Making the Most of REDCap: Beyond the Basics

Research Electronic Data Capture

THE UNIVERSITY OF CHICAGO MEDICINE & BIOLOGICAL SCIENCES
CENTER FOR RESEARCH INFORMATICS

Presenter: Julissa Acevedo
Senior Systems Analyst / REDCap Administrator

Introduction

CENTER FOR RESEARCH INFORMATICS

ACQUIRE DATA

Explore clinical data available for research and make a data request.

Clinical Research Data Warehouse
Cohort Discovery

ANALYZE DATA

We offer high-performance computing and advanced bioinformatics analysis for the most complex datasets.

Bioinformatics Core
High Performance Computing
Computing Resources

STORE DATA

Our storage is secure, standards-compliant, and backed up daily.

CRI Data Storage

MANAGE DATA

Manage studies, surveys, and databases for research.

REDCap
Clinical Trials Informatics

FIND A CUSTOM SOLUTION

Learn more about the CRI's tailor-made research solutions.

Custom Applications

WEBSITE:
cri.uchicago.edu

REDCAP HISTORY

THEN

2004: Created at Vanderbilt

2006: Global consortium

2010: University of Chicago

2011: CRI created

2012: REDCap at UChicago

NOW

Worldwide:

- 4,000 institutions
- 135 countries
- 850,000 projects
- 1,200,000 users

UChicago:

- 5,800 projects
- 5,800 users

SEMINAR SERIES

Introduction to REDCap
11/19/19

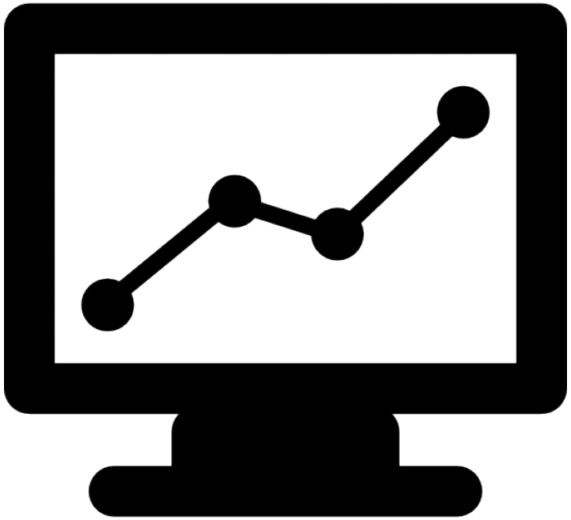
Beyond the REDCap Basics
2/20/20

All About REDCap Surveys
4/14/20

http://cri.uchicago.edu/seminar-series/

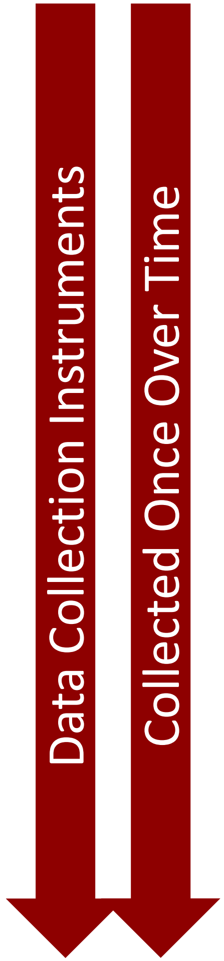
TOPICS

- Longitudinal Data Collection
- Edit Data Dictionary
- Data Import Tool
- Data Exports, Reports, Stats
- User Rights, Roles, DAGs
- Advanced Features
- Smart Devices
- New Features!
- Help Resources



Longitudinal Data Collection

WHAT IS CLASSIC DATA COLLECTION?



Data Collection Instrument
Demographics
Baseline Data
Month 1 Data
Month 2 Data
Month 3 Data
Completion Data

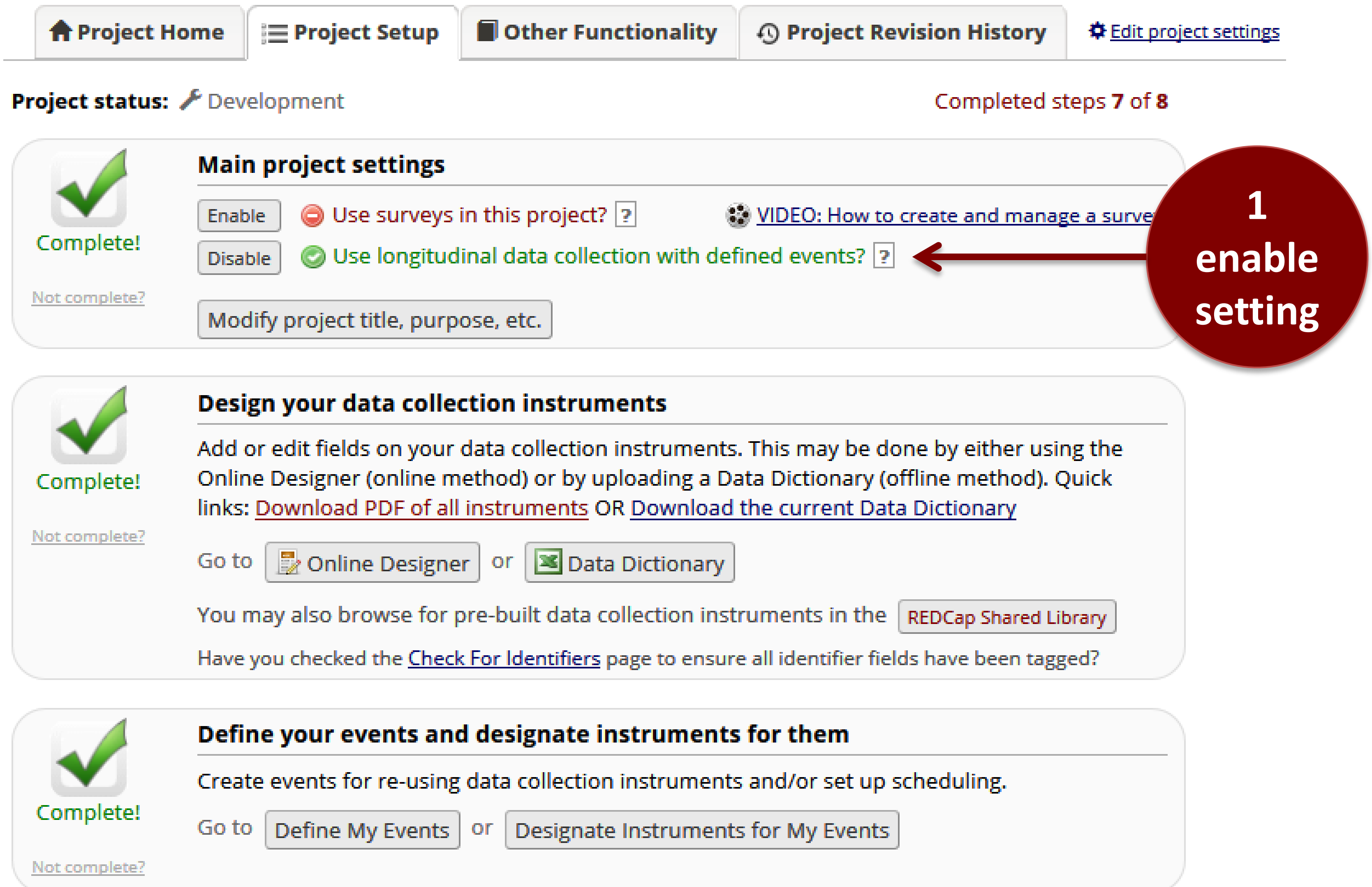
WHAT IS LONGITUDINAL DATA COLLECTION?

Repeatable Over Time (Events)

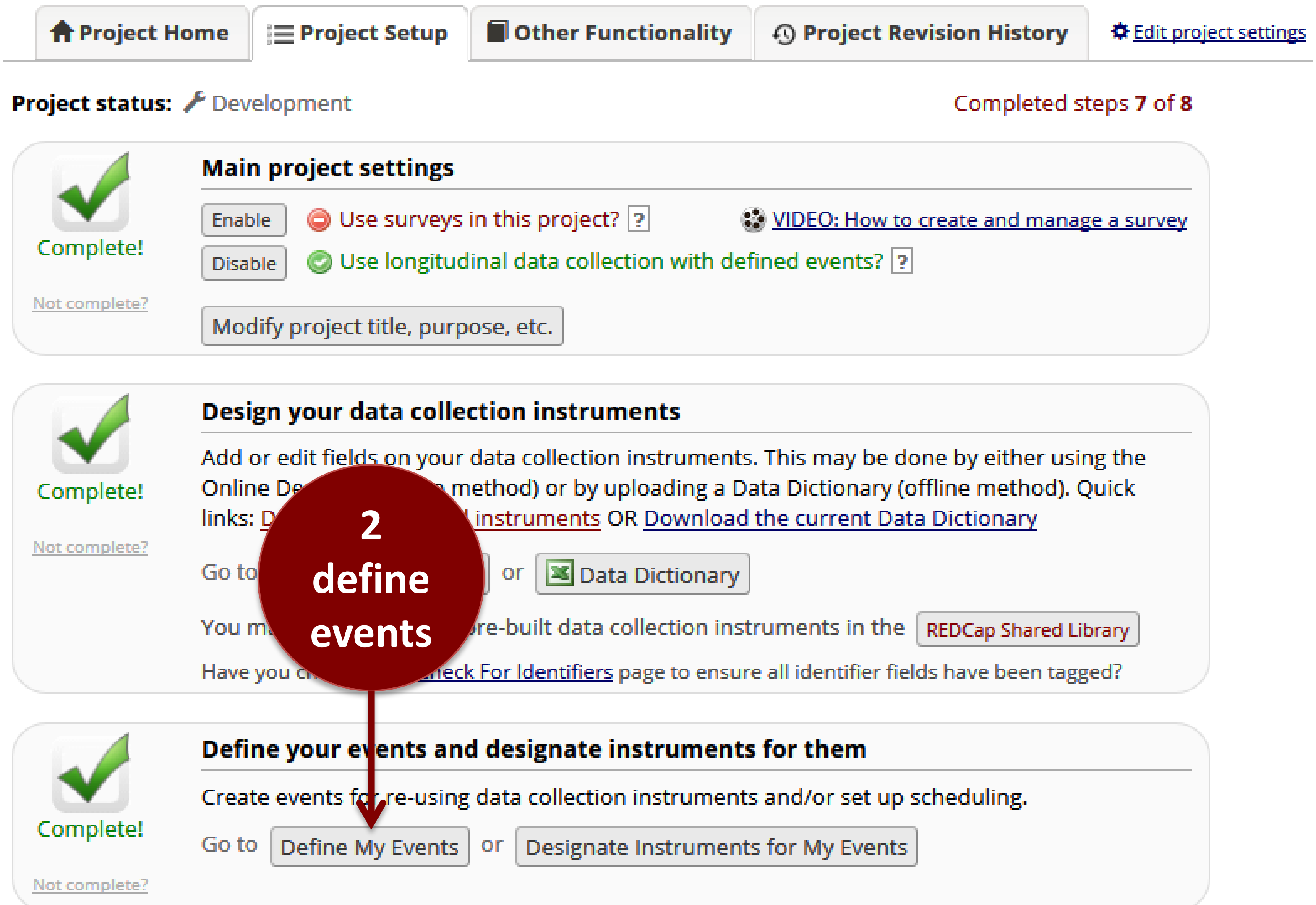
Data Collection Instruments

Data Collection Instrument	Baseline (1)	Visit 1 (2)	Visit 2 (3)	Visit 3 (4)	Final Visit (5)
Demographics	✓				
Baseline Data	✓				
Monthly Data		✓	✓	✓	
Completion Data					✓

HOW TO ENABLE LONGITUDINAL DATA COLLECTION



HOW TO ENABLE LONGITUDINAL DATA COLLECTION



HOW TO ENABLE LONGITUDINAL DATA COLLECTION

Project Setup | Define My Events | Designate Instruments for My Events

This application allows you to define 'events' for your project that allow for the **utilization of data collection forms multiple times for any given project record** (often used when collecting longitudinal data). An 'event' may be a temporal event in the course of your project, such as a participant visit or a task to be performed. After events have been defined, you will need to designate the data collection instruments that you wish to utilize for any or all events, thus allowing you to use a form for multiple events for the same project record. You may **group your events into 'arms'**, in which you may have one or more arms/groups for your project. Each arm can have as many events as you wish. You may use the table below to create new events and/or arms, or modify existing ones. (One arm and one event will be initially defined as the default for all projects.)

STEP #1:
To add new events below, provide an **Event Name** for that event, and then click the *Add new event*. Once events have been added, you can easily change their order by dragging and dropping the event using the up-down arrow icon on the far left for a given row in the table.

STEP #2:
Once you have defined your events on this page, you may navigate to the Designate Instruments for My Events page, where you may select which data collection instruments that you wish to utilize for each event you defined.

