New and updated features coming with the REDCap upgrade from v10.5.1 to v11.3.4 on Nov. 22, 2021:

- **New feature: New logic editor for conditional logic, branching logic, calculations, report filters, etc.** In every place where users might add/edit logic or calculations, the new logic editor will be displayed in a modal dialog to provide a better user experience for entering their logic. The logic editor provides much more space for entering large amounts of logic, including a full screen mode to take maximum advantage of their screen's real estate. It also provides bracket-matching and parentheses-matching where it will highlight a pair of matching brackets/parentheses to make it easier for users to gauge which brackets/parentheses belong together in the logic, thus reducing possible errors in the logic when typing.

- **New feature: Auto-numbering of repeating instances for data imports** - When using repeating events or repeating instruments, it may be difficult when performing dynamic imports of data for these because it is not easily known how many repeating instances already exist in a project for a given repeating event/instrument, thus often forcing users to invent clever ways to determine this, such as performing data exports beforehand and then dynamically determining what the next repeating instance number should be. However, that is no longer necessary. When performing a data import now for a repeating event/instrument, users may use the literal value "new" as the value for the "redcap_repeat_instance" field in their data import. By doing so, REDCap will perform the instance auto-numbering on its own to increment the repeating instances properly based on the highest numbered instance that already exists in the saved data in the project.

- **New feature: New survey option "Save a PDF of completed survey response to a File Upload field"** - On the Survey Settings page in the Online Designer, users may select a File Upload field in the project where a static PDF file of a participant's survey response will be stored immediately after they complete the survey. For longitudinal projects, if the target field exists on multiple events, users may set this feature so that it stores the PDF in the selected field in the current event (default) or else in a specific event in the project.

- **New feature: Field Bank** - When adding new fields via the Online Designer, users will see an "Import from Field Bank" button, which will allow them to search different standardized catalogs of commonly used fields, such as in the U.S. National Library of Medicine catalog. The Field Bank helps users add new fields quickly and easily to their data collection instruments. Over time, more standardized catalogs of fields will be added to the Field Bank.

- **New feature: @INLINE action tag** - Allows a PDF file or image file (JPG, JPEG, GIF, PNG, TIF, BMP) that is uploaded to a File Upload field to be displayed in an inline manner on the survey page or data entry form so that the PDF/image can be viewed by the user or survey participant without having to download it.
    - The PDF/image will be displayed inline on the page immediately above the download link for the field and will be displayed with 100% width by default (i.e., 100% width of the area in which it is contained).
    - Images will be displayed with their native width:height ratio, although PDFs will be displayed with a 300 pixel height by default. If you wish to manually set the width and/or height of the image/PDF, you may put the width/height values inside parentheses after the action tag in the following manner: @INLINE(width) or @INLINE(width,height). The width/height can be a percentage value (e.g., 50%) or a number representing size in pixels (e.g., 400). Thus @INLINE(50%) will display an image at 50% size for the area in which it is contained on the page, and @INLINE(400,100) would display the image always at 400px tall and 100px wide. To make an inline PDF appear taller on the page, you might use @INLINE(100%,600) since 300px is the default height for inline PDFs.
    - The @INLINE action tag also works if the File Upload field is embedded inside another field on the page.

- **New feature: New ":inline" piping option for File Upload fields**
    - If piping using the ':inline' option for a File Upload field, such as [my_field:inline], in which the uploaded file is a PDF file or image file (JPG, JPEG, GIF, PNG, TIF, BMP), the file will be displayed in an inline manner so that it is viewable on the page.

- The ':inline' option DOES work inside emails, so you can pipe a field with ':inline' inside the email body, thus allowing you to display inline images inside survey invitations or Alerts & Notifications.
- The @INLINE action tag does not need to be used on a field in order to utilize the ":inline" piping option.
- Note: Inline images are not able to be displayed inside a downloaded PDF of a survey/instrument that contains data.

