleaning and analyzing the data is the next logical step after data collection in Production status.

- Change: New records can no longer be created while in "Analysis/Cleanup" status. If users wish to create records, the project must be moved back to Production status.

- REDCap now incorporates the use of Webpack and NPM to better keep front-end packages up to date more easily and also to help bundle many of them automatically.

- Each REDCap page now loads the three JS files /Resources/webpack/js/bundle.js, /Resources/js/Libraries/bundle.js, and /Resources/js/base.js. The libraries jQuery, Bootstrap, etc. are no longer included in base.js but are now inside either file named bundle.js.

- If you are a developer and have an external module that references a JS or CSS file from REDCap core (as opposed to an asset bundled with your module), you should check your module code because you may need to modify the path for those files for REDCap 9.8.0+.

- The global function files ProjectGeneral/form_renderer_functions.php and Surveys/survey_functions.php have had their content removed and moved into classes as static methods. These files will still exist until the end of May 2020 in Standard Release, but in releases afterward they will be completely removed. If a plugin, hook, or external module includes/requires these files in a version of Standard Release prior to the end of May 2020, a note at the top of the project page will be displayed to inform the user/admin/developer that it is no longer needed to include/require these files and that those references should be removed from the custom code being called on that page.

- The endpoint "/PDF/index.php" has been removed and has now been replaced with "/index.php?route=PdfController/index". The developer method REDCap::getPDF() still works exactly the same way as in previous versions.

- Bug fix: If a user has "No access" data entry form level privileges for the first instrument in a project, the Data Search feature on the "Add/Edit Records" page would mistakenly not include the record ID field in the search. (Ticket #80282)

- Bug fix: If a checkbox field exists on a repeating event or repeating instrument and is utilized in a calculation or branching logic, in which the field is referenced on another repeating instance than the current repeating instance, then while the checkbox's checked value will save correctly, if a field choice is unchecked later, it might mistakenly not clear/delete the checked value successfully. (Ticket #78956)

- Bug fix: If using "LDAP" or "LDAP & Table-based" authentication, any user containing an apostrophe in their LDAP username would mistakenly not be able to be added to a user role in a project, in which it would fail silently when attempting to add a user to a role. (Ticket #79647)

- Bug fix: If a user attempts to add a field comment to a field on a data entry form prior to creating the record (via Save button), when the user clicks the "Save and then open Field Comment Log" button to reload the page, the cursor's focus might mistakenly be on a field on the form underneath the dialog rather than inside the dialog, possibly causing the user to get stuck and not be able to enter a field comment successfully. (Ticket #80511)

- Bug fix: When clicking the Compose Survey Invitations the first time on the Participant List page in a project, it might mistakenly not load the list of participants to email inside the popup, but it would load it successfully if the popup was closed and then reopened. (Ticket #80584)

- Bug fix: A database query would fail invisibly but do no harm whenever a record is renamed in a project. (Ticket #80895)

- Bug fix: A database query would fail invisibly but do no harm whenever previewing a survey theme in the Online Designer. (Ticket #80940)

- Bug fix: A database query would fail invisibly but do no harm whenever viewing a survey response on a data entry form. (Ticket #80901)

- Bug fix: In a multi-arm longitudinal project that has record auto-numbering disabled, if the record names contain non-Latin/multi-byte characters, then the record names would mistakenly get scrambled whenever rebuilding the record list. (Ticket #74092)

- Bug fix: A database query would fail invisibly in certain scenarios surrounding the piping of repeating instances, which might cause the piping not to work correctly. (Ticket #80901)

- Change: The Python code generated by the API Playground has been changed/improved to better handle JSON-formatted outputs.

- Bug fix: When performing a data import (via API or Data Import Tool) for a multi-arm project, in which a record is being imported into multiple arms during the import, the record might not initially appear as if it has been created in the subsequent arms when viewing the Record Status Dashboard (even though it had been created in the arm correctly). Note: This issue would automatically resolve itself within five days of the import. (Ticket #55039)

- Bug fix: When using the randomization module in a project, the act of randomizing a record does not trigger any Alert & Notifications if an alert was set to be triggered based on the randomization field or strata fields having their values changed. (Ticket #80985)

- Bug fix: When using the randomization module in a project, the act of randomizing a record does not trigger the REDCap hook "redcap_save_record".

- Bug fix: If survey notifications have been enabled on a survey that is a repeating instrument or is on a repeating event, then the link back to the survey response on the data entry form would mistakenly always point back to the first instance of that instrument rather than to the correct instance. (Ticket #81009)

- Bug fix: A database query would fail invisibly in certain API methods being called. (Ticket #81041)

- Bug fix: A database query would fail invisibly in very specific occasions when using the Online Designer to add/edit fields. (Ticket #81020)

- Bug fix: A database query would fail invisibly to the redcap_log_view_requests table when a user is logging in to REDCap. (Ticket #81056)

Version 9.8.1

- Bug fix: When calling the API method "Export Metadata (Data Dictionary)" and providing values for the "fields" parameter, it would mistakenly ignore that parameter unless the "forms" parameter was also provided with a value. Bug emerged in the previous release.