Upload or download arms/events

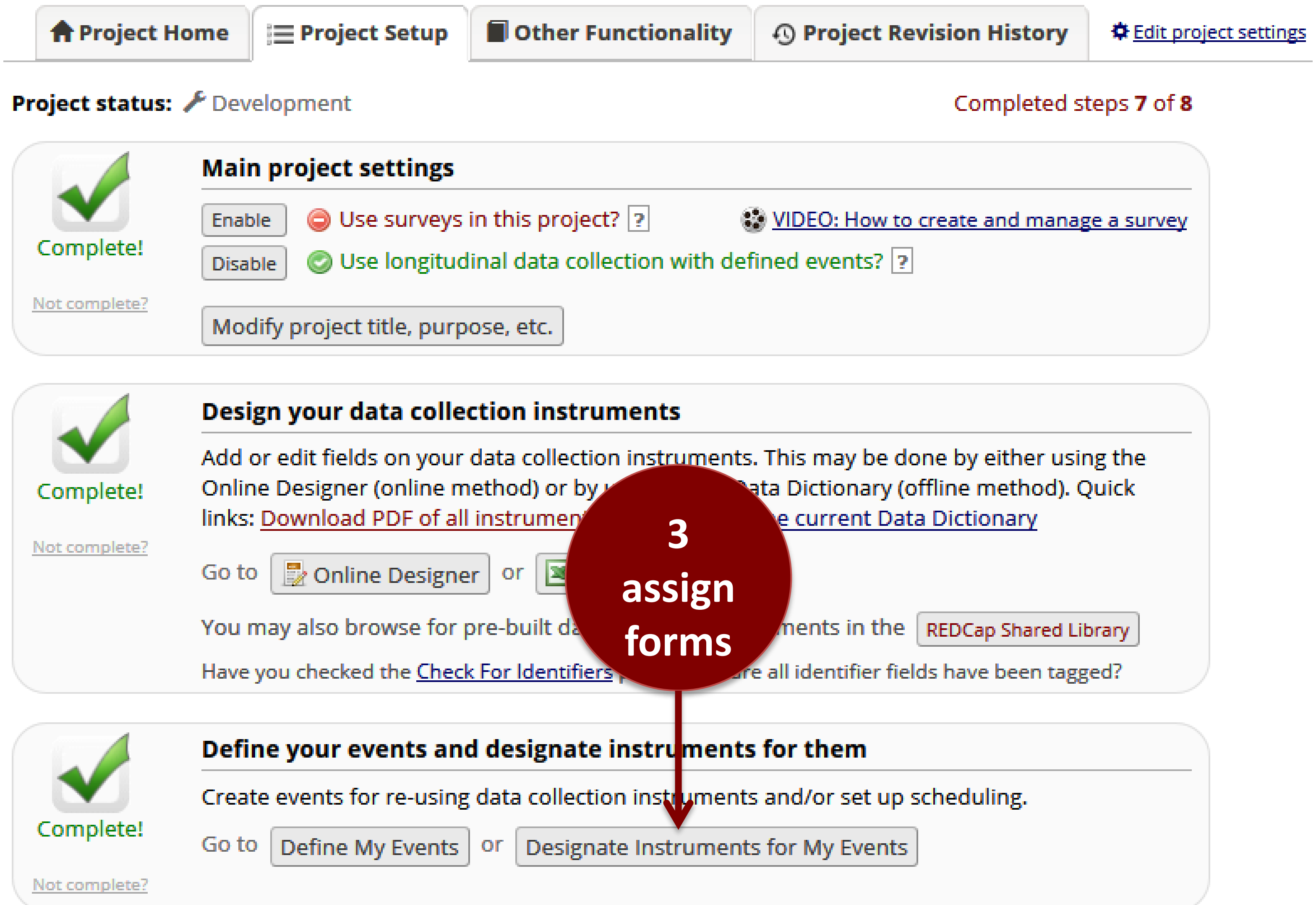
Arm 1: Arm 1 | +Add New Arm

Arm name: **Arm 1**

Rename Arm 1

	Event #	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
	1	Baseline		baseline_arm_1
	2	Visit 1		visit_1_arm_1
	3	Visit 2		visit_2_arm_1
	4	Visit 3		visit_3_arm_1
	5	Final Visit		final_visit_arm_1
Add new event		Descriptive name for this event	Custom Event Label (optional) Example: [visit_date], [weight] kg	

HOW TO ENABLE LONGITUDINAL DATA COLLECTION



HOW TO ENABLE LONGITUDINAL DATA COLLECTION

Project Setup | **Define My Events** | **Designate Instruments for My Events**

Since you have defined multiple events on the Define My Events page, you may now select which data collection instruments that you wish to utilize for each event by using the table below. This allows you to enter data on any data collection form multiple times for any given project record. Any and all data collection instruments can thus be used for any event defined.

Click the *Begin Editing* button to change the relationships below by designating which forms you wish to utilize for which events. When you are finished making changes, click the *Save* button to finalize your changes.

Upload or download instrument mappings

Begin Editing | Save

Data Collection Instrument	Baseline (1)	Visit 1 (2)	Visit 2 (3)	Visit 3 (4)	Final Visit (5)
Demographics	✓				
Lab Values		✓	✓	✓	
Exit Interview					✓

DISPLAY AND REPORTING DIFFERENCES

Classic Project:

one row per record

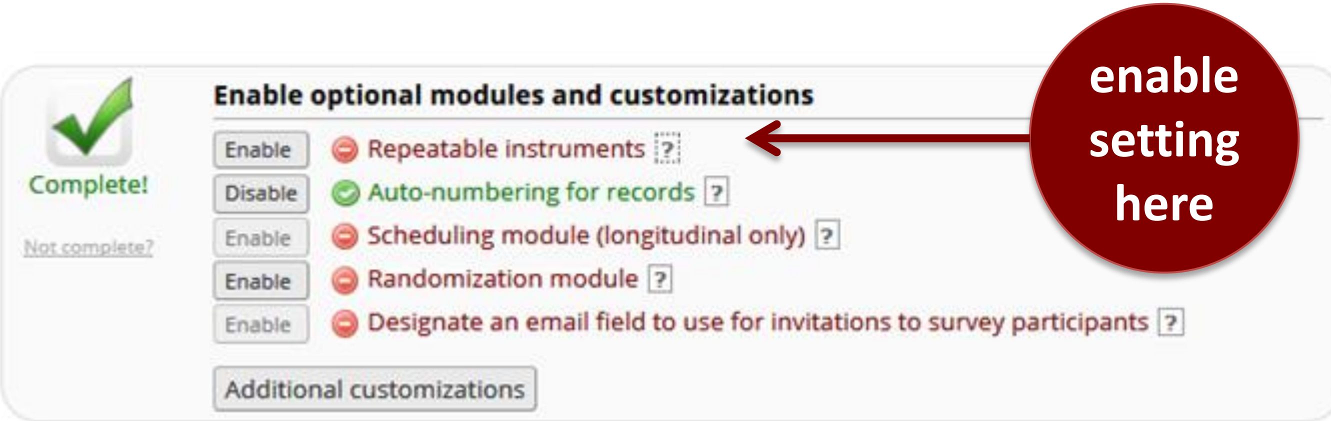
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Q
1	study_id	(screening form fields)----------->			(month1 form fields)----------->			(month2 form fields)----------->			(month3 form fields)----------->			(stud	------->
2	100	data	data	data	data	data	data	data	data	data	data	data	data	data	data
3	200	data	data	data	data	data	data	data	data	data	data	data	data	data	data
4	300	data	data	data	data	data	data	data	data	data	data	data	data	data	data

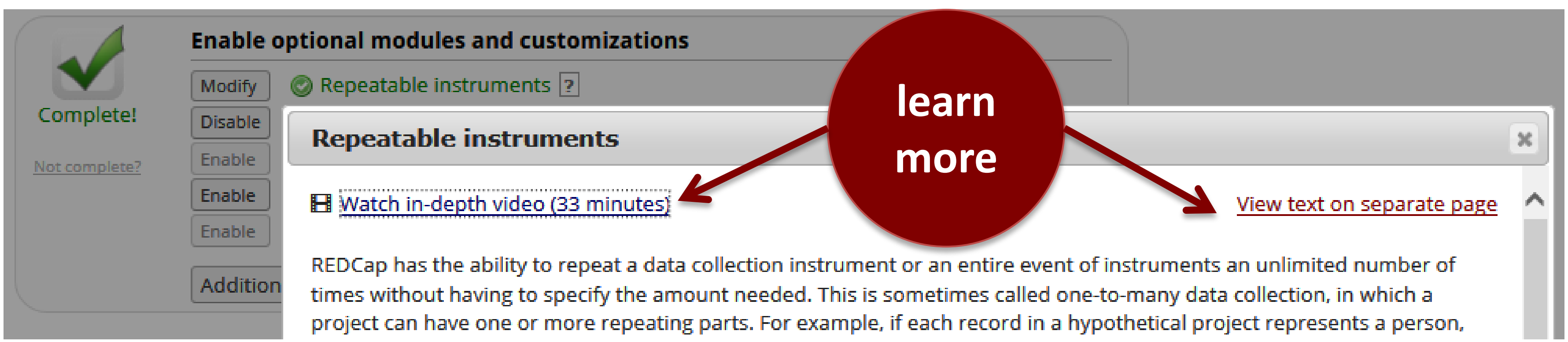
Longitudinal Project:

multi rows per record

	A	B	C	D	E	F	G	H	I	J		
1	study_id	redcap_event_name	(screening form fields)----------->			(monthly form fields)----------->			(study completion forr			
2	100	screening	data	data	data							
3	100	month1				data	data	data				
4	100	month2				data	data	data				
5	100	month3				data	data	data				
6	100	completion							data	data	data	data
7	200	screening	data	data	data							
8	200	month1				data	data	data				
9	200	month2				data	data	data				
10	300	screening	data	data	data							
11	300	month1				data	data	data				

REPEATING INSTRUMENTS





REPEATING INSTRUMENTS

Classic Projects	Longitudinal Projects	Survey Projects
Repeat Forms	Repeat Forms and Events	Repeat Surveys

CLASSIC VS LONGITUDINAL DATA COLLECTION

CLASSIC

- Only uses instruments.
- Doesn’t use events.
- Create an instrument for each time point.
- Or use repeating instruments feature.

Data Collection Instrument
Demographics
Baseline Data
Month 1 Data
Month 2 Data
Month 3 Data
Completion Data

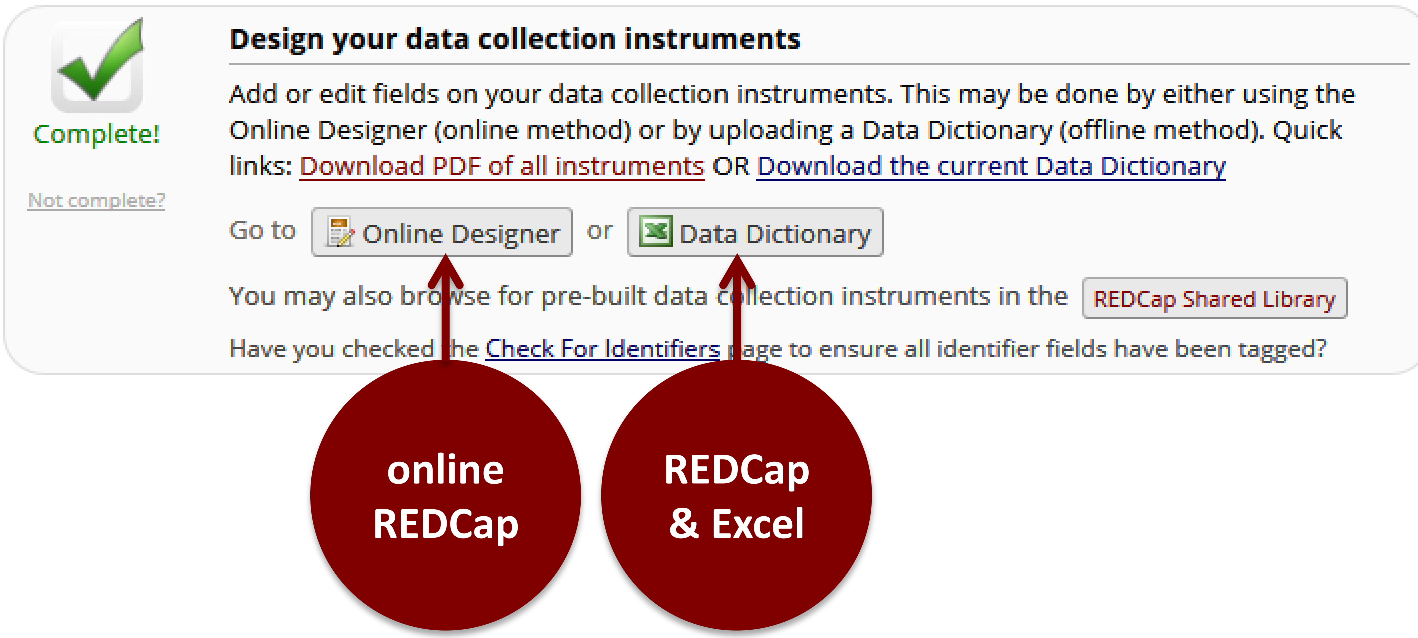
LONGITUDINAL

- Uses instruments.
- Uses events.
- Repeat instruments using events.
- Or use repeat instruments feature.