- **New feature: Ability to import/export user rights** via a CSV file on the User Rights page - Users can download a CSV file to view all the user privileges of the existing users in a project, including their instrument-level user rights. Users can upload a CSV file to grant new users access to the project and/or to modify the user privileges of existing users, including their instrument-level user rights.
    - New drop-down options on the User Rights page to allow users to perform the tasks listed below using a CSV file in the user interface.
        - Upload users and their privileges
        - Download users and their privileges
        - Upload user roles and their privileges
        - Download user roles and their privileges
        - Upload user role assignments
        - Download user role assignments
    - When using the "Upload Users (CSV)" option on the User Rights page, it now displays a checkbox option in the dialog to allow the user to optionally send an email notification to all new users being added to the project via this import process.
    - **Improvement:** Assign a user to a DAG at the same time as adding the user to the project - Whenever a user is being added to a project via the User Rights page, if Data Access Groups are being utilized in the project, a new option will appear (whether if adding the user with custom rights or if assigning them to a user role) that allows you to assign the user to a DAG at the same time as adding them to the project. This helps prevent a common issue where a newly added user might temporarily have access to the records of *all* DAGs in the project prior to the user being assigned to a DAG immediately after

getting added to a project. By making this two-step process a single step, it avoids possible data access issues for users who need to be assigned to a DAG.

- **New feature: Export Data Quality rule results** - After running a data quality rule, users may export the results/discrepancies of the rule as a CSV file. The CSV file will be structured exactly like a date export/import file, which should allow for faster and easier cleaning of data so that values can be fixed and then re-uploaded as a data import.

- **New feature: Custom offline message for surveys in offline status**- Users can provide custom text that is displayed to participants only when the survey is offline. This custom text will be displayed in place of the default offline text on the survey while the survey is in offline mode. This text can be set at the top of the Survey Settings page.

- **New feature: Survey-level Stop Action controls** (new section on Survey Settings page)
    - **Alternative survey completion text** - Users can optionally set alternative survey completion text that is displayed in place of their standard survey completion text whenever a survey is ended via a Stop Action on any field. This is useful when it doesn't make sense for non-eligible participants to see the same survey completion text as those who completed the survey fully.
    - **Prevent survey responses from being saved if the survey ends via Stop Action** - Users can optionally choose to prevent submitted responses from being saved as data in the project if the survey ends via Stop Action. This is useful if survey administrators do not wish to keep the data for ineligible participants, for example. This means that if a one-page public survey is started but ends via Stop Action, no data from that response will be saved into the project (i.e., no new record will be created), but it will log this event on the project Logging page (so that users are at least aware of this happening despite no data being saved).

        - NOTE: If any data has been saved on the survey instrument for a given record prior to the Stop Action being triggered, that data will be deleted from that instrument. For example, if the survey is a multi-page survey in which data has been entered on previous pages prior to triggering the Stop Action, all data collected thus far in that survey will be deleted as if the survey was never taken. Additionally, if the record does not contain data in any other instruments, the entire record itself will be deleted during this process. If data does exist in other instruments, the record will not be deleted.

- **New feature: Smart Functions**
    - Smart Functions are aggregate mathematical functions that are utilized as Smart Variables. The following Smart Functions exist: [aggregate-min], [aggregate-max], [aggregate-mean], [aggregate-median], [aggregate-sum], [aggregate-count], [aggregate-stdev], and [aggregate-unique]. Each represents the mathematical functions minimum, maximum, mean/average, media, sum, count, standard deviation, and unique count, respectively. Each must have at least one field attached to it that follows a colon - e.g., [aggregate-mean:age]. Multiple fields may be used in each one, which will perform the function over all the data values of all the fields. By default, the functions will utilize all data values for all records in the project. To limit the data values being utilized to a subset of the total project data, see the Smart Variable documentation on how to apply filters, such as attached unique report names, DAGs, and other parameters
        - Note: When using [aggregate-count:record_id], in which "record_id" in this example represents whatever the variable of the Record ID field is, it performs a special count that does not literally count the number of data values but instead returns a count of the total number of records in the project. This is a quick way to display the total record count of the project.
    - Smart Functions can be used anywhere in a project where piping is allowed, and can even be used inside calculations, branching logic, and other conditional logic (report filters, alert conditions, etc.).

- **New feature: Smart Tables**
  - Smart Tables are tables displaying aggregate descriptive statistics in which the results of any or all of the following stats functions can be displayed for one or more fields: minimum, maximum, mean/average, media, sum, count, standard deviation, count of missing values, and count of unique values.
  - Smart Tables are represented with the Smart Variable [stats-table], which accepts as a parameter the variable names (comma delimited) of all the fields to be displayed as separate rows in the table. There is no limit to the number of fields that can be used. For example, [stats-table:field1,field2,field3].
  - By default, all available columns will be displayed in the table and are as follows: Count, Missing, Unique, Min, Max, Mean, Median, StDev, Sum. To display only a subset of the columns, you may provide any of the following designations (comma-separated) that represent a specific column in the table: count, missing, unique, min, max, mean, median, stdev, sum. For example, [stats-table:field1,field2,field3:mean,max].
  - By default, each stats table will have an "Export table (CSV)" link displayed immediately below it to allow users to download the table as a CSV file. But if users wish to hide the export link, they can simply attach ":no-export-link" to the Smart Variable, which will cause the link not to be displayed. For example, [stats-table:field1,field2,field3:no-export-link].
  - Smart Tables can be used anywhere in a project where piping is allowed.
  - Report "description" text now utilizes the rich text editor. Additionally, users may perform piping into a report's description, such as project-level Smart Variables, including Smart Charts, Smart Functions, and Smart Tables.