- Change: The downloadable Python example code provided in the API Playground has been improved.

- Bug fix: The plain text section of outgoing emails (which is not ever displayed by most email clients unless they do not support HTML email) would mistakenly have links converted into text and might have unnecessary tabs or line breaks. Most extra tabs and line breaks have been removed from the plain text section of emails, and all links in the email body will have their URL extracted and placed in parentheses directly following the link text so as not to lose that information. (Ticket #80878)

- Bug fix: The redcap_connect.php file was mistakenly not returning an HTTP 500 status error in the incident that the database connection fails. Following the upgrade to this version, REDCap will prompt administrators to replace their redcap_connect.php file.

- Bug fix: If a survey participant partially completes a survey that has the "Save & Return Later" option enabled, the mechanism to send an email to the participant after clicking the "Save & Return Later" button would mistakenly throw a JavaScript error and not send the email. (Ticket #81287)

- Bug fix: Certain tables displayed throughout a project, such as in the Record Status Dashboard, reports, etc., might mistakenly not have their table header float correctly when scrolling down a long page, in which a duplicate table header might appear strangely at the bottom of the page instead. Bug emerged in REDCap 9.8.0.

- Bug fix: When using a Super API Token to create a new project via the API, it would mistakenly thrown a fatal PHP error. Bug emerged in REDCap 9.8.0.

- Bug fix: If still using the old bit.ly (j.mp) URL shortener service for public surveys (instead of the newer https://redcap.link URL shortener), then when fetching a short survey link on the Public Survey Link page, it would appear to spin forever and never return the shortened URL. This is due to BITLY changing how their API web service works.

- Bug fix: The new database table redcap_projects_user_hidden (added in v9.8.0) mistakenly did not have the table collation explicitly set, which could cause it to be set to an undesired value.

- Bug fix: Some reports and data quality rules in longitudinal projects might run 2x-10x slower than expected in certain situations, such as if a field in the report filter logic or DQ logic does not have a prepended event name or if the report filter has "all events" selected for a filter field drop-down. The

slowness is especially pronounced in projects having large numbers of events defined and/or a large amount of records in the project. (Ticket #79830)

- Bug fix: When viewing the participant list of a longitudinal project containing multiple arms, the paging drop-down list for the participant list would mistakenly provide an incorrect number of participants for the given survey/event and might not be able to display subsequent pages in the participant list after changing the paging drop-down list to select another page to view. (Ticket #81118)

- Bug fix: When viewing a drop-down field with auto-complete enabled, depending on the labels of the drop-down choices, some choices might mistakenly wrap their text to the second line inside the drop-down. (Ticket #81340)

- Bug fix: If an administrator is using the "View as [user]" feature in a project in which the user selected has had their access expired in that project, it would mistakenly display the error message to the admin telling them that their user rights in the project have expired, thus preventing them from doing anything in the project, including preventing the admin from even disabling the "View as [user]" feature. (Ticket #81536)

- Bug fix: If a project does not have record auto-numbering enabled, and the record ID field has min/max validation, then the min/max validation would mistakenly not be applied when a user is entering a new record name via the Record Status Dashboard or Add/Edit Record page. (Ticket #81117)

Version 9.8.2

- Critical bug fix: When collecting data using a public survey where multiple participants are entering data near-simultaneously (i.e., submitting the survey within the same fraction of a second), some scenarios may arise in which those multiple responses could get mistakenly merged together as a single record rather than as separate new records. When this occurs, it appears in the logging that one participant has created the record while another participant modified the record afterward, in which it should instead log the events as two separate "create response" events. It is difficult to know when this kind of incident has occurred, and if discovered, might take some work (using the Logging page as a reference) to split the record back into separate proper records and resave them. While this issue occurs very seldom, the worst-case scenario can be if the survey allows the participant to download their responses as a PDF or have their responses emailed to them after completing the survey, in which it might possibly result in a privacy leak if private and/or identifying information (e.g., PHI) has been entered on the survey. (Ticket #81104, #81559)

- Bug fix: Any REDCap plugins or module pages that utilize the HtmlPage::PrintHeaderExt() method would see the main DIV on the page mistakenly left-aligned when it should instead be centered on the page.