Data Collection Instrument	Baseline (1)	Visit 1 (2)	Visit 2 (3)	Visit 3 (4)	Final Visit (5)
Demographics	✓				
Baseline Data	✓				
Monthly Data		✓	✓	✓	
Completion Data					✓

Edit Data Dictionary via Excel

EDITING YOUR INSTRUMENTS: TWO METHODS



EDITING YOUR INSTRUMENTS: DATA DICTIONARY

Project Home | Project Setup | Online Designer | Data Dictionary

VIDEO: How to use this page

how-to video

This module will allow you to create new data collection instruments/surveys or edit existing ones. Changes may be made by either using the **Online Designer** or **Upload Data Dictionary** (see tabs above), in which you may use either method or both. The Onli Designer may help you get some initial fields/forms built quickly or to make quick edits, but using the Data Dictionary file ma more helpful if you will be adding a large number of fields for this project.

This module may be used for making changes to the project, such as adding new fields or modifying existing fields, by us offline method called the Data Dictionary. The Data Dictionary is a specifically formatted CSV (comma delimited) file withi you may construct your project fields and afterward upload the file here to commit the changes to your project.

Click the 'Browse' or 'Choose File' button below to select the file on your computer, and upload it by clicking the 'Upload File' b Once your file has been uploaded, changes will NOT immediately be made but will be displayed and checked for errors to ensure that all the formatting in your Data Dictionary is correct before official changes are made to the project. **Snapshot note:** A snapshot of your project's current Data Dictionary will be created automatically during the Data Dictionary upload process before committing the new Data Dictionary. The snapshot can later be accessed and downloaded from the Project Revision History page.

Need some help?
If you wish to view an example of how your Data Dictionary may be formatted, you may download the Data Dictionary demonstration file, or you may view the Data Dictionary Tutorial Video (10 min). For help setting up your Data Dictionary, you may also see the instructions listed on the Help & FAQ.

Steps for making project changes:

1.) Download the current Data Dictionary
2.) Edit the Data Dictionary (see the Help & FAQ for help)
3.) Upload the Data Dictionary using the form below
4.) The changes will be made to the project after the Data Dictionary has been checked for errors

Upload your Data Dictionary file (CSV file format only)

Format for min/max validation values for date and datetime fields: MM/DD/YYYY or YYYY-MM-DD

Browse...

Upload File

STEPS FOR DATA IMPORT TOOL

CAUTION!

1. Uploading a new data dictionary replaces the old one. It does not append to the current one. Always upload the old dictionary with your new changes – not just your changes!

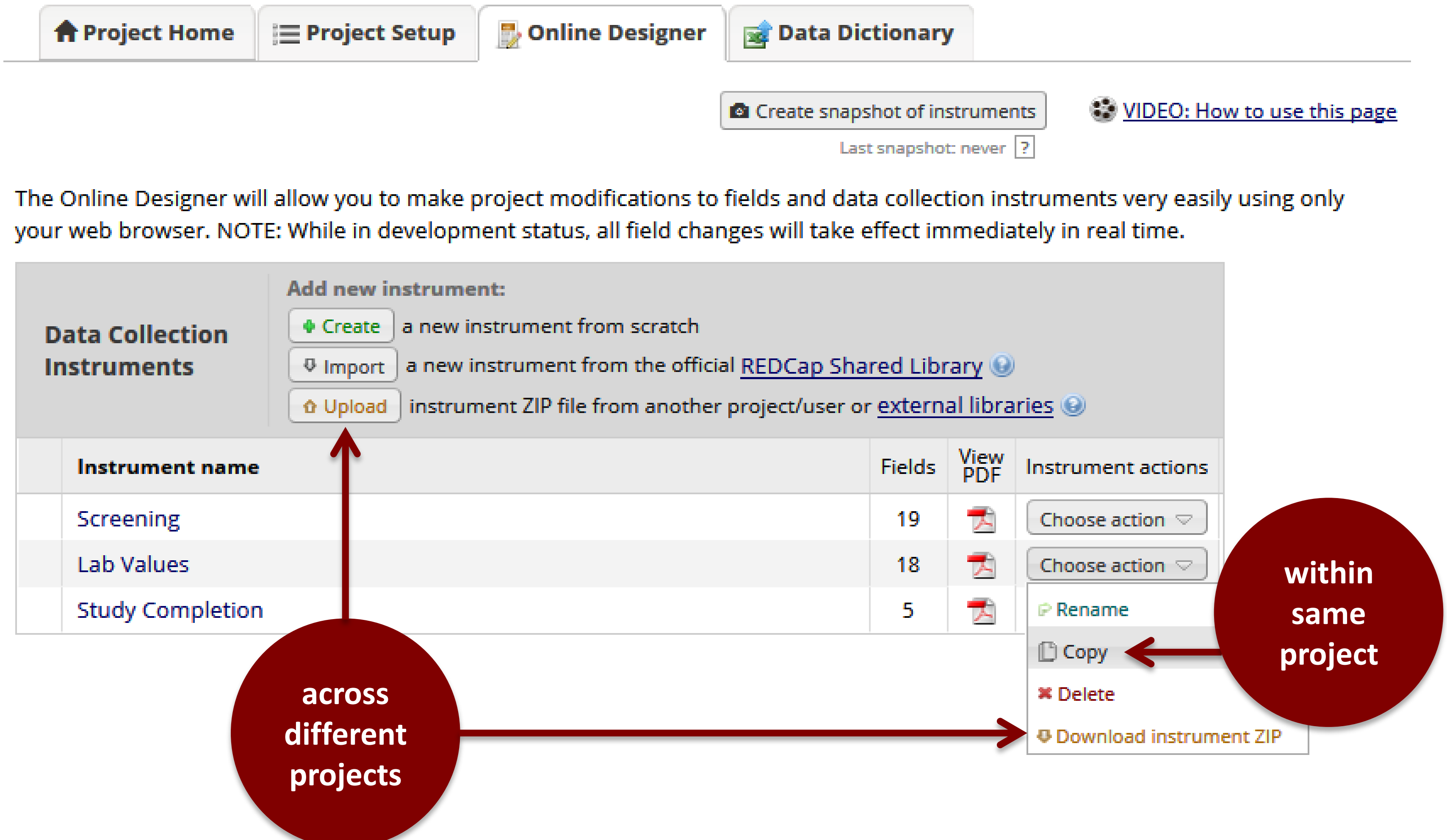
2. Data dictionary version history is automatic for projects in Production Mode, but it is not automatic for projects in Development Mode. Take “snapshots” often in Development Mode!

3. If your project has special characters, such as Spanish (á, é, í, ó, ú, ñ), Excel will jumble them. Use Google Sheets to preserve the characters!

GOOD USES FOR UPDATING VIA DATA DICTIONARY

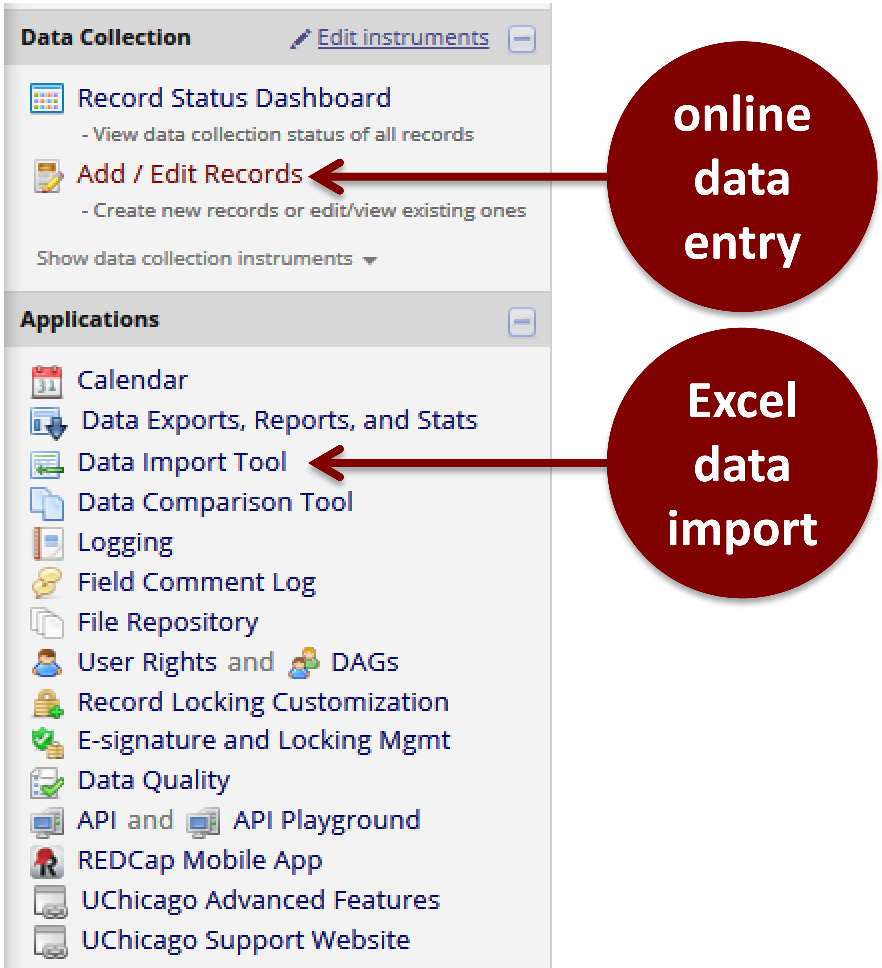
1. **Divide** an instrument into two, or vice versa, **join** several instruments into one instrument.
2. Make copies of instruments or fields in **batch**.
3. Turn radio buttons into a **matrix** field by adding a Matrix Group Name, or vice versa, turn a matrix field back into a radio, dropdown, or checkbox field by removing the Matrix Group Name..
4. Apply **changes to many fields** for branching logic, required fields, custom alignment, etc.

EDITING YOUR INSTRUMENTS: ONLINE DESIGNER



Data Import Tool

DATA COLLECTION TYPES



DATA IMPORT TOOL

Data Import Tool

This module may be used for importing data into this project from a CSV (comma delimited) file or alternatively from an XML file in CDISC ODM format. Below are the steps you will need to follow in order to import your data successfully into this project.

NOTICE:
This project is currently in Development status. **Real data should NOT be entered** until the project has been moved to Production status.

CSV import | **CDISC ODM (XML) import**

Instructions:

1.) Click the link below to download your data import template as a CSV (comma delimited) file. Save it locally to your computer and then open it to begin filling it with the data you wish to import.

Download your Data Import Template (with records in rows)
OR
Download your Data Import Template (with records in columns)

2.) In each column of the Data Import Template file that you downloaded, place the data for each record that you wish to import. Once all your data has been added, save the file.

- Be sure not to change the Variables/Field Names in the file or an error may occur.
- Also, for all of the 'dropdown' or 'radio' fields in the project, you must make sure that the numerical value (rather than the text value) is entered in those cells, or else it cannot be processed.
- Any empty rows or columns in the file can be safely deleted before importing the file. Doing this reduces the upload processing time, especially for large projects.

3.) Click the 'Browse' or 'Choose File' button below to select the file on your computer, and upload it by clicking the 'Upload File' button.

4.) Once your file has been uploaded, the data will NOT be immediately imported but will be displayed and checked for errors to ensure that all the data is in correct format before it is finally imported into the project.

Record format: The file to be uploaded has its records stored as separate Rows

Format for date and datetime values: MM/DD/YYYY or YYYY-MM-DD

Allow blank values to overwrite existing saved values? No, ignore blank values in the file (default)

Upload your CSV file:

Browse...

Upload File

help text

STEPS FOR DATA IMPORT TOOL

DOWNLOAD the Data Import Template

TRANSFER your data to the Data Import Template

UPLOAD the Data Import Template

	A	B
1	**Study ID**	**Gender**
2	100	male
3	101	female
4	102	F
5	103	M
6	104	f
7	105	m

Choices (one choice per line)

0, Female
1, Male

	A	B
1	**study_id**	**gender**
2	100	1
3	101	0
4	102	0
5	103	1
6	104	0
7	105	1

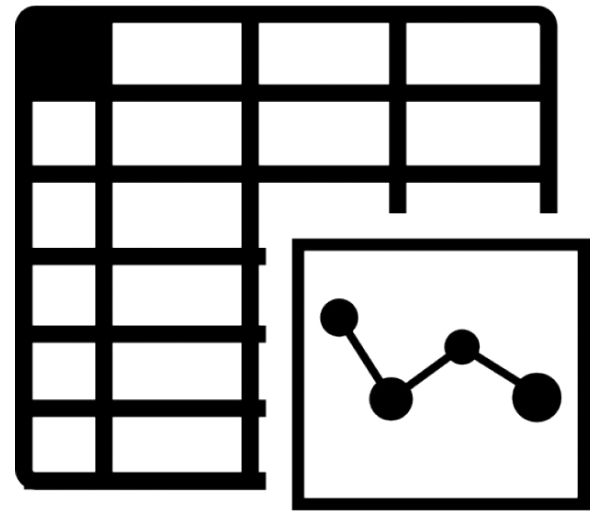
CAUTION!

1. Don’t change the **variable names** on the template. They must match the project's variable names.

2. For all discrete fields, upload the **numerical value** (rather than the label value).

3. **Empty** rows or columns should be deleted before importing the file to reduce the processing time.

4. For **large files**, it’s recommended you import a few variables at a time. The entire template doesn’t need to be imported all at once.