- **New feature: Smart Charts**
  - Smart Charts are various aggregate plots and charts utilized as different Smart Variables. The following plots are available for use: bar charts, pie charts, donut charts, scatter plots,

and line charts. These are all represented by the following Smart Variables, respectively: [bar-chart], [pie-chart], [donut-chart], [scatter-plot], and [line-chart]. These Smart Variables accept one or more field names and other optional parameters, as described below for each.

- **Bar charts** - Displays a bar chart for a single multiple choice field. It can optionally perform color grouping if a second field (multiple choice only) is provided. The fields must be comma-separated. For example, [bar-chart:field,grouping-field:parameters]. Bar charts have optional parameters that can be applied to alter their appearance. By appending the parameter ":bar-stacked" when two fields are used, the bars in the chart will appear stacked on top of each other rather than side by side. By default, bar charts are displayed with their bars going horizontally, but by appending the parameter ":bar-vertical", the orientation will be changed to display vertically instead.
- **Pie charts** - Displays a pie chart for a single multiple choice field. For example, [pie-chart:field:parameters].
- **Donut charts** - Displays a donut chart for a single multiple choice field.Note: A donut chart is essentially the same as a pie chart but with the center removed. For example, [donut-chart:field:parameters].
- **Scatter plots** - Displays a scatter plot of one number/date/datetime field for the x-axis and a second field (number field only) for the y-axis. (If a second field is not provided, a random value will be assigned for the y-axis.) It can optionally perform color grouping if a third field (multiple choice only) is provided. All fields must be comma-separated. For example, [scatter-plot:x-axis-field,y-axis-field,grouping-field:parameters].
- **Line charts** - Displays a line chart of one number/date/datetime field for the x-axis and a second field (number field only) for the y-axis. It can optionally perform color grouping if a third field (multiple choice only) is provided. All fields must be comma-separated. Note: A line chart is essentially the same as a scatter plot except with dots connected with a line. For example, [line-chart:x-axis-field,y-axis-field,grouping-field:parameters].

- **Color blindness accessibility:** Pie charts and donut charts have the ability for the user to enable color blindness accessibility, via a gray link displayed immediately below each chart, in which it overlays different patterns onto the colored pieces of the chart to make each color more distinct for many types of color blindness. This option to enable color blindness accessibility is stored in a secure cookie on the user's device and will be used to remember this choice anytime a pie/donut chart is displayed on any page for any REDCap project for that REDCap server.
- The colors displayed in each chart/plot are preset and are not modifiable.
- Smart Charts can be used anywhere in a project where piping is allowed *except* for inside the body of outgoing emails.

- **Optional parameters for Smart Functions, Smart Tables, and Smart Charts**
  - There exist various optional parameters that can be used with Smart Functions, Smart Tables, and Smart Charts to either filter the data used in them (e.g., via a unique report name) or to change their appearance (e.g., bar-vertical). See the descriptions for each below, which are all documented in the Smart Variables documentation.
    - **:R-XXXXXXXXXX Unique Report Name** - For Aggregate Functions, Charts, and Tables, filter the data being used by appending a Unique Report Name. Next to each report on the 'My Reports & Exports' page is its unique report name, which has 'R-' following by alphanumeric characters. By default, all Aggregate Functions, Charts, and Tables will use the values of all records in the project, but if a unique report name is appended to any of them, only data from that specific report will be used. Using a report as a surrogate to filter data is a very useful technique of performing complex filtering logic for Aggregate Functions, Charts, and Tables.
    - **:record-name "record-name"** - For Aggregate Functions, Charts, and Tables, filter the data being used to the *current record* by using the literal value 'record-name'. <u>Note</u>: This parameter will only work in a context where a single record is being viewed/accessed, such as on a survey page, data entry form, etc. This

parameter can be used with any of the other parameters except unique report names.