- Bug fix: A database query would fail invisibly but do little harm when importing data to a project via the REDCap Mobile App. (Ticket #81815)

- Bug fix: If the e-Consent Framework is enabled on a survey that is a repeating instrument, in which the first name, last name, and/or date of birth fields (designated in the e-Consent Framework options) also exist on that same survey/instrument, then those name/DOB values would mistakenly not pipe correctly

when REDCap adds them to the footer of the e-Consent PDF and also to the Identifier column in the PDF Archive table in the File Repository. Unfortunately, it is not possible to fix the missing piped values for survey responses that have already gone through the e-Consent process prior to this bug fix. (Ticket #81790)

- Bug fix: The IE-specific Conditional Comments to detect Internet Explorer 9 (e.g., <!--[if IE 9]>) were mistakenly not formatted correctly and might cause some users using Internet Explorer to have issues loading pages.

- Bug fix: When exporting a Project XML file for a project via the API, the resulting XML file would mistakenly be missing a lot of the project settings, such as surveys, Alerts & Notifications, Data Quality rules, reports, etc. (Ticket #81879)

- Bug fix: A link in the "Piping" section of the "Help & FAQ" page would point to a non-existent page on the Vanderbilt REDCap server.

- Bug fix: When editing an alert and changing Step 1A from the second option (form save + conditional logic) to the third option (only conditional logic), it would mistakenly not save the alert correctly and might cause the dialog not to reload properly when editing that same alert again later.

Version 9.8.3

- Bug fix: When using the [previous-event-name] and [next-event-name] Smart Variables when prepended to field variables in piping, calculations, or logic, they might mistakenly point to the previous/next designated event of the current instrument rather than the previous/next designated event of the field to which the Smart Variable is prepended. Note: This does not affect [previous-event-name] and [next-event-name] when they are used as standalone without being prepended to a field. (Ticket #81976)

- Bug fix: If Twilio SMS and Voice Call Services have been enabled at the system level on the Modules/Services Configuration page in the Control Center, but they have been set to "No, hide all information about Twilio services" for the setting "Display information about Twilio services to all users on Project Setup page in a project?", then users would mistakenly still see the SMS and Voice Call options in the alert setup dialog when creating a new alert on the Alerts & Notifications page.

- Bug fix: When viewing Report B for a project that contains repeating instruments, the "total number of records queried" in the report might mistakenly be incorrect and not match the "number of results returned".

- Bug fix: When downloading a PDF of an instrument or survey, it would mistakenly display the project title as the PDF header instead of the survey title or instrument title. Bug emerged in REDCap 9.8.0. (Ticket #82070)

- Bug fix: When a project is using Twilio telephony services for Alerts & Notifications but not for surveys, if someone received an SMS message from an alert being triggered and responded back to it, it would then respond back to the person saying that they need to enter a valid survey code. This is confusing if the Twilio functionality is not being utilized for surveys. Instead, in this case it will return another

message stating that the phone number is not being monitored, thus implying that replying to it will do nothing.

- Bug fix: When a project is using Twilio telephony services for Alerts & Notifications but not for surveys, the Configure Twilio Settings dialog on the Project Setup page would mistakenly always force the user to select at least one survey invitation type checkbox, even when not using Twilio for surveys.

- Bug fix: When exporting data to SAS, it might throw an error when loading the CSV data into SAS in some cases if a field variable name ends in a number. Additionally, if the project is utilizing Missing Data Codes, it might throw an error on a numerical field if some of the Missing Data Codes are non-numerical.

- Bug fix: Custom Record Status Dashboards that are set to sort by a field's value would mistakenly sort in a case sensitive manner when instead it should be sorting in a case insensitive manner. (Ticket #82092)

- Bug fix: When clicking the "All Status Types" link on the Record Status Dashboard, it would mistakenly hide the [+] buttons next to the status icons of repeating instruments. Instead they should remain displayed. (Ticket #82092)

- Bug fix: If a survey participant partially completes a survey that has the "Save & Return Later" option enabled, the mechanism to send an email to the participant after clicking the "Save & Return Later" button would mistakenly throw a JavaScript error and not send the email. This bug was thought to have been fixed in REDCap 9.8.1 but mistakenly was not. (Ticket #82158)

- Bug fix: If custom "Help & FAQ" text has been defined, then the navigation bar would mistakenly obscure the custom text on the "Help & FAQ" page. (Ticket #82192)

- Bug fix: When a production project is in draft mode and a user deletes an entire instrument in draft mode, it would mistakenly delete any Descriptive field attachments that belong to fields on that instrument from the live version of the instrument in production, thus permanently losing the attachments. (Ticket #82322)

- Bug fix: When a survey participant is viewing their Survey Queue, in which it contains a repeating survey, the "Take this survey again" button next to the repeating survey would mistakenly not be visible in the survey queue when viewing the page on a mobile device with a narrow screen. (Ticket #82335)

Version 9.8.4

- Major bug fix: If running certain versions of PHP (PHP 5.5 and 5.6 are suspected), then no pages will load and thus will throw a fatal PHP error when navigating into a REDCap project. (Ticket #82421)

Version 9.8.5

- Major bug fix: If a multi-arm longitudinal project is collecting data via public surveys across multiple arms at a time, in which each public survey has its own URL that corresponds to a distinct arm, then if survey participants are submitting a survey at near the same time but for a different arm, then it is

possible that those two responses might mistakenly get saved with the same record name, even though the records exist in different arms. This is easily remedied by renaming the record in one of the arms afterward, but it may be hard to detect when it occurs and might be confusing for users when it does.