Data Exports, Reports, and Stats

DATA EXPORTS, REPORTS, AND STATS PAGE

Data Exports, Reports, and Stats

VIDEO: How to use Data Exports, Reports, and Stats

how-to video

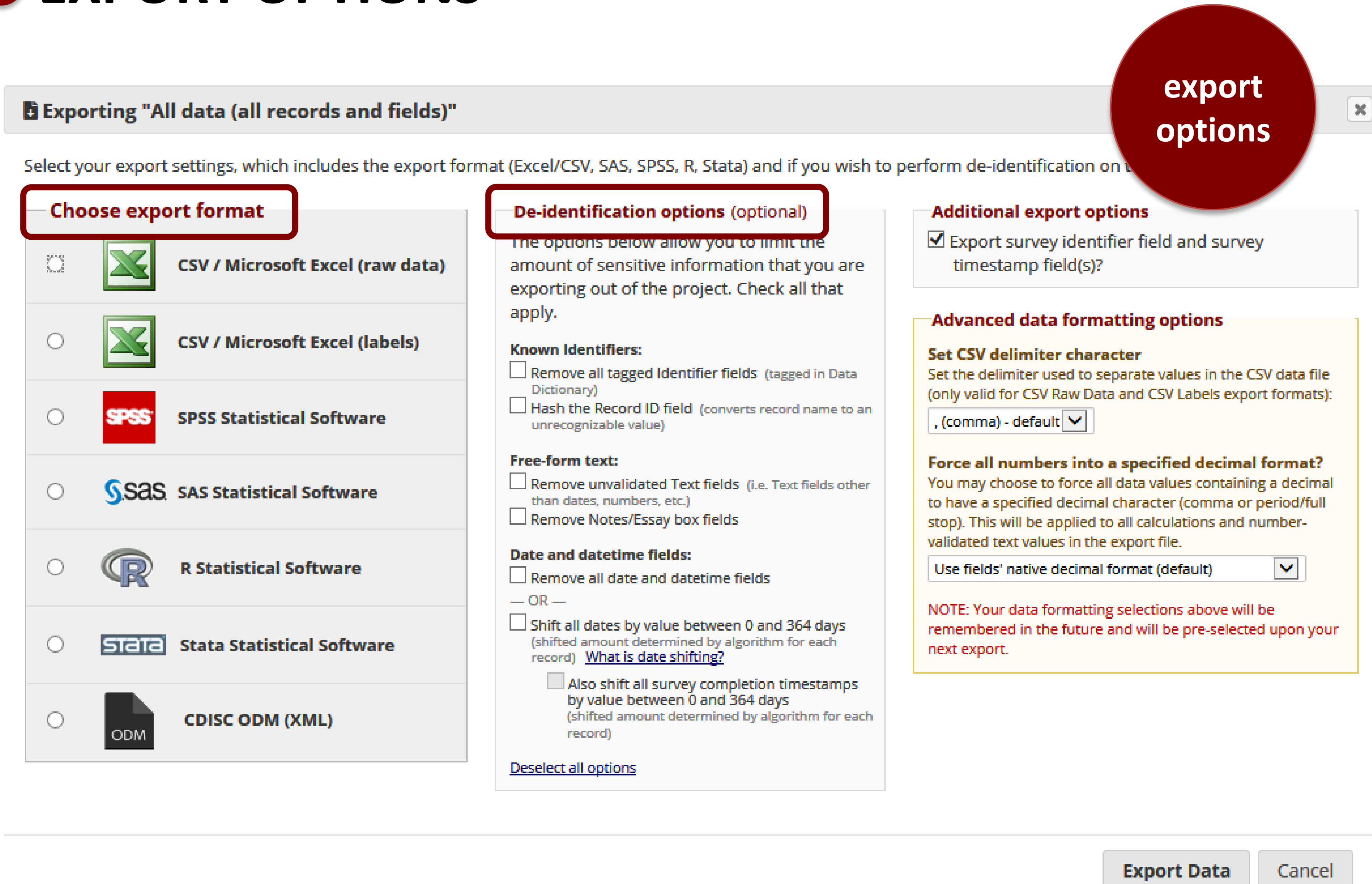
Create New Report | My Reports & Exports | Other Export Options

This module allows you to easily view reports of your data, inspect plots and descriptive statistics of your data, as well as export your data to Microsoft Excel, SAS, Stata, R, or SPSS for analysis (if you have such privileges). If you wish to export your *entire* data set or view it as a report, then Report A is the best and quickest way. However, if you want to view or export data from only specific instruments (or events) on the fly, then Report B is the best choice. You may also create your own custom reports below (if you have such privileges) in which you can filter the report to specific fields, records, or events using a vast array of filtering tools to make sure you get the exact data you want. Once you have created a report, you may view it as a webpage, export it out of REDCap in a specified format (Excel, SAS, Stata, SPSS, R), or view the plots and descriptive statistics for that report.

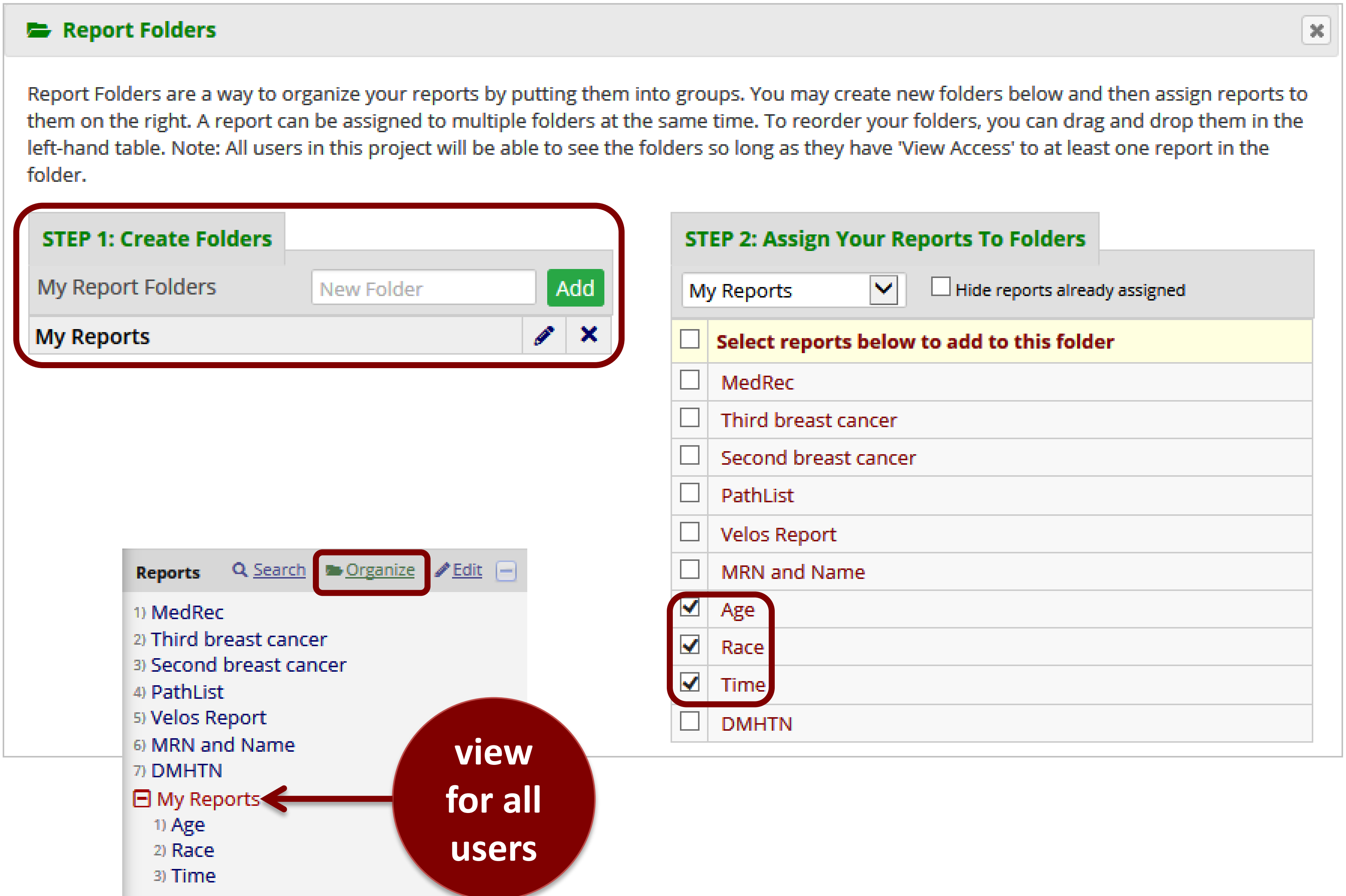
My Reports & Exports

		Report name	View/Export Options	Management Options	Report ID (auto-generated)
	A	**All data** (all records and fields)	View Report / Export Data / Stats & Charts		
	B	**Selected instruments** (all records)	Make custom selections		
		+ Create New Report			