- **:event-name "event-name"** - For Aggregate Functions, Charts, and Tables, filter the data being used to the *current event* (longitudinal projects only) by using the literal value 'event-name'. Note: This parameter will only work in a context where a single record/event is being viewed/accessed, such as on a survey page, data entry form, etc. This parameter can be used with any of the other parameters except unique report names.
- **:unique-event-names Unique Event Names** - For Aggregate Functions, Charts, and Tables, filter the data being used to specific events (longitudinal projects only) by providing an event's unique event name (found on the Define My Events page). You may use one or more unique event names (comma-separated). Note: This parameter can be used with any of the other parameters except unique report names.
- **:user-dag-name "user-dag-name"** - For Aggregate Functions, Charts, and Tables, filter the data being used to the records assigned to the *current user's Data Access Group* by using the literal value 'user-dag-name'. Note: This parameter will only work in a context where an authenticated user belongs to a project and has been assigned to a DAG in the project (this excludes survey pages and public project dashboards). This parameter can be used with any of the other parameters except unique report names.
- **:unique-dag-names Unique DAG Names** - For Aggregate Functions, Charts, and Tables, filter the data being used to the records assigned to specific Data Access Groups by providing a DAG's unique group name (found on the Data Access Groups page). You may use one or more unique DAG names (comma-separated). Note: This parameter can be used with any of the other parameters except unique report names.
- **:bar-vertical "bar-vertical"** - Display a bar chart with the bars going vertically instead of horizontally (the default) by using the literal value 'bar-vertical'. Note: This parameter can be used with any of the other parameters.

        - **:bar-stacked "bar-stacked"** - Only for bar charts using two fields, display the bar chart with the bars stacked on top of one another for each choice. Whereas the default view is that the bars of each field are displayed side by side to show the color grouping. To enable this, use the literal value 'bar-stacked'. Note: This parameter can be used with any of the other parameters.
        - **:no-export-link "bar-stacked"** - Only for bar charts using two fields, display the bar chart with the bars stacked on top of one another for each choice. Whereas the default view is that the bars of each field are displayed side by side to show the color grouping. To enable this, use the literal value 'bar-stacked'. Note: This parameter can be used with any of the other parameters.
        - **NOTE:** Smart Functions/Tables/Charts do not yet work in the REDCap Mobile App; however, it is planned that they eventually will (to a certain degree).
    - **NOTE regarding permissions for Smart Functions/Tables/Charts:**
        - DAG permissions (i.e., filtering out records not assigned to the current user's DAG) are **NOT applied by default** to Smart Charts/Tables/Functions but are only applied when the Smart Chart/Table/Function utilizes a unique report name as a parameter (thus mimicking the natural DAG-filtering behavior of reports themselves) OR when the Smart Chart/Table/Function utilizes the "user-dag-name" parameter. This means that if a user is assigned to a DAG and views a project dashboard with the Smart Chart [scatter-plot:weight], for example, the plot will display data for ALL records in the project and not just the user's DAG. To limit the plot to just data in the user's DAG, it could be changed to [scatter-plot:weight:user-dag-name] in this case.
        - Smart Charts/Tables/Functions that utilize a unique report name as a parameter for data filtering purposes will still function and display normally even if the user does not have explicit access to view that specific report referenced as a parameter.

New feature: Project Dashboards

- **INTRO:** Project Dashboards are pages with dynamic content that can be added to a project. They can utilize special Smart Variables called Smart Functions, Smart Tables, and Smart Charts (described below) that can perform aggregate mathematical functions, display tables of descriptive statistics, and render various types of charts, respectively. User access privileges are customizable for each dashboard, and anyone with Project Design privileges can create and edit them. A Wizard is provided on the Project Dashboard creation page to help users easily construct the syntax for Smart Functions, Smart Tables, or Smart Charts, and a basic list of helpful examples is also included. Example dashboard: https://redcap.link/dash1
    - **Setting project dashboards as "public"**
        - Any project dashboard can be enabled as "public", which means it can be accessed at a unique URL that does not require any authentication. Making a dashboard public is useful if you wish for people to view it without having to be REDCap users or log into REDCap. Public dashboards are simply standalone pages that can be viewed by anyone with a link to them.
        - Users can opt to create a custom/short URL (via the https://redcap.link service) for any project dashboard that is enabled as "public".
        - When editing a report, users can now set a report as "public" and can obtain a public link to the report if they have User Rights privileges in the project. When a report is public, this means that all data in the report will be fully accessible (with no authentication required) to anyone with the public link to the report.
        - To make a report public, all the following must be true:
            - The user must have User Rights privileges in the project or be a REDCap administrator.
            - The report cannot have any Identifier fields in it.
            - The user is required to view the report during their current REDCap session.
            - The user must agree to and check off the following statements: 1) I understand that making this report "public" means that all data in the report will be fully accessible to anyone with the public link to the

report, and 2) I understand that I am responsible if any private, sensitive, or identifying data in the report is exposed to persons who should not have access to such data.