- Major bug fix: If a user in a longitudinal project clicks the "Delete data for this form only" button at the bottom of a data entry form, in which multiple instruments on the current event contain data for the current record, if all the data on that event had been imported via data import *and* no values for form status fields were imported during the data import process *and* no user ever clicked a Save button on an instrument in that event after the import was performed, then all the data on all instruments in that event would mistakenly get deleted, when instead it should only delete the data from the current instrument.

- Bug fix: When using the Twilio telephony services in a project, specifically for surveys, if someone replies back to an initial SMS message they received in order to begin a survey, it might mistakenly reply back to them saying "Auto-Reply: This SMS phone number is not monitored".

- Bug fix: If the Twilio telephony services have been enabled at the system level but have been set to be hidden to normal users on the Project Setup page, then even though Twilio had been enabled for a given project, it would still hide the Twilio option to the user on the Project Setup page. It now displays it if it is already enabled for the project. Additionally, if an administrator was using the "View project as user" setting and impersonating a project user with Project Design/Setup privileges, they would still see the Twilio option on the Project Setup page even when Twilio is not enabled yet in the project, in which the Twilio option is set at the system level to be hidden from all normal users.

- Change/improvement: If MariaDB 10.4.6 is being used, which is known to have issues regarding the "optimizer_switch" configuration value and thus sometimes not returning some query results correctly from the database, a warning message will be displayed in the Control Center recommending that MariaDB be upgraded to a newer version. (Ticket #72984)

- Bug fix: When entering conditional logic for Automated Survey Invitations or adding branching logic via the Online Designer, if the logic contained certain Smart Variables (.e.g., [survey-date-completed]), the logic check status displayed immediately below the logic text box would mistakenly state "Error in syntax" even when the logic's syntax is correct.

- Bug fix: In certain cases, if a large amount of external modules have been installed at the system level in REDCap, it could prevent the REDCap installation from reporting its weekly stats to the REDCap consortium.

- Bug fix: If a large amount of HEAD requests hit a survey page, it might cause a disproportionate amount of load to be put on the web server and database server. (Ticket #82501)

- Bug fix: If questions are being prepopulated on a survey using the @DEFAULT action tag, in which those fields are also being piped to other places on that same survey page, then the piping would mistakenly not occur when the survey page loads but only after one of the piped fields' values are modified on the page. Bug emerged in REDCap 9.8.0. (Ticket #82678)

- Bug fix: When clicking the "+ Add new" button to add a new repeating event for a record on the Record Home Page in a longitudinal project, it might cause the entire instrument/event table to disappear from the page. Bug emerged in REDCap 9.8.0.

- Bug fix: The advanced function isblankormissingcode() would mistakenly not work correctly when used in the equation of a calculated field. (Ticket #82653)

- Bug fix: When a survey participant attempts to close their browser window by clicking the "Close survey" button on the page after completing the survey, if their browser prevents the tab/window from being closed, then the text displayed on the page afterward would mistakenly always be in the language of the system-level language setting rather than the project-level language. (Ticket #82631)

- Bug fix: The generic "Alert" jQuery UI dialog would often have its title and/or buttons displayed in hard-coded English rather than using the language file's text for that particular project in which it is being displayed. (Ticket #81638)

- Bug fix: Dots/periods were mistakenly allowed to be used in the raw coded values for Missing Data Codes. Dots/periods are not compatible to be used in checkbox codings and thus cannot be used as Missing Data Codes. (Ticket #82476)

- Bug fix: When using a field from a repeating instrument in the logic of a Data Quality rule, in which the logic is trying to find instances of the field where its value is blank (e.g., [field] = ""), it might mistakenly not return the expected results in the discrepancy list. (Ticket #82201)

- Bug fix: When using Data Quality rule I to find Missing Data Codes, the rule would mistakenly ignore checkbox fields and not include them in the results. (Ticket #82636)

- Bug fix: When using the "View project as user" feature, the left-hand menu would mistakenly display all the reports in the project rather than displaying only the reports to which the user being impersonated has access to view. (Ticket #82697)