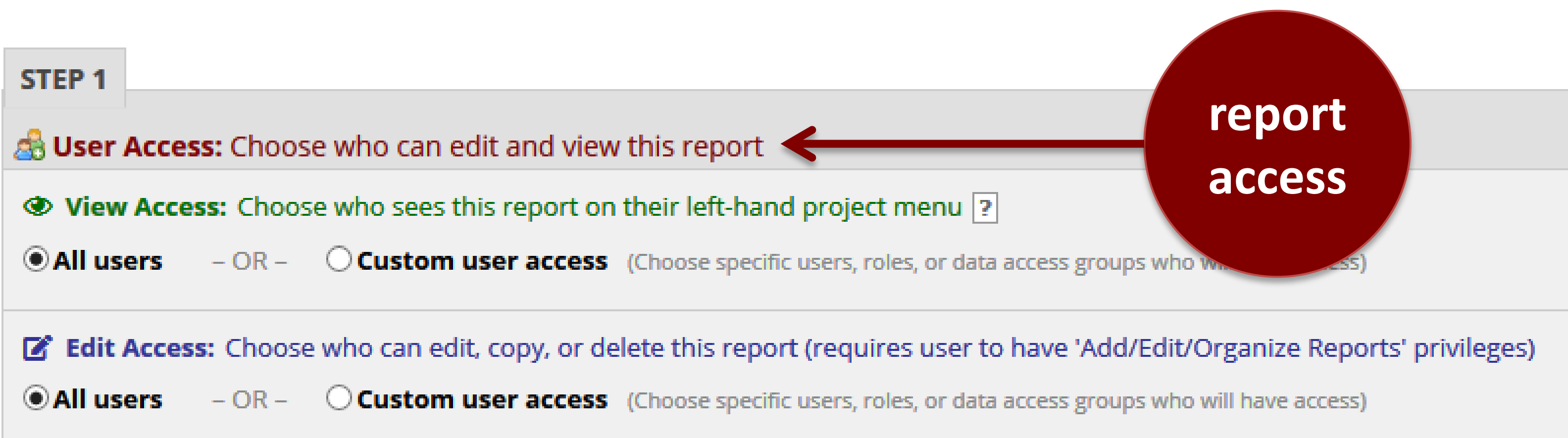
EXPORT OPTIONS



REPORT FOLDERS

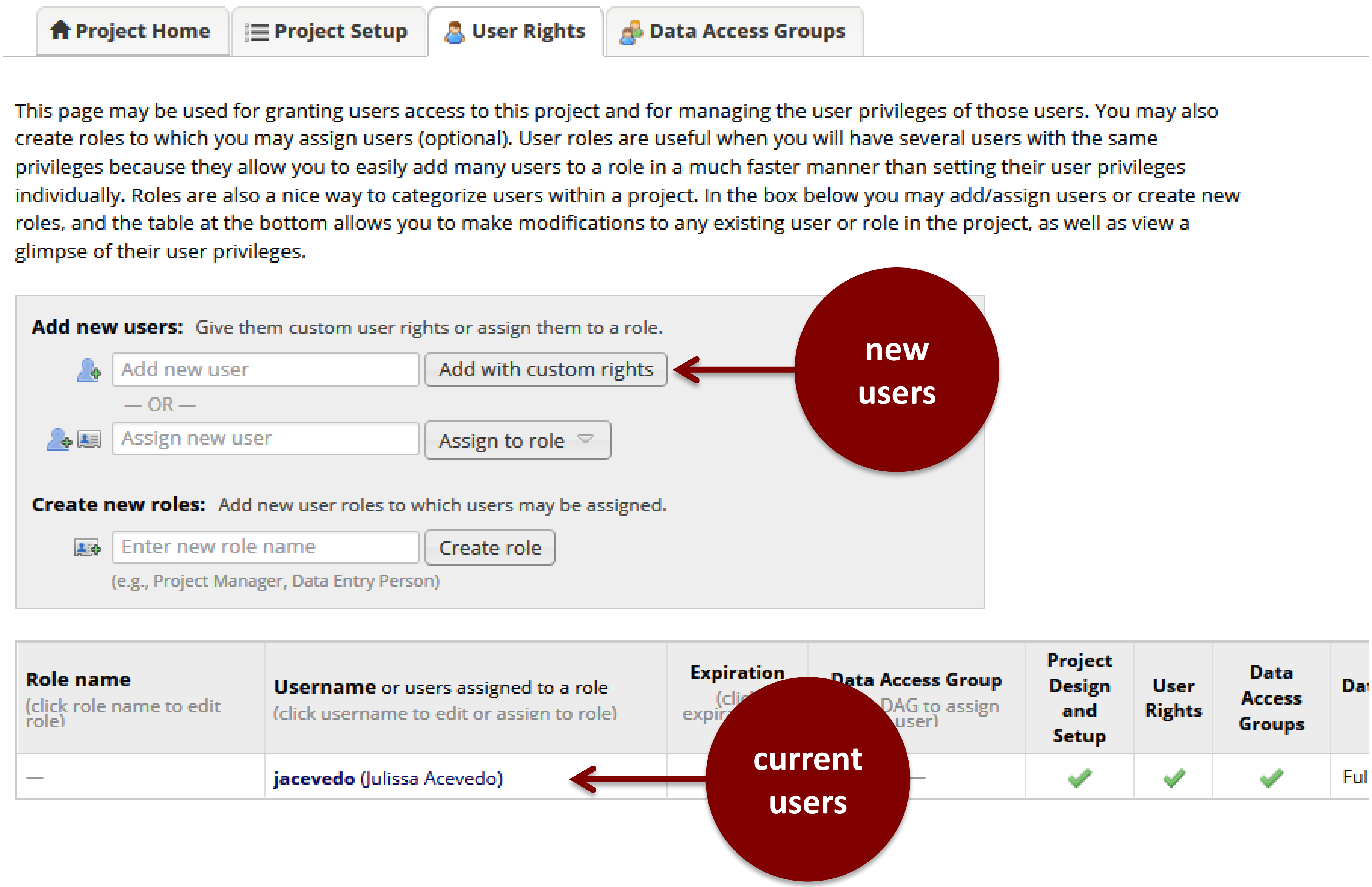


REPORT SEARCH AND ACCESS



User Rights

USER RIGHTS


Project Home
Project Setup
User Rights
Data Access Groups
This page may be used for granting users access to this project and for managing the user privileges of those users. You may also create roles to which you may assign users (optional). User roles are useful when you will have several users with the same privileges because they allow you to easily add many users to a role in a much faster manner than setting their user privileges individually. Roles are also a nice way to categorize users within a project. In the box below you may add/assign users or create new roles, and the table at the bottom allows you to make modifications to any existing user or role in the project, as well as view a glimpse of their user privileges.
Add new users: Give them custom user rights or assign them to a role.
Add new user
Add with custom rights
— OR —
Assign new user
Assign to role
new users
Create new roles: Add new user roles to which users may be assigned.
Enter new role name
Create role
(e.g., Project Manager, Data Entry Person)
Role name (click role name to edit role)
Username or users assigned to a role (click username to edit or assign to role)
Expiration
Data Access Group
Project Design and Setup
User Rights
Data Access Groups
—
jacevedo (Julissa Acevedo)
current users

USER ROLES

Project Home | Project Setup | User Rights | Data Access Groups

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Add new users: Give them custom user rights or assign them to a role.

Add new user | Add with custom rights

— OR —

Assign new user | Assign to role

Create new roles: Add new user roles to which users may be assigned.

Enter new role name | Create role

(e.g., Project Manager, Data Entry Person)

new roles

Role name (click role name to edit role)	**Username** or users assigned to a role (click username to edit or assign to role)	**Expiration** (click expiration to edit)	**Project Design and Setup**	**User Rights**	**Data Access Groups**	**Data Export Tool**
Project Manager	**jacevedo** (Julissa Acevedo)	never	✓	✓	✓	Full Data Set
Data Entry	**t.cri.redcap2** (Jane Doe) **t.cri.redcap3** (Sam Lee)	never never	✗	✗	✗	De-Identified

DATA ACCESS GROUPS

Project Home | Project Setup | User Rights | Data Access Groups

This page may be used for granting users access to this project and for managing the user privileges of those users. You may also create roles to which you may assign users (optional). User roles are useful when you will have several users with the same privileges because they allow you to easily add many users to a role in a much faster manner than setting their user privileges individually. Roles are also a nice way to categorize users within a project. In the box below you may add/assign users or create new roles, and the table at the bottom allows you to make modifications to any existing user or role in the project, as well as view a glimpse of their user privileges.

Add new users: Give them custom user rights or assign them to a role.

Add new user | Add with custom rights

— OR —

Assign new user | Assign to role

Create new roles: Add new user roles to which users may be assigned.

Enter new role name | Create role

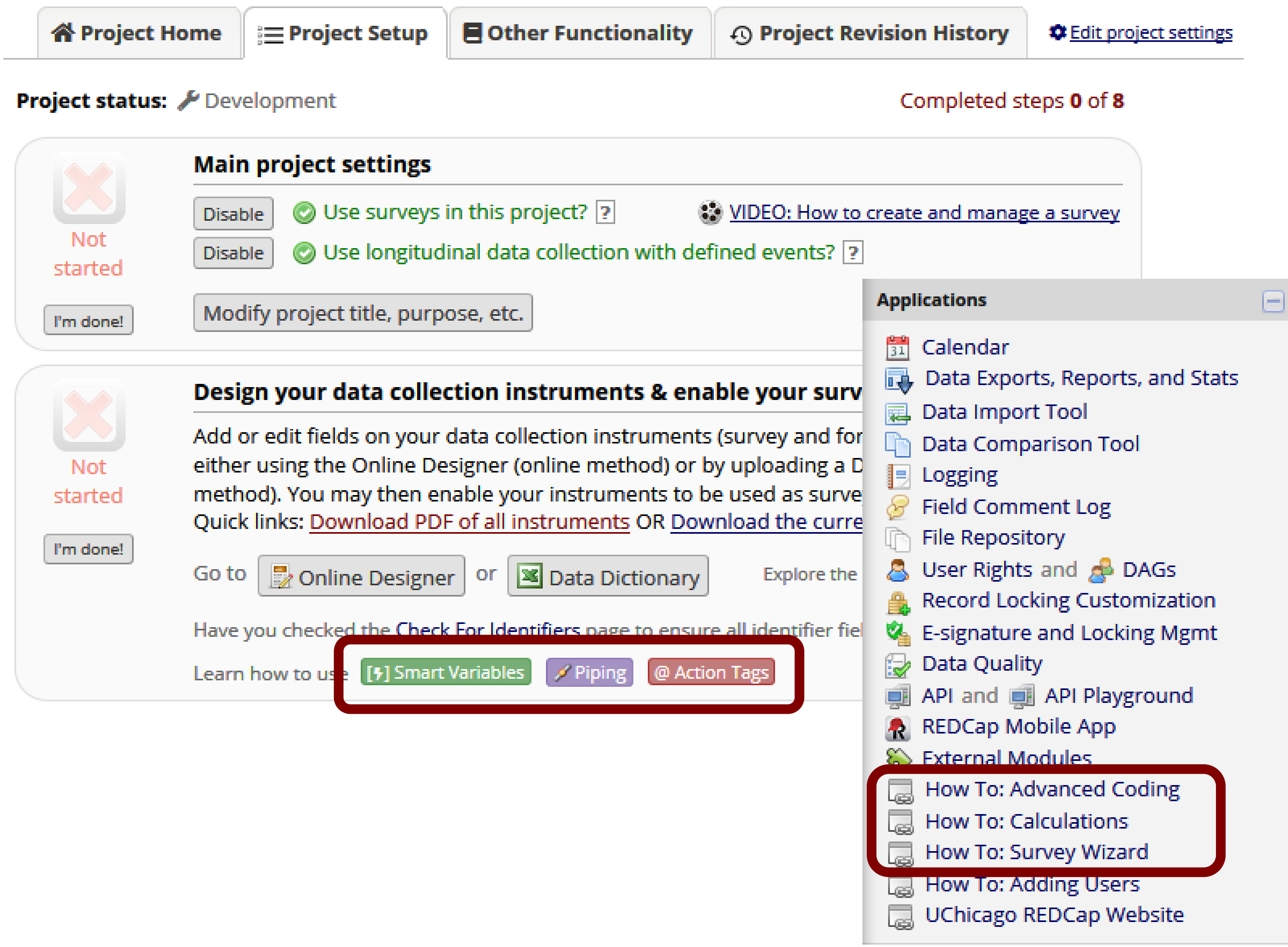
(e.g., Project Manager, Data Entry Person)

data access groups

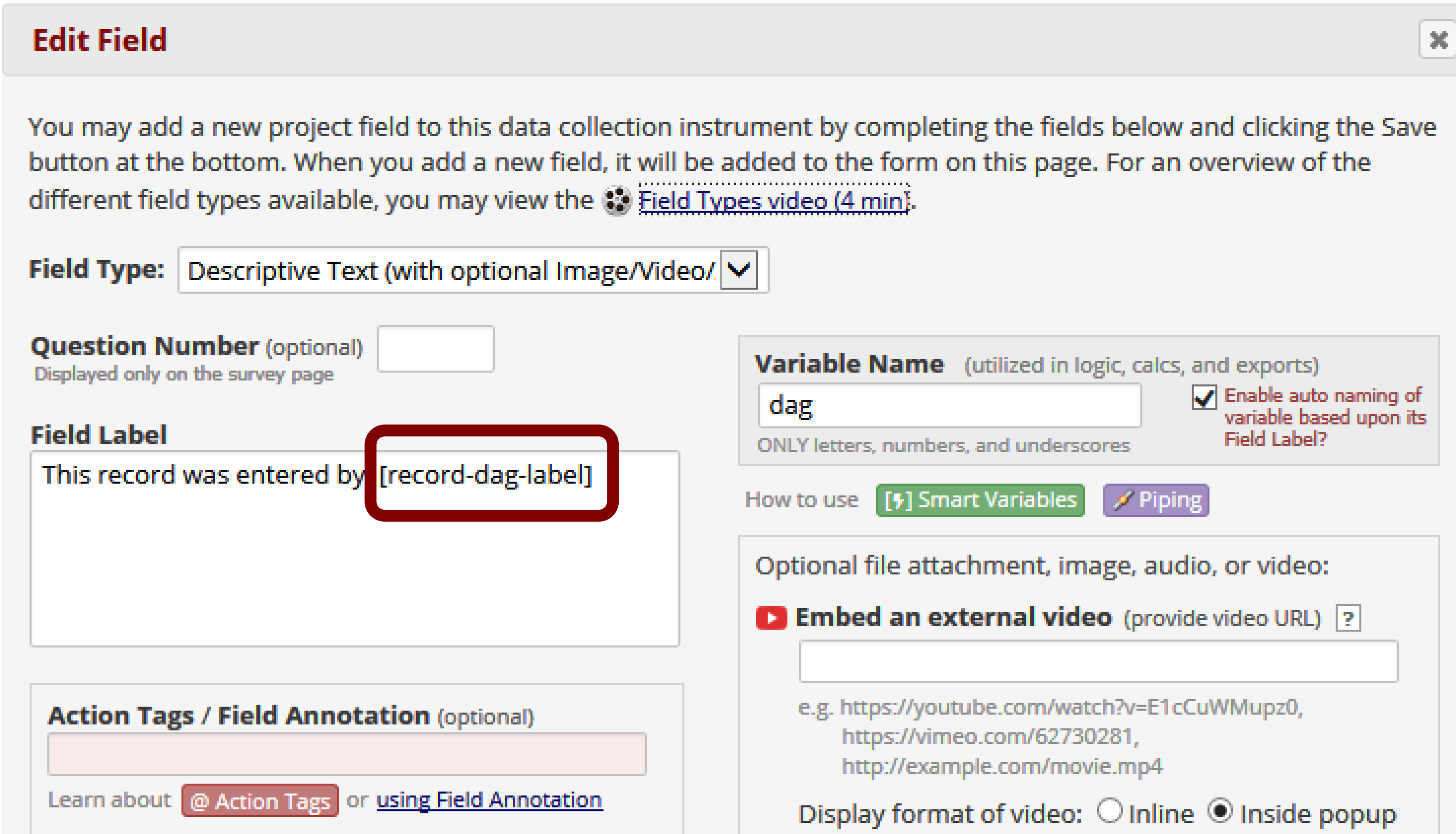
Role name (click role name to edit role)	**Username** or users assigned to a role (click username to edit or assign to role)	**Expiration** (click expiration to edit)	**Data Access Group** (click DAG to assign user)	**Project Design and Setup**	**User Rights**	**Data Access Groups**	**Data Export Tool**
Project Manager	jacevedo (Julissa Acevedo)	never	—	✔	✔	✔	Full Data Set
Data Entry	t.cri.redcap2 (Jane Doe) t.cri.redcap3 (Sam Lee)	never never	Rush Advocate	✘	✘	✘	De-Identified