- Once a report has been made public, its configuration cannot be modified while it is public (users cannot add new fields, modify filter logic, etc.). In order to modify a public report, the user will need to make it no longer public, then make their changes, and then make it public again.

- **Setting to control data privacy on public dashboards and other public pages**
  - The User Settings page in the Control Center has a setting to define the "Minimum number of data points required to display data for any Smart Charts, Smart Tables, and Smart Functions on a *public* project dashboard, survey queue, or survey page". **By default, it is set to a value of "11".** While only aggregate data is displayed in Smart Charts, Smart Tables, and Smart Functions, if any of these utilize very few data values, it might pose a threat to an individual's data privacy if these are being displayed on *public* dashboards and other public pages (i.e., where authentication is not used).
  - If someone is viewing a public page that has Smart Charts, Smart Tables, and Smart Functions that utilize data that does not meet the minimum data point requirement, instead of displaying the chart/table/number on the page, it will instead display a notice saying "[INSUFFICIENT AMOUNT OF DATA FOR DISPLAY]" with a pop-up note with details about the minimum data requirements.
- **PDF export:** Each project dashboard can be exported as a one-page PDF file.
- **Dashboard cache:** To prevent server performance degradation, each project dashboard will have its content cached (stored temporarily) automatically for up to 10 minutes at a time rather than generating its content in real time every time the dashboard is loaded. It will note at the top right corner of the dashboard page when the dashboard content was last cached. If a user is viewing the dashboard inside a project (i.e., not via a public dashboard link), they have the option at the top right to "Refresh" the dashboard at will, which will refresh/generate its content in real time.

- Note: The refresh option will only be displayed on the page when the dashboard content is at least 30-seconds old.

- **New feature: CSV Delimiter as a user-level preference** - The Profile page now has a new user preference to allow a user to set their own preferred CSV delimiter (e.g., comma, semi-colon) that will be used as the delimiter character in all CSV file downloads throughout REDCap, such as data dictionary import/export, event import/export, user rights import/export, etc. This setting is not used by data imports and exports because those already have a way to specify the CSV delimiter manually.

- **New Smart Variables**
    - **[event-id]** - (longitudinal only) The event id number of the current event.
    - **[survey-access-code:instrument]** - The Survey Access Code of the specified survey for a given record/event/instance. The format must be [survey-access-code] or [survey-access-code:instrument], in which 'instrument' is the unique form name of the desired instrument. This can be used simply as [survey-access-code] inside the content of a survey invitation, in which 'instrument' is assumed to be the current survey instrument.
    - **[survey-return-code:instrument]** - The Survey Return Code of the specified survey for a given record/event/instance in order to allow a participant to return to a completed or partially completed survey response when using the 'Save & Return Later' survey feature. The format must be [survey-return-code] or [survey-return-code:instrument], in which 'instrument' is the unique form name of the desired instrument. This can be used simply as [survey-return-code] inside the content of a survey invitation, in which 'instrument' is assumed to be the current survey instrument.
    - **[user-role-id]** - The Role ID of the user role to which the current user is assigned (blank if not assigned to any user role). This value is auto-generated for each user role.
        - NOTE: This value is not just unique for all roles within the project but is also unique across all REDCap projects. Thus, if the project and its user roles are

copied, the Role IDs of the user roles in the resulting copy will be different from the ones in the original project.

- [**user-role-name**] - The unique role name of the user role to which the current user is assigned (blank if not assigned to any user role). This value is auto-generated for each user role.
  - NOTE: This value is only unique for roles within the project. Thus, if the project and its roles are copied, the new project will retain the same unique role names, which allows you to utilize the unique role names in conditional logic, calculations, branching logic, etc. that will not break when the project is copied.
- [**user-role-label**] - The name/label of the user role to which the current user is assigned (blank if not assigned to any user role). This value is defined by the user that creates the user role.