- Bug fix: When setting up Randomization in a project that is not longitudinal and then later the project is converted to a longitudinal project, it would cause issues and might prevent the randomization process from working properly. (Ticket #82757)

Version 9.9.0

- Improvement/change: Users are now able to utilize dots/periods/full stops in the codings of choices for checkbox fields. In previous versions of REDCap, this was not allowed for checkbox fields. (Ticket #83002)

- Improvement/change: By popular demand, users may once again utilize dots/periods/full stops in Missing Data Codes. They are no longer forbidden. They were originally allowed for Missing Data Codes, but then removed in REDCap 8.5.0. Now that checkboxes can have dots/periods in their codings as of v9.9.0, it is no longer an issue for Missing Data Codes to use them too. (Ticket #83002)

- Bug fix: When using the Dynamic Data Pull (DDP Custom) module and clicking the Save button in the adjudication dialog, it would correctly save the data but might mistakenly crash and display an error

message in the dialog afterward. Note: This issue does not affect the CDP or Data Mart modules. (Ticket #82879)

- Bug fix: The Missing Data Codes in the Additional Customizations popup on the Project Setup page could mistakenly be modified or removed while collecting data in production, which could cause issues with the saved data during analysis and in reports. It now displays a warning prompt to the user beforehand to inform them that re-labeling or removing Missing Data Codes after data collection has begun could cause data issues, but they will still be allowed to make modifications to the codes if they wish. (Ticket #82977)

- Bug fix: When using Missing Data Codes in a project and selecting a missing data code for a radio button field on a data entry form, the missing data codes popup would mistakenly not close after the code had been clicked. (Ticket #82977)

- Bug fix: When exporting data to Stata, it would mistakenly output the incorrect syntax in the .do file for text fields with datetime_seconds validation. (Ticket #83001)

- Bug fix: When using a Super API Token for the API method "Export REDCap Version", it would mistakenly fail with a fatal PHP error. Bug emerged in REDCap 9.8.0. (Ticket #83068)

- Bug fix: If upgrading to 9.5.24 LTS or higher or upgrading to 9.8.5 Standard or higher, the upgrade SQL script might throw a MySQL error during the upgrade process due to a foreign key constraint on a database table. (Ticket #83098)

- Bug fix: Slider fields that are vertically aligned and have the "Display number value (0-100)?" option enabled will mistakenly display the number value field too narrowly and thus will not display the full value if its value is "100". (Ticket #83234)

- Bug fix: If running REDCap on the Google App Engine platform and the email quota has been exceeded when sending outgoing emails, it would mistakenly crash with a fatal PHP error. It now continues to run and finish the script instead of halting the script with an error.

Version 9.9.1

- Improvement: A new send-time option has been added when setting up Automated Survey Invitations and Alerts & Notifications. When defining when the ASI/Alert should be sent, the option "Send after a lapse of time" has a new setting added so that, if desired, the user may set the time lapse relative to the value of a date or datetime field in the project. In previous versions, the time lapse setting could only be set relative to the time in which the ASI/Alert was triggered. That is still an option, but now users may also opt to send the ASI/Alert a certain amount of time either before or after the date/time of a specific field. This new setting will allow users to have greater control with regard to setting when ASIs/Alerts will be sent without getting too complicated in their setup, such as having to use complex logic (with datediff, etc.).

- Change: For external module and hook developers, the location of where the redcap_save_record hook is called has changed very slightly. In previous versions, that hook was called after a record had been saved and also after the following things: the triggering of Automated Survey Invitations, of Alerts

& Notifications, and of the Data Entry Trigger. This has now been changed so that the hook is still called immediately after the record has been saved but *before* ASIs, Alerts, and DETs are called. This does not have any negative consequences but comes with the advantage of allowing module/hook developers to manipulate data via the redcap_save_record hook so that the data may then be utilized via piping or conditional logic by ASIs, Alerts, and/or DET afterward. (Ticket #83095)

- Bug fix: Certain menu toggles, such as the "hamburger menu" at the top right of the My Projects page when using a mobile device, were not working correctly due to a breaking change in jQuery 3.5.0 in REDCap 9.9.0 Standard and 9.5.25 LTS. A makeshift patch has been applied to fix this in lieu of a proper fix from jQuery. (Ticket #83490)

- Bug fix: When creating a new record via the Schedule module in a project, especially if the user creating the record belongs to a Data Access Group, the record would mistakenly not appear in record lists, record status dashboards, or reports for up to several days due to a record list caching issue, in which the cache was not getting updated appropriately when creating the record via the Scheduling module. (Ticket #83478)

- Bug fix: When using an API script to send the "authkey" value for an Advanced Link type of Project Bookmark, the script would mistakenly fail and would have a fatal PHP error returned to it. (Ticket #83498)