Advanced Features

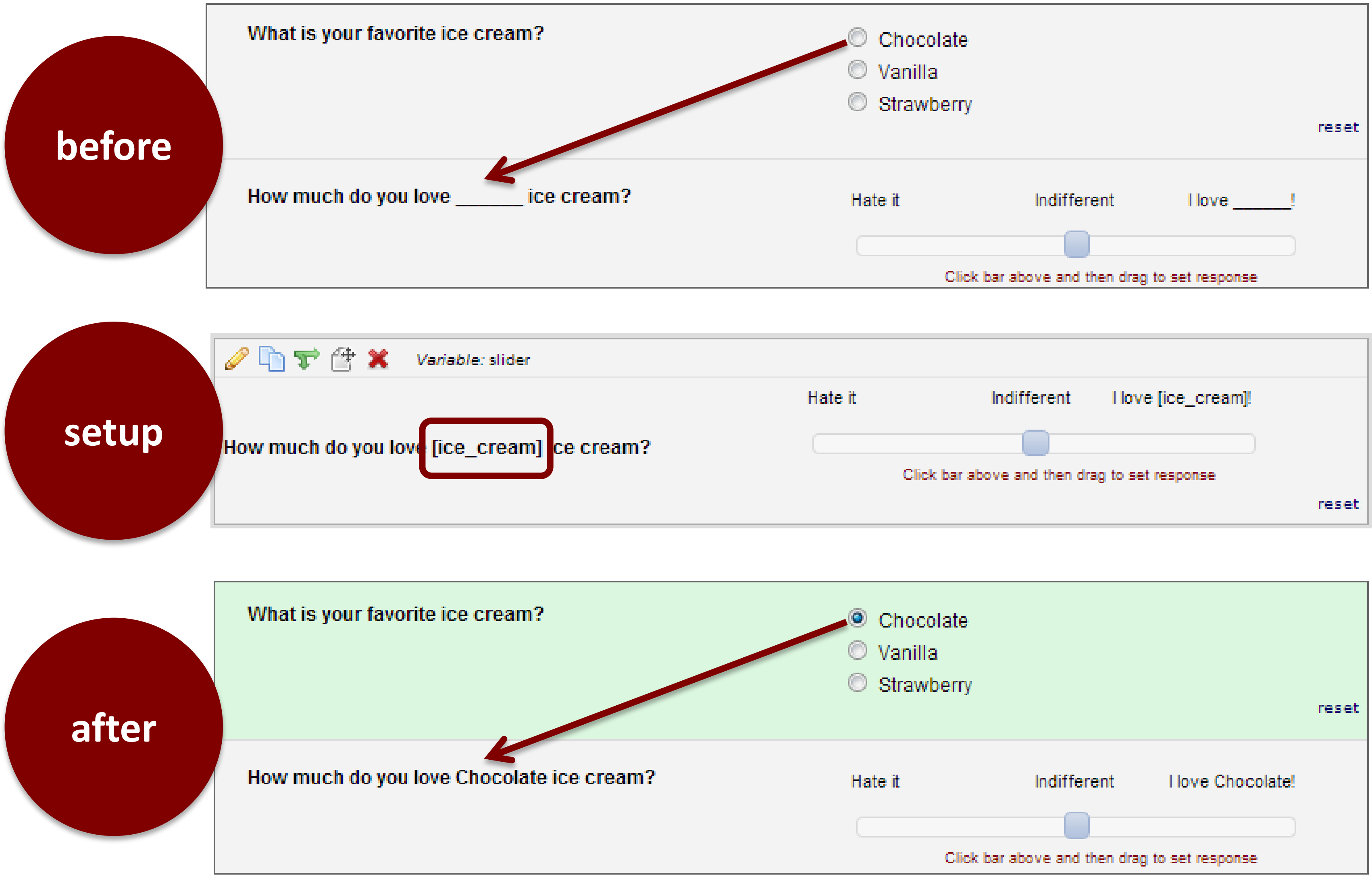
ADVANCED FEATURES



SMART VARIABLES

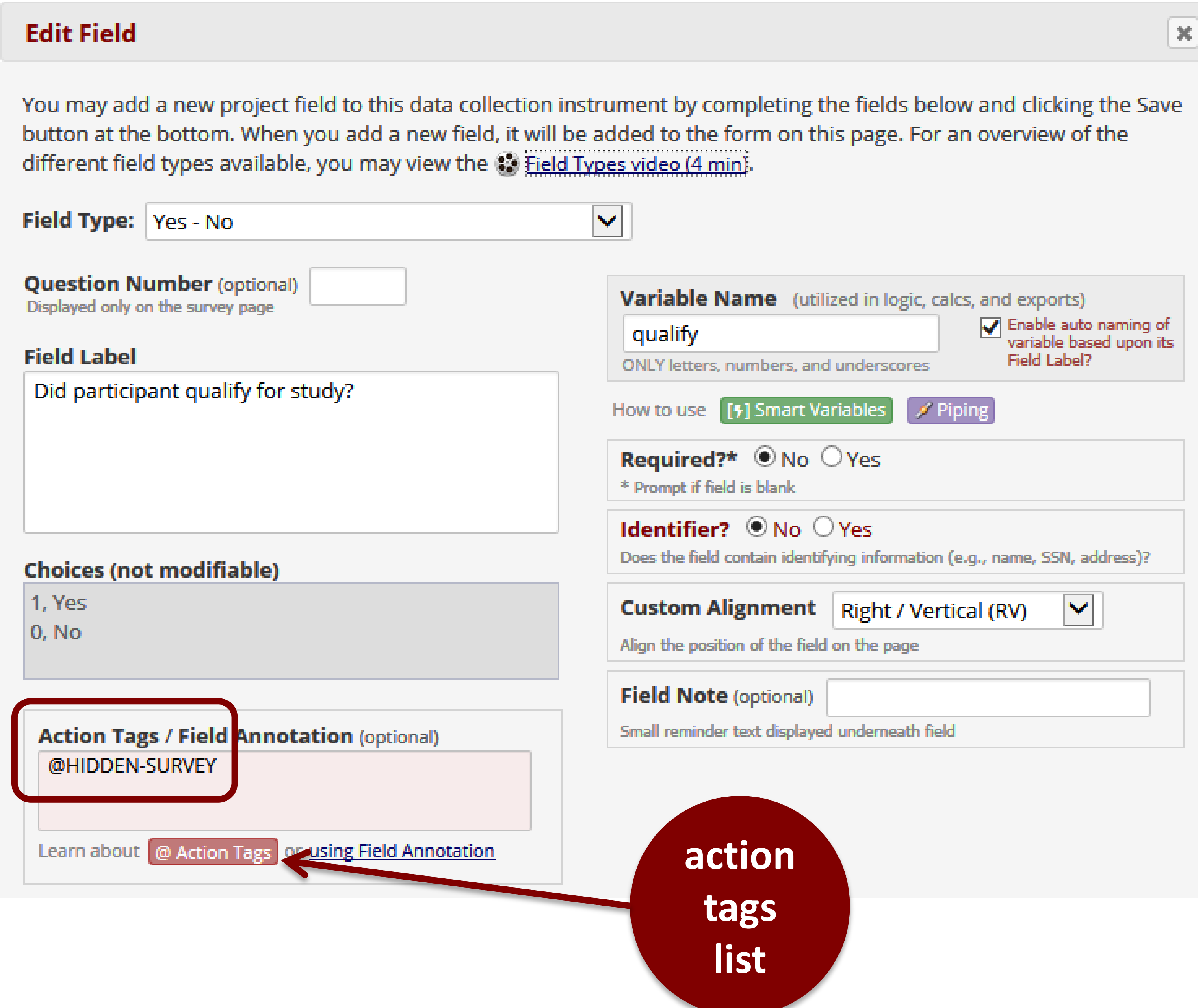


PIPING



before
What is your favorite ice cream?
Chocolate
Vanilla
Strawberry
reset
How much do you love _______ ice cream?
Hate it
Indifferent
I love ______!
Click bar above and then drag to set response
setup
Variable: slider
Hate it
Indifferent
I love [ice_cream]!
How much do you love [ice_cream] ice cream?
Click bar above and then drag to set response
reset
after
What is your favorite ice cream?
Chocolate
Vanilla
Strawberry
reset
How much do you love Chocolate ice cream?
Hate it
Indifferent
I love Chocolate!
Click bar above and then drag to set response

ACTION TAGS


Edit Field
You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the Field Types video (4 min).
Field Type: Yes - No
Question Number (optional)
Displayed only on the survey page
Field Label
Did participant qualify for study?
Choices (not modifiable)
1, Yes
0, No
Action Tags / Field Annotation (optional)
@HIDDEN-SURVEY
Learn about @ Action Tags or using Field Annotation
Variable Name (utilized in logic, calcs, and exports)
qualify
ONLY letters, numbers, and underscores
Enable auto naming of variable based upon its Field Label?
How to use [⚡] Smart Variables Piping
Required?* No Yes
* Prompt if field is blank
Identifier? No Yes
Does the field contain identifying information (e.g., name, SSN, address)?
Custom Alignment Right / Vertical (RV)
Align the position of the field on the page
Field Note (optional)
Small reminder text displayed underneath field
action tags list

Smart Devices

SMART DEVICES

REDCap is compatible with tablets and smart phone (iOS and Android).

Simply navigate to https://redcap.uchicago.edu/

MOBILE APP

Offline Data Collection

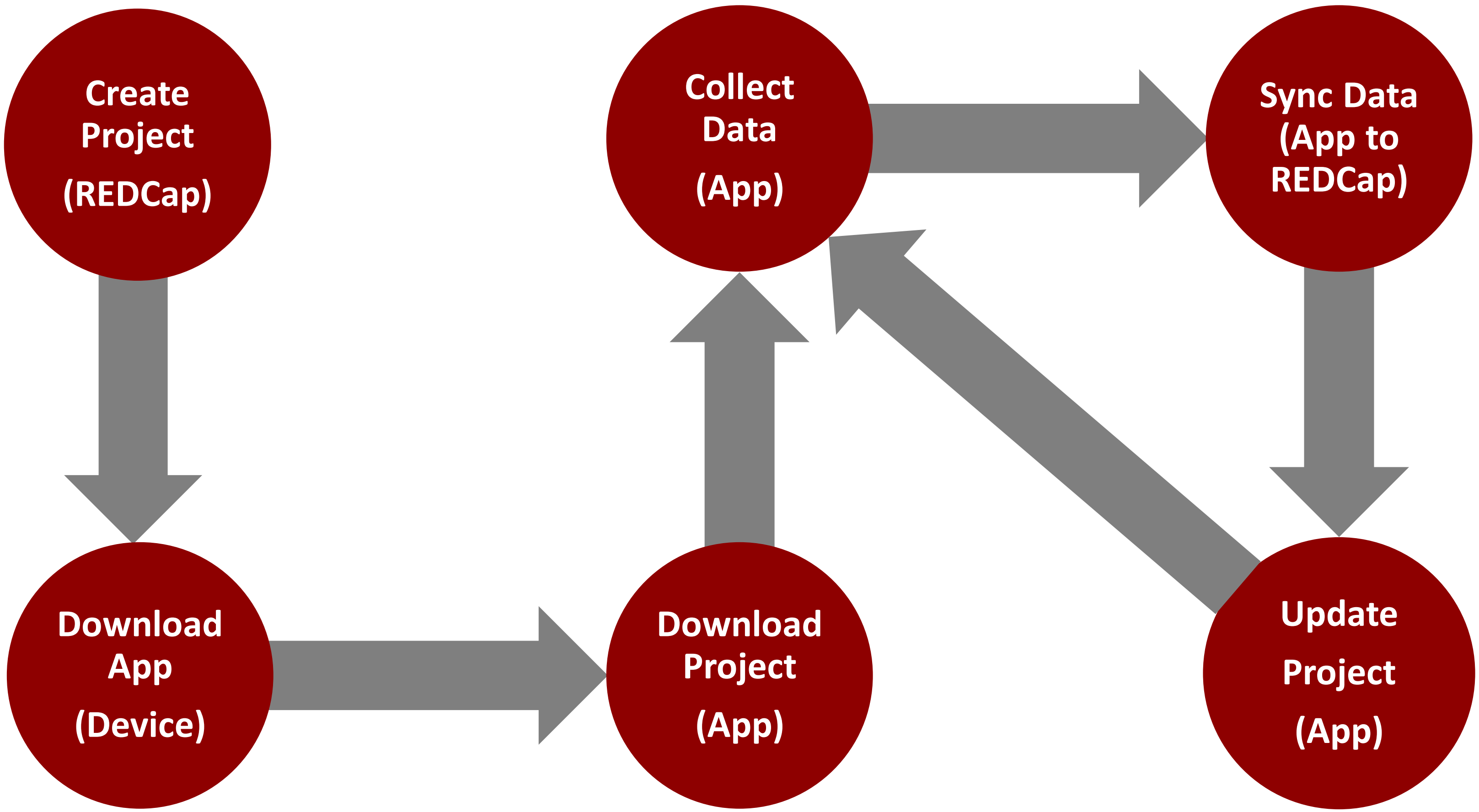
(no/poor internet connectivity)