- **New Action Tag: @MAXCHOICE-SURVEY-COMPLETE** - Similar to @MAXCHOICE but only counts choices on completed survey responses (does not count data entered as data entry only or on partial responses). Causes one or more specified choices to be disabled (i.e., displayed but not usable) for a checkbox, radio button, or drop-down field after a specified amount of records have been saved with that choice for completed survey responses only.

- **New action tag: @RICHTEXT** - Adds the rich text editor toolbar to a Notes field to allow users/participants to control the appearance (via styling and formatting) of the text they are entering into the field.

- **New action tag: @DOWNLOAD-COUNT** - The @DOWNLOAD-COUNT action tag provides a way to automatically count the number of downloads for a File Upload field or a Descriptive field attachment. It can be used on a Text field or Notes field so that its value will be incremented by '1' whenever someone downloads the file for either a File Upload field or a Descriptive field attachment. The variable name of the File Upload field or Descriptive field whose downloads are to be counted should be provided inside the @DOWNLOAD-COUNT() function. For example, the Text field 'my_download_count' might have its action tag defined as @DOWNLOAD-COUNT(my_upload_field), in which 'my_upload_field' is the variable of a File Upload field. Whenever the file is downloaded on a data entry form, survey page, or report, the value of the field with this action tag will be incremented by '1'. If that field has no value or has a non-integer value, its value will be set to '1'.

- NOTE: The download count field must be in the same context as the File Upload field or a Descriptive field. This means that in a longitudinal project the two fields must be on the same event, and in a repeating instrument context, they must be on the same repeating instrument.

- **New Action Tag:** The @PREFILL action tag has been renamed to **@SETVALUE**, which more accurately captures how it behaves. Some confusion had occurred regarding this action tag's behavior simply because of its name. This change to the name is backward compatible so that projects already using @PREFILL will still work with its legacy counterpart (i.e., @PREFILL and @SETVALUE will work equivalently), but @SETVALUE will be the preferred name going forward. The description of the @SETVALUE action tag in the Action Tags documentation notes this name change.
  - Any fields using the @PREFILL/@SETVALUE action tag will no longer be read-only/disabled on survey pages and data entry forms but will be editable. Some users had complained of the read-only attribute as being too restrictive and inflexible, thus preventing some valid use cases. If users wish to make the field read-only, it is recommended they simply add the @READONLY action tag as a means of maintaining the previous read-only behavior.

- **New feature: Tableau Data Export**- Extract all records into Tableau via the REDCap API.
  - This feature enables Tableau (v10.0+) users to connect Tableau to a REDCap project using an API token. Project data can be exported on demand and be available for use within Tableau to produce summaries and visualizations. The Other Export Option page in any given project has instructions to export project data into Tableau.

- NOTICE: It is required for a user to have an API token generated for the project to use this feature.

- **New feature: Project-level setting "Prevent branching logic from hiding fields that have values."**
  - This setting can be enabled by any project user with Project Setup/Design privileges in the Additional Customizations popup on the Project Setup page.
  - This setting affects both data entry forms and surveys. If it is not enabled (default), then whenever a field is to be hidden by branching logic on a data entry form, it will always ask the user if they wish to hide the field and erase its value, whereas on survey pages it will automatically erase the value of the field being hidden without displaying the confirmation prompt, which has always been the default behavior for surveys. If this setting is enabled, the branching logic behavior will change so that fields with values will not cause the 'Erase the Value of the Field?' confirmation prompt to ask the user if they wish to keep the value or hide the field, and instead fields with values will not be hidden by branching logic and will stay visible. Thus, they will be exempt from branching logic. This will prevent data from being erased as it normally does if fields are hidden by branching logic.
  - When a field should be hidden by branching logic but is not hidden because it has a value, an icon will be displayed on the field to indicate this to the user.
  - The name of Data Quality Rule F has been slightly changed when this setting is enabled from "Hidden fields that contain values" to "Fields that contain values that should be hidden".

- **New Features: Logging Page**
  - The Logging page in a project now defaults to only displaying the logged events from the past week, although users can always adjust the filter settings to expand the time range values after initially loading the page. This change makes the Logging page load much faster when initially loaded by a user.

  - The Logging page in a project now has helpful buttons to quickly adjust the time range filters to Past Day, Past Week, Past Month, Past Year, and all time (“no limit”) to make it easier for users to view the logging from various time ranges.
  - The Logging page in a project now has more download options for exporting the logging. In addition to exporting all logged events, there are now the following new buttons: 1) Export all pages using current filters and 2) Export current page.
  - The project logging page now displays more information for PDF Exports that contain data, such as displaying the record name, event, and instrument for the downloaded PDF.
  - More detailed logging descriptions on the Logging page for report-related logged events, such as mentioning the report name and report ID.