- Bug fix: On the Data Access Groups page in a project, the "Table not displaying properly" link in the DAG Switcher section might mistakenly be superimposed onto the instruction text in certain circumstances. (Ticket #83416)

- Bug fix: If some Alerts & Notifications had been created in a longitudinal project, in which recurring alerts had been scheduled for some records, it might prevent a user from deleting an event on the Define My Events page due to foreign key restrictions in the back-end database. (Ticket #83438)

- Bug fix: When moving a project to production and selecting the option to "delete all data", if the Survey Queue is enabled in the project and some existing records had had a survey queue link generated for them, then even though the records would correctly get deleted when moving to production, the survey queue links for those deleted records would mistakenly not get cleared out of the back-end database and thus could mistakenly get reused by new records. (Ticket #83341)

- Bug fix: When using a Missing Data Code value of "0", "1", or "2" in a project, the Missing Data Code would mistakenly get used on the Form Status Complete field on any given instrument and thus cause issues with being able to set that field's value correctly. (Ticket #83423)

- Bug fix: When branching logic or a calc field references a checkbox choice that has been hidden by the @HIDECHOICE action tag, it would mistakenly display a branching logic/calculation error alert on the survey page or data entry form. (Ticket #83376)

- Various updates and fixes for the External Module Framework.

- Bug fix: If an Automated Survey Invitation has conditional logic using the datediff() function with "today" or "now" as a parameter, in which "today" or "now" are not in lowercase form, the ASI Datediff cron job would mistakenly not run for these ASIs, thus causing invitations not to get scheduled at the appropriate time.

- Bug fix: The cron job for scheduling Automated Survey Invitations that contain datediff+today/now in their conditional logic and are set to send "Immediately" would mistakenly send invitations immediately in real time by that cron, which can be a slow process and delay the scheduling of other invitations in some situations. Instead, the cron job should have been only scheduling the invitations and then letting the email-sending cron job actually send those scheduled invitations. (Ticket #83596)

- Bug fix: When entering an X-event-name Smart Variable into conditional logic for an ASI, report filter, etc., when validating the logic, it might mistakenly return a confusing error saying that the syntax is not valid even when it is.

- Bug fix: If one or more External Modules have been enabled in a project and have a link displayed for a module page in the "External Modules" section on the project's left-hand menu, then if Report Folders have been created in the project and a user toggles a Report Folder to open or close the folder, it would mistakenly cause the reports section on the left-hand menu to be moved below the "External Modules" section when it should instead remain above it.

- Bug fix: For a project where Missing Data Codes are defined, when exporting data to a stats package (R, Stata, SAS, SPSS) when the export file contains checkbox fields and the report being exported is set to include the Missing Data Codes, the extra fields/columns for the Missing Data Codes for the checkbox would mistakenly not get added to the stats package syntax file, even though they get added to the CSV data file, thus causing the data not to load properly into the stats package because of the column number mismatch. (Ticket #83329)

- Bug fix: If running Data Quality rule A or B in a project, in which a blank field has branching logic based off of another blank field, then in certain cases it might not return discrepancies correctly for all the fields with blank values. (Ticket #82655)

- Bug fix: When downloading a PDF of an instrument, sometimes rich text might mistakenly not display well in the PDF, such as paragraphs and tables being too far spaced out.

Version 9.9.2

- Improvement: New PDF customization to hide the Record ID from the PDF header. In the "PDF Customizations" section of the "Additional Customizations" dialog on the Project Setup page, users may set this option to display or hide the record name in the top header of every PDF page when downloading a PDF with data for a record. This is a project-level setting, so setting it applies to all PDFs generated for records in the project.

- Improvement/change: A new "Clear the Record List Cache" button has been added to the Other Functionality page in a project, in which this button is only available to administrators to use. If there appear to be records missing from the project (in reports, record status dashboards, or elsewhere), then the Record List Cache (a secondary list of all record names) might be out of sync and thus might need to be cleared. Clearing the cache will cause the Record List Cache to regenerate and bring back records that appear to be orphaned/missing in the project. Clicking this button will clear the cache and fix the record list. NOTE: This is normally not needed, but there have been instances in which unknown factors caused the Record List Cache to get out of sync, which could cause major problems for some projects.

- Improvement: A new field "Preferred language" has been added to projects that are created as Clinical Data Mart projects. This field will serve as the location where a patient's preferred language will be imported as freeform text (e.g., "English") from the EHR. If a Data Mart project was created in an earlier version of REDCap, this field can simply be added after the fact by adding the variable name "preferred_language" as a Text field with no field validation on the Demography data collection instrument.