REDCap

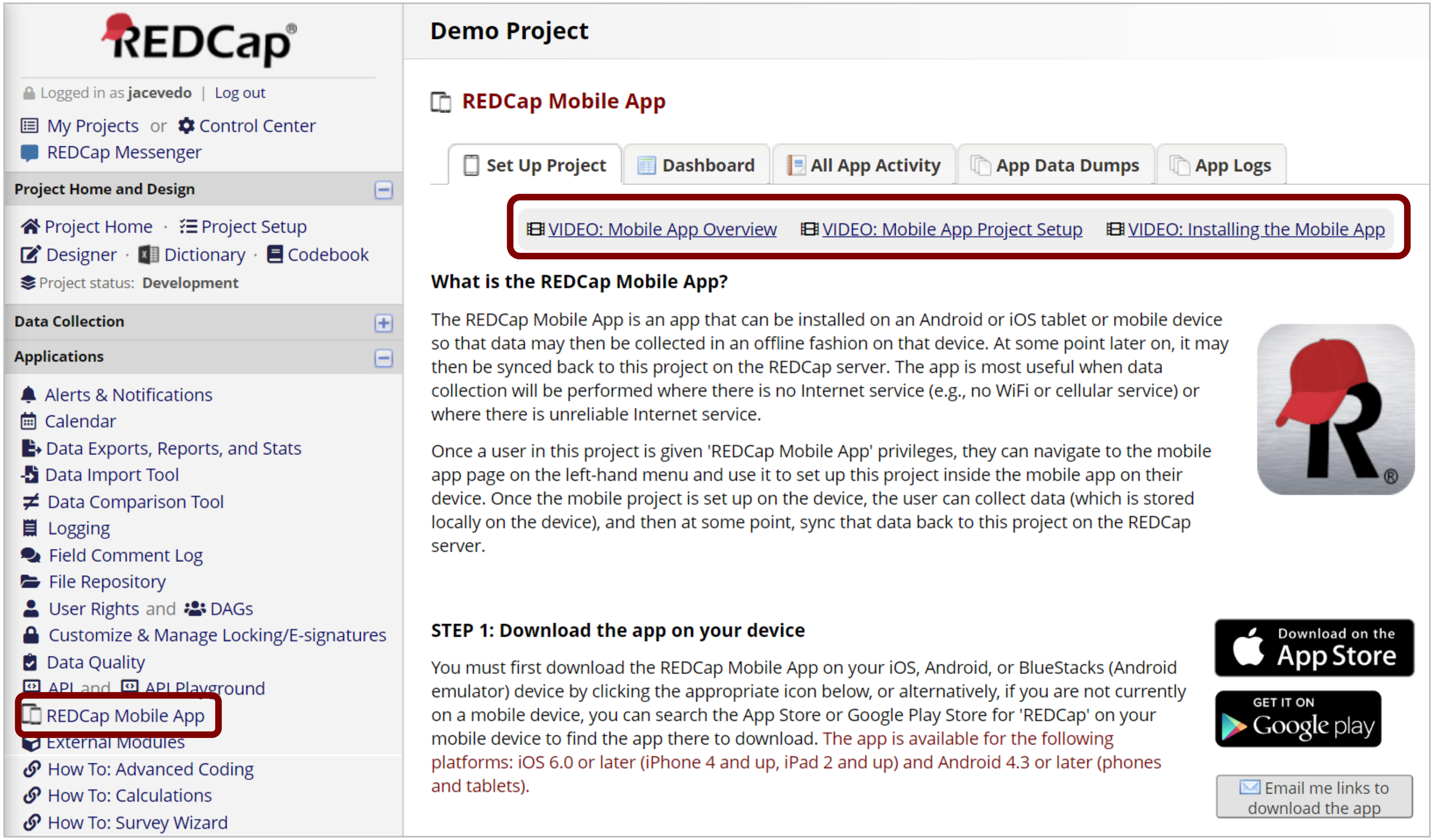
App Store

Google play

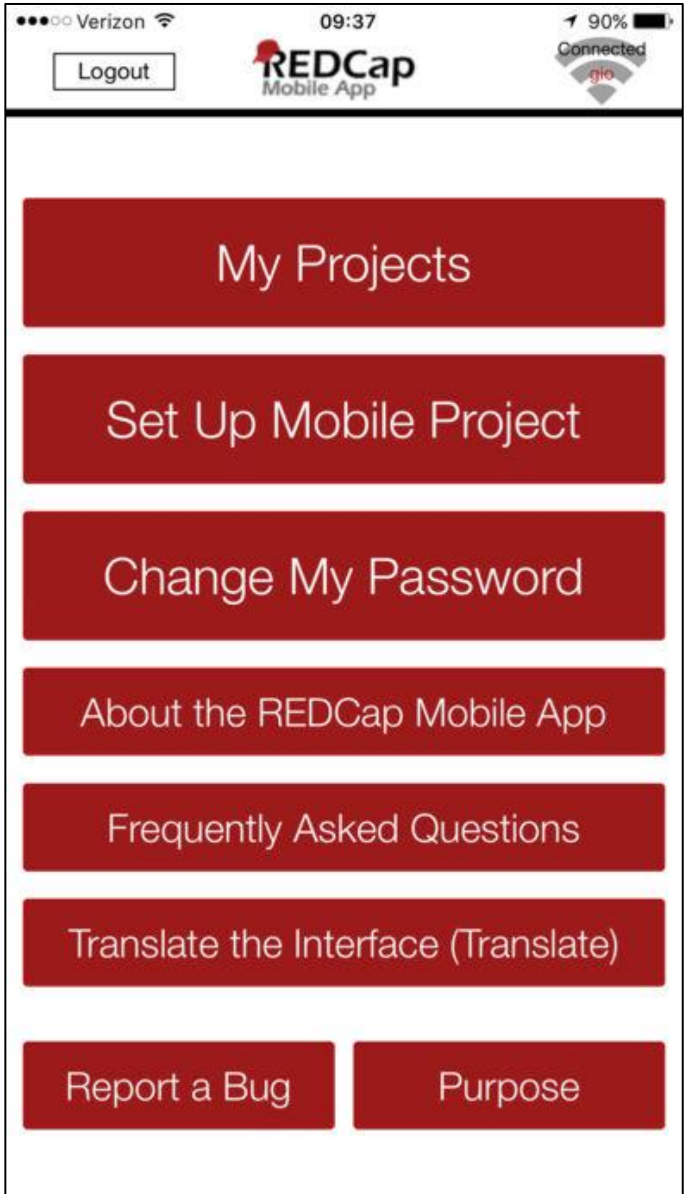
MOBILE APP - PROCESS

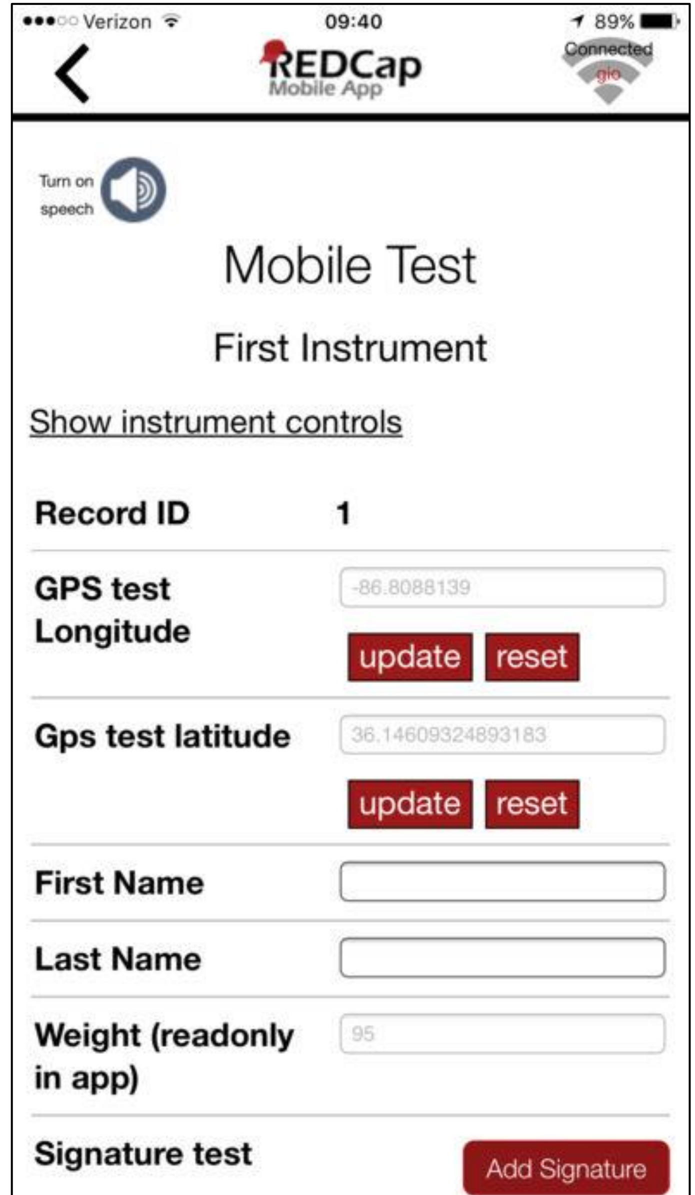


MOBILE APP - SETUP

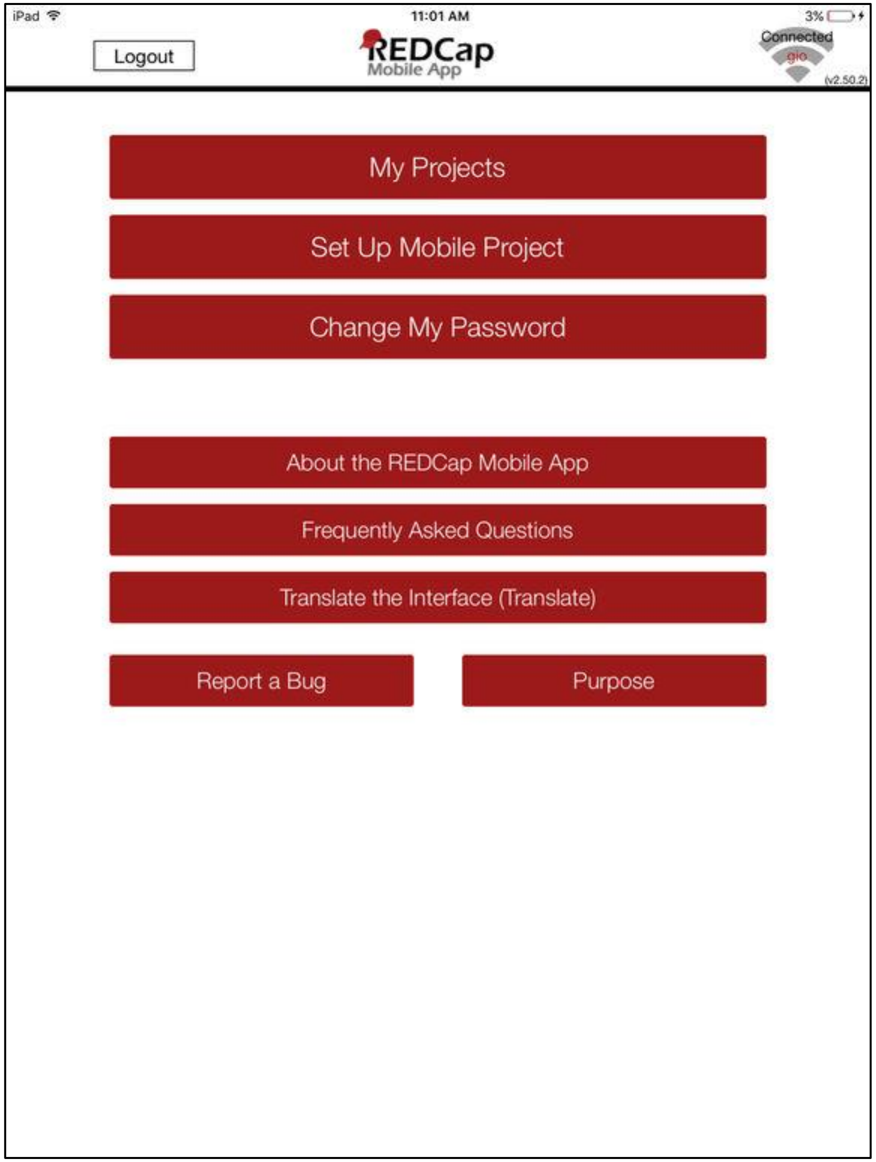


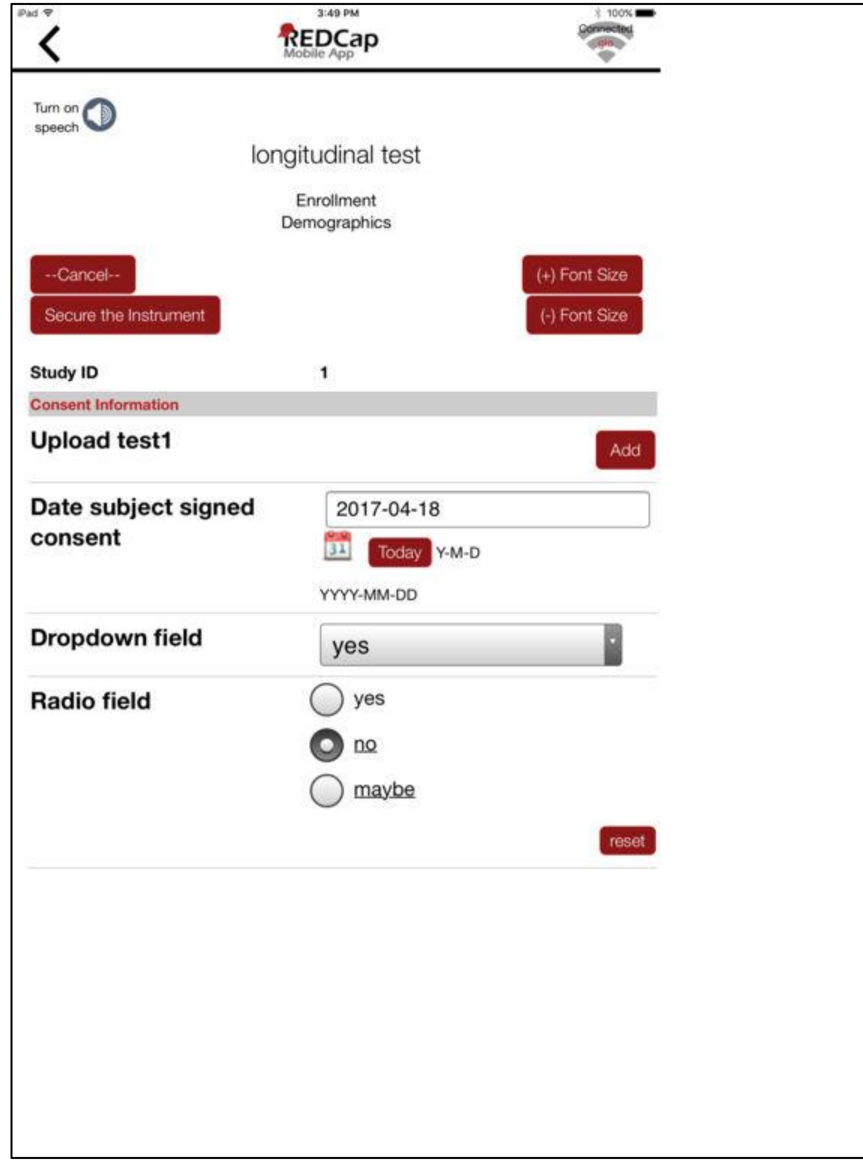
MOBILE APP - IPHONE





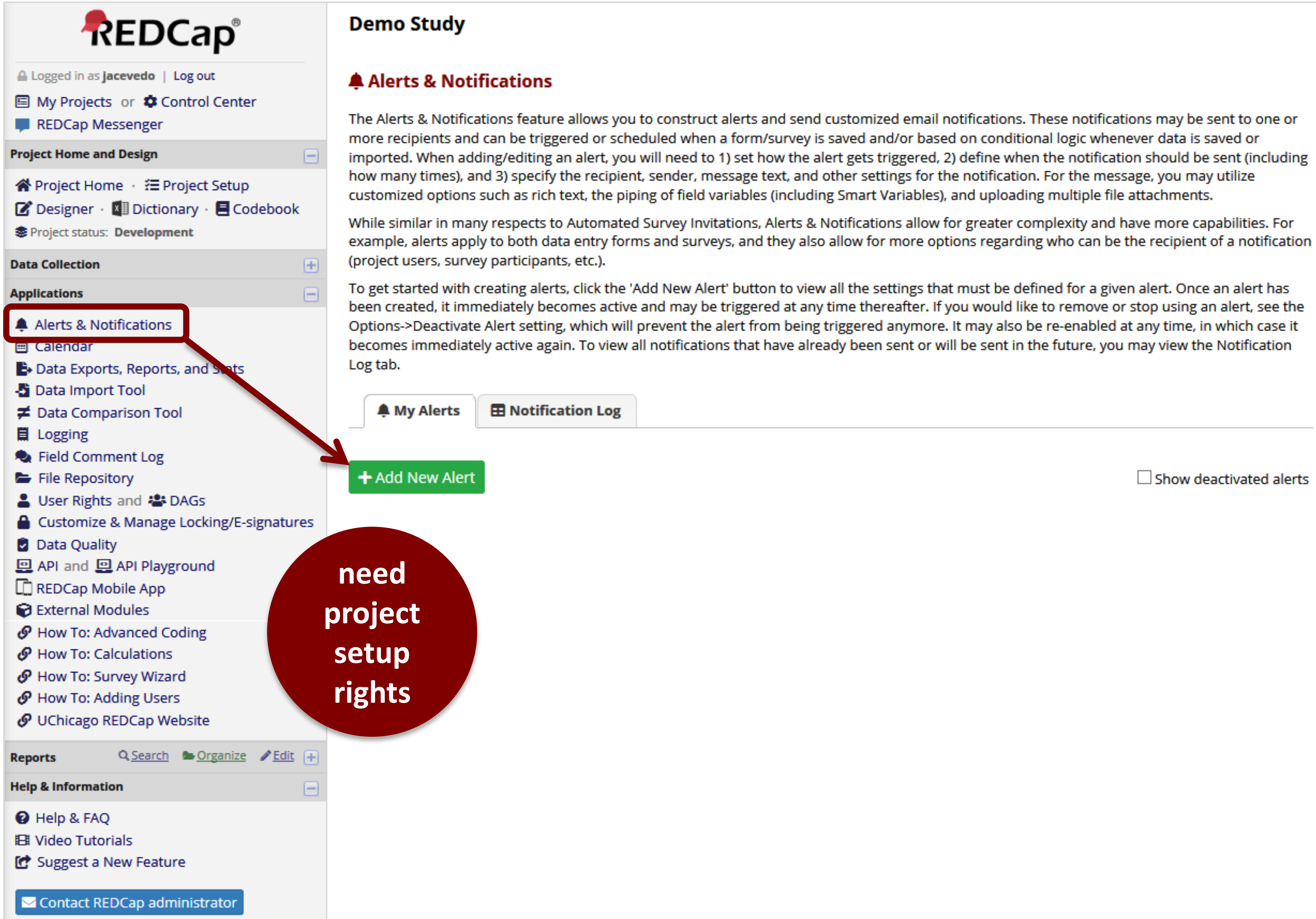