- **Improvement: Custom ranges (min/max) for slider fields** - Users may now set a custom minimum and/or custom maximum integer value for slider fields. The default min and max is still 0 and 100, respectively. If no value is entered for the min or max value, it will assume the default value. These can be set via the Edit Field popup in the Online Designer, and via the “Text Validation Min” and “Text Validation Max” columns in the Data Dictionary.

- **Improvement:** File Upload fields and Signature fields may now be used in piping. If you are piping *from* a File Upload field or Signature field, the field's numerical value will be piped by default, but you may pipe the original filename of the uploaded file by appending the ':label' option, such as [my_field:label].

- **Change/improvement:** Users are now permitted to import data values for Biomedical Ontology fields. In previous versions, this was not allowed and would return an error message when a user attempted this. The Data Import Tool now displays a warning (instead of an error) that informs users that importing data for such fields is allowable but is not recommended because the value might not display correctly if viewed afterward on a report or in the data entry interface, in which this is caused by the fact that the label is missing because it has not been fetched via the BioPortal web service and then cached in REDCap's database tables.

- **Improvement:** Field variables and Smart Variables can now be piped into the "src" attribute of HTML image tags ("img").
    - Note: The value being piped into the "src" attribute must have already been saved prior to the page loading, which is how piping for the "href" attribute has always worked.

- **Improvement:** Field embedding can now be used for embedding a Descriptive field inside another field (even though descriptive fields do not have an actual input element for saving data). Embedding a descriptive field would merely relocate the field's label to the new location where it is embedded. This is typically only useful if the descriptive field has branching logic, in which you could use branching logic to make the descriptive field's text appear conditionally in a specific place on the page.

- **Improvement:** In the Online Designer, any fields that have action tags will have those action tags listed immediately below the field in the table on that page. This makes it easier to know if a field has a certain action tag without having to open the Edit Field dialog for the field.

- **Change/improvement:** When viewing the Survey Settings page for a repeating instrument, the "Location of the button on survey" option for the "Allow respondents to repeat the survey" setting now includes a new choice not to display the repeating survey button at all on the survey page. This is useful if users are utilizing the Survey Queue as the path for participants to enter new responses for the repeating responses instead of displaying the repeating survey button on the survey page itself.

- **Improvement:** If a project contains more than 25,000 records, the Logging page will no longer display the record filtering drop-down at the top of the page but instead will display an auto-complete text box to allow the user to enter the record name if they wish to filter the logging by record. This behavior is similar to the "Add/Edit Records" page when not using record auto-numbering if a project contains more than 25,000 records.

- **Change/improvement:** The "Phone (North America)" field validation now allows phone numbers that begin with "800" and “811”.

- **Improvement:** When exporting a PDF of all record data via the "Other Export Options" page, a copy of the downloaded PDF will now be archived and stored in the File Repository, similar to how other data exports (i.e., CSV, SPSS) are archived. This will help REDCap users keep better track of exactly what data was downloaded by someone when they export a PDF of all records in the project.
    - Note: This does not apply to other PDF exports but only to the "all records" PDF export on the "Other Export Options" page.

- **Change/improvement:** The User Access Dashboard now displays "Last logged activity" for each project displayed on that page.

- **Improvement:** When viewing files in the File Repository that are archived from a data export, it now displays the data export details (as seen on the Logging page) for each export listed in the table on the "Data Export Files" tab. This provides more context regarding the contents of the data in the archived export files.

- **Improvement:** New option for Project Templates called “copy records”, which will copy any existing records in the template to the new project created from the template. This option can be enabled for any new or existing Project Templates.

- **Improvement:** A new Project Template was added to illustrate new features in 11.0+. The new template is named “Project Dashboards, Smart Functions, Smart Tables, & Smart Charts”.

- **Improvement:** On the Calendar page when viewing the "View/Edit Calendar Event" popup for a calendar event that is attached to a record, the popup now displays a "View Record Home Page" link next to the record name to allow the user to easily navigate to the record.

- **Change/improvement**: The green highlight background color will no longer appear when a user/participant puts focus on or clicks on a field that is embedded inside another field on a data entry form or survey. From now on, it will only highlight the field with green for non-embedded fields. This should improve the user experience when many fields are embedded in the same table row on the page in which the green highlight would highlight all of them (sometimes making the entire page green), which is often not desirable.