- Improvement/change: The sending of a survey confirmation email now gets logged on the project Logging page when a confirmation email has been set to send to a survey participant after having completed a survey, in which the logged event will note the record name, the To address, the From address, the email subject, and whether or not the email contained attachments (including the PDF of the participant's survey responses).

- Changes for long-standing quirks with calc fields and branching logic

      Change: In previous versions, calculated fields could only utilize either numeric fields or date/datetime fields in the calculation. Now non-numeric fields may be used, most notably inside IF statements. For example, if ([field1] = "A", 0, 99).

      Change: In previous versions, using > or < in branching logic would not always work as expected. For example, [a] > [b] would have to be formatted as [a]*1 > [b]*1 to work correctly 100% of the time, which is not intuitive. This is no longer required, in which [a] > [b] will work as one would expect in branching logic. Note: This does not apply to calc fields, which have never had this problem.

      Change/improvement: The datediff() function used in branching logic and calc fields no longer requires the date format parameter ("ymd", "mdy", "dmy"). This was required for datediff() in calc fields and branching logic but was not required elsewhere, such as in report filters, DQ rule logic, ASI/Alert conditions, etc. The $returnSignedValue parameter (if provided) can now be provided as the fourth parameter - e.g., datediff([dob], "today", "y", true). NOTE: Both of the date/datetime fields used in the datediff function must still be in the same date format ("mdy", "dmy", or "ymd"), so that is still a requirement.

- Bug fix: If the foreign key of a database table is not defined correctly in the REDCap database, the SQL provided by the Control Center warning "Your REDCap database structure is incorrect" would mistakenly fail to fix the issue and would keep appearing after being run. It now provides the correct SQL to run in order to fix the database structure issues. (Ticket #83951, #84054)

- Bug fix: When using Twilio Telephony Services to send SMS messages from a Short Code phone number, it would fail to send the messages because REDCap would mistakenly prepend a "+" to the Short Code when attempting to send it via Twilio's API.

- Bug fix: The "redcap_survey_complete" hook would mistakenly get called when a survey participant loads their survey queue when navigating directly to their queue as opposed to navigating there after completing a survey.

- Bug fix: When using the Dynamic Data Pull (DDP) Custom module to import data from an external data source, the cron job that runs routinely to import data into projects might mistakenly crash with a fatal error.

- Bug fix: The REDCap installation page would mistakenly crash with a fatal PHP error and would prevent anyone from going through the full installation process. Bug emerged in the previous version. (Ticket #84111)

- Change/improvement: Added "PARTICIPANT OPTED OUT" as a new valid option that will be logged in the Survey Invitation Log when an SMS fails to be sent via Twilio telephony services because a blacklist rule is violated (as noted by the Twilio service). Documentation regarding how a participant may opt out of receiving SMS messages from Twilio can be found here and here.

- Bug fix: If an alert on the Alerts & Notifications page contains attachment files in which two or more attachments have the exact same file name, then it would mistakenly not attach all the files to the email but only the last one listed. (Ticket #83903)

- Bug fix: The sum() function would mistakenly not work as expected and would return a blank value for a calculated field if one or more of the fields used inside sum() have a blank value. (Ticket #84284)

- Bug fix: In certain cases, if new records are being created in a project while the project's Record List Cache is being built, it might mistakenly cause new records to appear orphaned (as if they were never created) and not appear in reports, dashboards, etc. in the project for a few days (or until the cache is rebuilt). (Ticket #84159)

- Bug fix: When performing a data import into a repeating instrument, in which all the fields in the row in the data import file have blank values (excluding the record id field, redcap_repeat_instance field, and redcap_repeat_instrument field), it would return a confusing error message and prevent the import from completing. (Ticket #84359)

- Bug fix: When exporting a Project XML for a longitudinal project, in which the project contains reports with report filters that have the "in All Events" drop-down option selected for a given filter field, the resulting XML file would contain advanced filter logic that would work successfully in a new project created from the XML file, but if a user went to modify that report afterward in the newly created project, REDCap would note that the logic was not syntactically correct (even though the filter logic would work correctly when displaying the report). This is due to the fact that in the XML file it was mistakenly not prepending "[event-name]" to all fields in the advanced logic that did not already have a prepended unique event name. For longitudinal projects with advanced filter logic, all fields must have a prepended event name or else must have [event-name] prepended to the field.

- Bug fix: If the setting "Email to send email-failure errors" has been defined for an alert in Alerts & Notifications, the email received after an error occurs would mistakenly not contain the real error message of why the alert did not send and also would not contain the alert number of the alert being triggered. (Ticket #84004)

- Bug fix: When running Data Quality rule D ("Field validation errors (out of range)"), it would mistakenly return discrepancies for valid number values if a field had "Number (comma as decimal)" validation. (Ticket #84004)

Version 9.10.0

- Major bug fix: When submitting a one-page public survey, in some specific scenarios after completing the survey, a participant could incidentally cause the survey to get resubmitted (minutes, hours, or even days later), thus creating a duplicate record in the project. This appears to occur mostly for certain mobile devices, in which returning to a tab containing the completed survey might mistakenly cause the survey to get resubmitted somehow. (Ticket #75626)

- Major bug fix: If a calculated field's equation contains a field with "Number (comma as decimal)" validation or "Number (X decimal places - comma as decimal)" validation, the calculation would mistakenly fail and would often result in an error prompt on the page stating that a syntactical error exists in the calculation, which is untrue. Bug emerged in REDCap 9.9.1. (Ticket #84622)

- Change: The project ID (PID) of a project is now displayed immediately after the project title at the top of every project page. This will make it easier for users to obtain their project's PID when attempting to identify their project to administrators.

- Bug fix: When using the Survey Login and clicking the "Show value" link for one of the login fields on the survey login form, it would fail to remove the password mask from the login field. Bug emerged in REDCap 9.9.0. (Ticket #84417)

- Bug fix: When uploading an MP3 audio file to be embedded in a Descriptive field on a survey page or data entry form, it might mistakenly not play in Internet Explorer.

- Bug fix: If a project is longitudinal and has either repeating instruments or repeating events, in which a field exists on both a non-repeating event/instrument and on a repeating event/instrument, then if that field is used as a report filter, the report might mistakenly return partially incorrect results. Part of this issue was caused by another fix in REDCap 9.9.1 Standard and 9.5.26 LTS, and the other part is a longer-standing issue caused by difficulty in parsing logic referencing different repeating and non-repeating contexts. (Ticket #84330)

- Bug fix: For longitudinal projects, the project Logging page would mistakenly display the name of the first event next to the record name for logged events related to Data Access Group assignments for records. It should not display the event name because assigning DAGs is performed at the record level and not at the event level, so displaying the event name for the logged event is misleading.

- Bug fix: The cron job to routinely reset the record list cache for all active projects was mistakenly not resetting the cache as often as it should.

- Bug fix: If a calculated field's equation contains certain Smart Variables (e.g., [project-id]), when saving the calc field in the Online Designer, it would note that it is syntactically incorrect, which is untrue. (Ticket #84524)

- Bug fix: When importing an instrument from the REDCap Shared Library, in which the instrument contains a checkbox field that is used in branching logic or in calculations in the imported instrument, and also that checkbox field's variable name already exists in the project as an existing variable, then when the variable is being automatically renamed during the instrument import process to prevent a conflict with the existing variable, it would mistakenly fail to perform the renaming successfully for checkbox fields, which require a slightly different syntax when being referenced in calc fields and branching logic.

- Change: If a project contains a large number of users and/or Data Access Groups, it now automatically disables the DAG Switcher feature. This is done because if the table becomes very large, it can cause a major slowdown in the user's browser and possibly cause it to crash. So any projects where Users X DAGs > 10K, the DAG Switcher will be disabled and will not be usable. Also, if a project has a count of Users X DAGs between 5K and 10K, it will still display the DAG Switcher, but it will auto-disable the floating headers and search features on the DAG Switcher table in order to prevent browser slowness. (Ticket #84610)

- Bug fix: The User Whitelist would fail to work when using external authentication methods (e.g., LDAP). (Ticket #83958)

- Bug fix: In the Required Fields dialog on data entry forms and surveys, one of the buttons mistakenly did not have its language abstracted for translation. (Ticket #81638)

- Bug fix: Downloaded PDFs would mistakenly result in the error "AddMBFont: ERROR Encoding [SJIS] Undefine" if the project's "Character encoding for exported files" setting was set to "Japanese (Shift JIS)".

- Bug fix: When exporting data to SAS while using Missing Data Codes in a project, if any fields contain the @NOMISSING action tag, such fields would mistakenly not be made exempt from the Missing Data Codes when importing the data into SAS. (Ticket #83910)

- Change: When exporting data to SAS, the line "OPTIONS nofmterr;" is now added to the SAS script to prevent any formatting issues from throwing fatal errors.

- Bug fix: When rendering a report or performing a data export in which the report contains some report filters, some extra processing was being done unnecessarily that was making the report slower than it should have been. This unnecessary code was removed, which now makes reports load faster (up to 2x faster in some cases) for reports with report filters.

- Bug fix: When a project that has record auto-numbering enabled exceeds 25,000 records in the project, then the text input field that is displayed (in lieu of a drop-down list) on the Add/Edit Records page would mistakenly allow users to free-form type a new record name that might not comply with the record auto-numbering scheme. To prevent this issue, it now checks to ensure the record being typed already exists.