- **Improvement:** New alternative PDF print option in the "Download PDF" drop-down at the top of data entry forms, in which there is a new PDF export choice: "This data entry form with saved data (send to printer: select "Save as PDF" for Printer/Destination)". This will produce a much-improved browser-based print option to print/save the webpage as a PDF that serves as a suitable alternative to the existing server-side PDF rendering options, which can sometimes be very limited and inaccurate (e.g., when representing field embedding).
    - Note: This "Print to PDF" does correctly hide fields that have the @HIDDEN-PDF action tag.

- **Improvements for report display and/or data exports**- When creating/editing a report, the "Additional report options" section in Step 2 now contains the new options below:
    - For projects that have repeating instruments and/or repeating events, the repeating fields that are automatically added (e.g., redcap_repeat_instrument and redcap_repeat_instance) can now be excluded from the report and data export. These fields are displayed by default in reports/exports.
    - Users may choose to display the field label, variable name, or both (default) in the header of a report.

        - Note: This is only used when viewing reports and thus is not applicable for exports since there already exist options for choosing raw vs label format in data exports.
    - Users may choose to display the field label, raw data value, or both (default) for multiple choice fields in the data displayed in a report. Note: This is only used when viewing reports and thus is not applicable for exports since there already exist options for choosing raw vs label format in data exports.

- **Improvement:** If the value of a Text field or Notes field contains a URL or email address, the URL or email address will be converted into clickable link and mailto link, respectively, when viewing the data in a report.

- **Improvement:** When users download an Instrument ZIP file for a given instrument in the Online Designer, the zip file now includes all survey settings for the instrument if the instrument has been enabled as a survey, including various files (e.g., survey logo, confirmation email attachment). The downloaded Instrument ZIP can then be uploaded into any project to transfer both the fields and all the survey settings.

- **Improvement:** In the Online Designer, the "Custom text to display at top of survey queue" now utilizes the rich text editor to make it easier to style the custom text.

- **Improvement:** New piping parameter ":ampm" - When piping a time, datetime, or datetimes w/ seconds Text field, appending ":ampm" to the variable name (e.g., [visit_time:ampm]) will display the time in am/pm format (e.g., 4:45pm, 10:35am) instead of military time.

- **Improvement/change:** Any HTML used in the value of a Text field or Notes field will no longer be escaped on a report (i.e., displayed as-is) but instead the HTML will be interpreted on the report to allow for the styling of text on the page. This means that while previous versions would have displayed the text value "Word" literally as "Word" (without quotes) on a report, it now instead displays "Word" as bolded text on a report.

- Note: This does not affect data exports or any pages other than reports.

- **Improvement:** On the External Modules page in a project, users with appropriate privileges may now import and export the configuration settings for any module that is enabled in the project. This feature functions as a convenience by allowing users to easily migrate the configuration settings of one or more modules to another project that has the same module(s) enabled.

- **Improvement:** If a user is not assigned to a Data Access Group in a project, the user will now see a new "[No assignment]" option in the "Displaying Data Access Group" drop-down list on the Record Status Dashboard, in which selecting that option will display only records that have not been assigned to any DAG.

- **Change/improvement:** "Previous instrument" and "Next instrument" buttons were added at the top right of the Online Designer field-view page to allow easier navigation between instruments.

- **Improvement:** The Project Revision History page now displays icons next to each production revision and snapshots, and after being clicked, will display options to compare that revision/snapshot with any other revision/snapshot in the project.

- **Improvement:** When using the eConsent Framework in a project, the "PDF Survey Archive" tab on the File Repository page now displays a "Download all" button that will download all PDF files displayed on the page in a single zip file. Additionally, there is a record filter drop-down list and a "file type" drop-down list, which distinguishes between general "PDF Auto-Archiver" PDFs and "eConsent Framework" PDFs.
    - Note: If a user is in a Data Access Group, they will only be able to download and filter on records in their DAG.

- **Change**: Renamed the "My Profile" page to "Profile".
- **Improvement:** When executing many data quality rules at once, the total time to finish all the rules occurs 3X faster. Instead of running only one rule at a time in a serial fashion, REDCap now executes three rules simultaneously when clicking the "All", "All except A&B", and "All custom" buttons at the top of the Data Quality page

- **Change:** When viewing a report while using a mobile device, it will no longer enable the floating table headers or floating first column automatically for the report table. This was changed because the floating headers/column made it difficult to view parts of a report while on a mobile device with a small screen.