MOBILE APP - IPAD





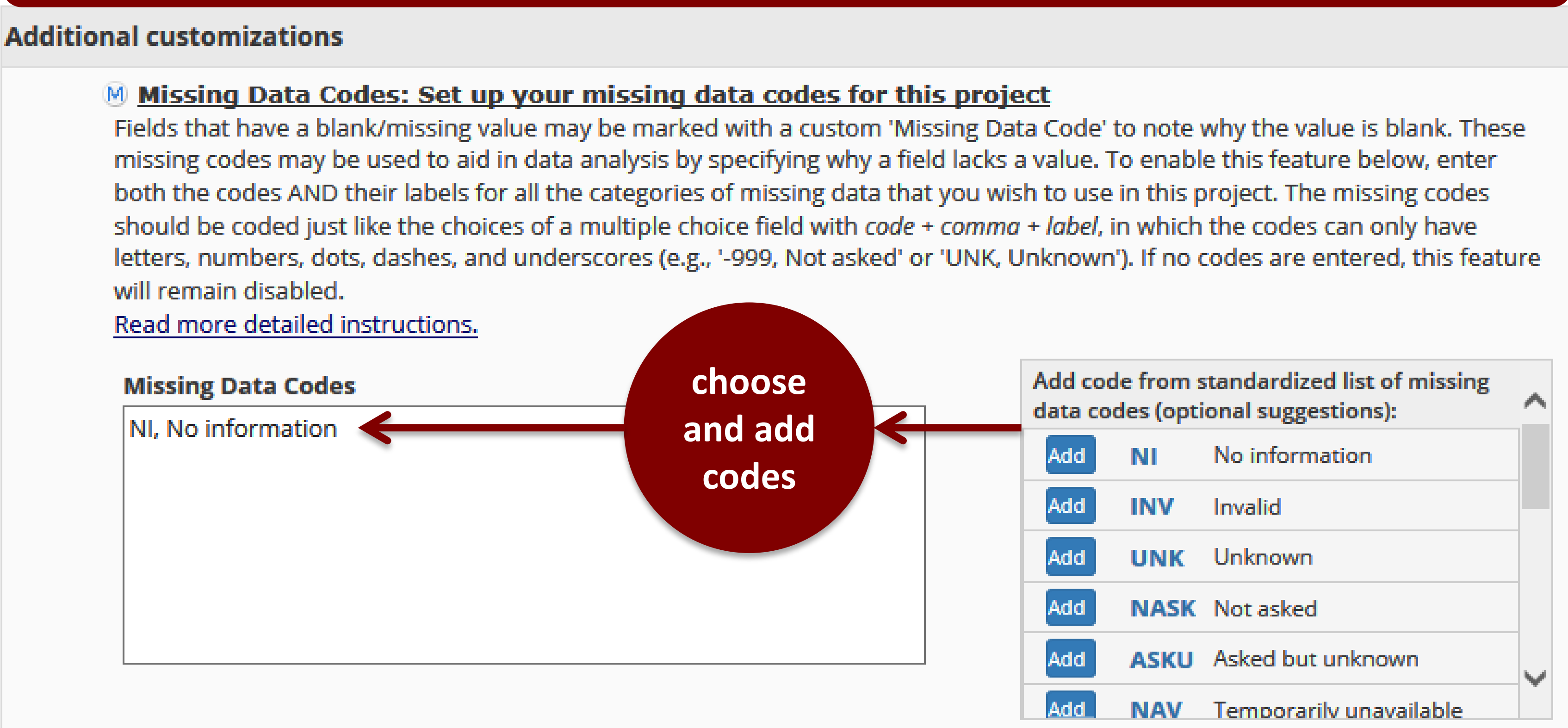
New Features!

ALERTS & NOTIFICATIONS



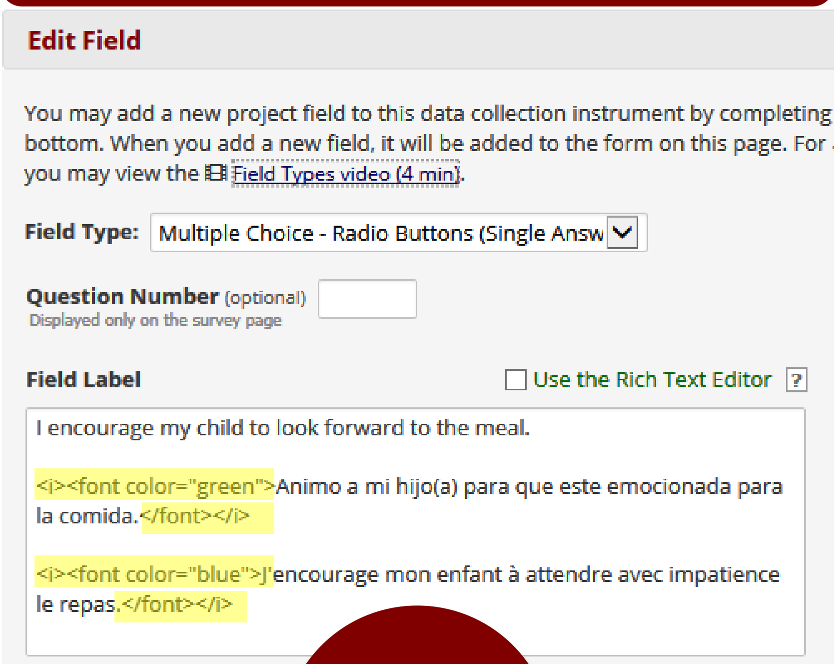
MISSING DATA CODES

Project Setup > Enable optional modules > Additional Customizations



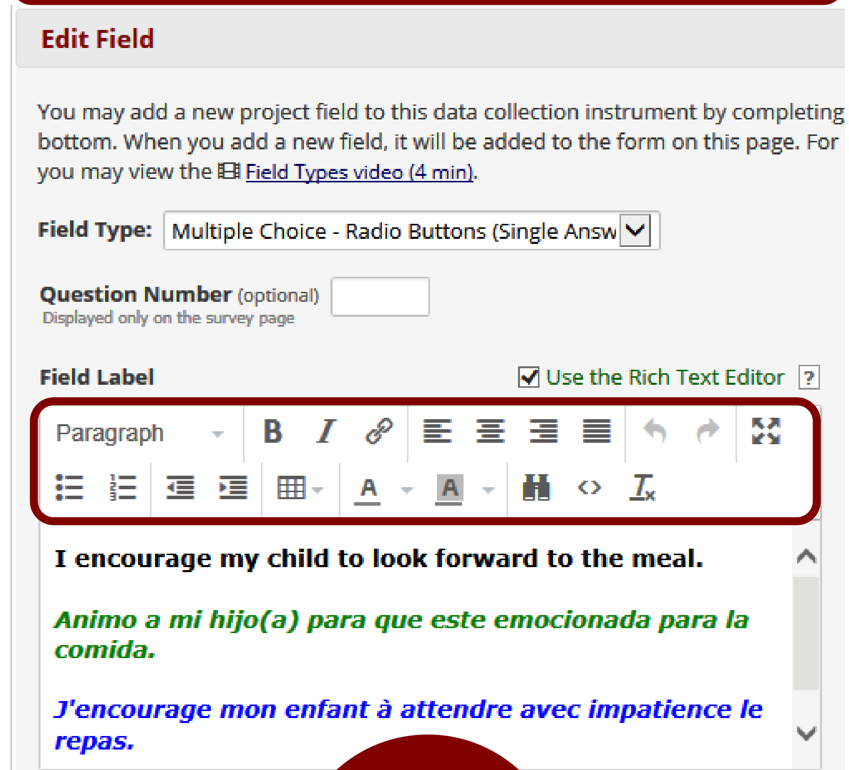
RICH TEXT EDITOR

Previously…



HTML needed

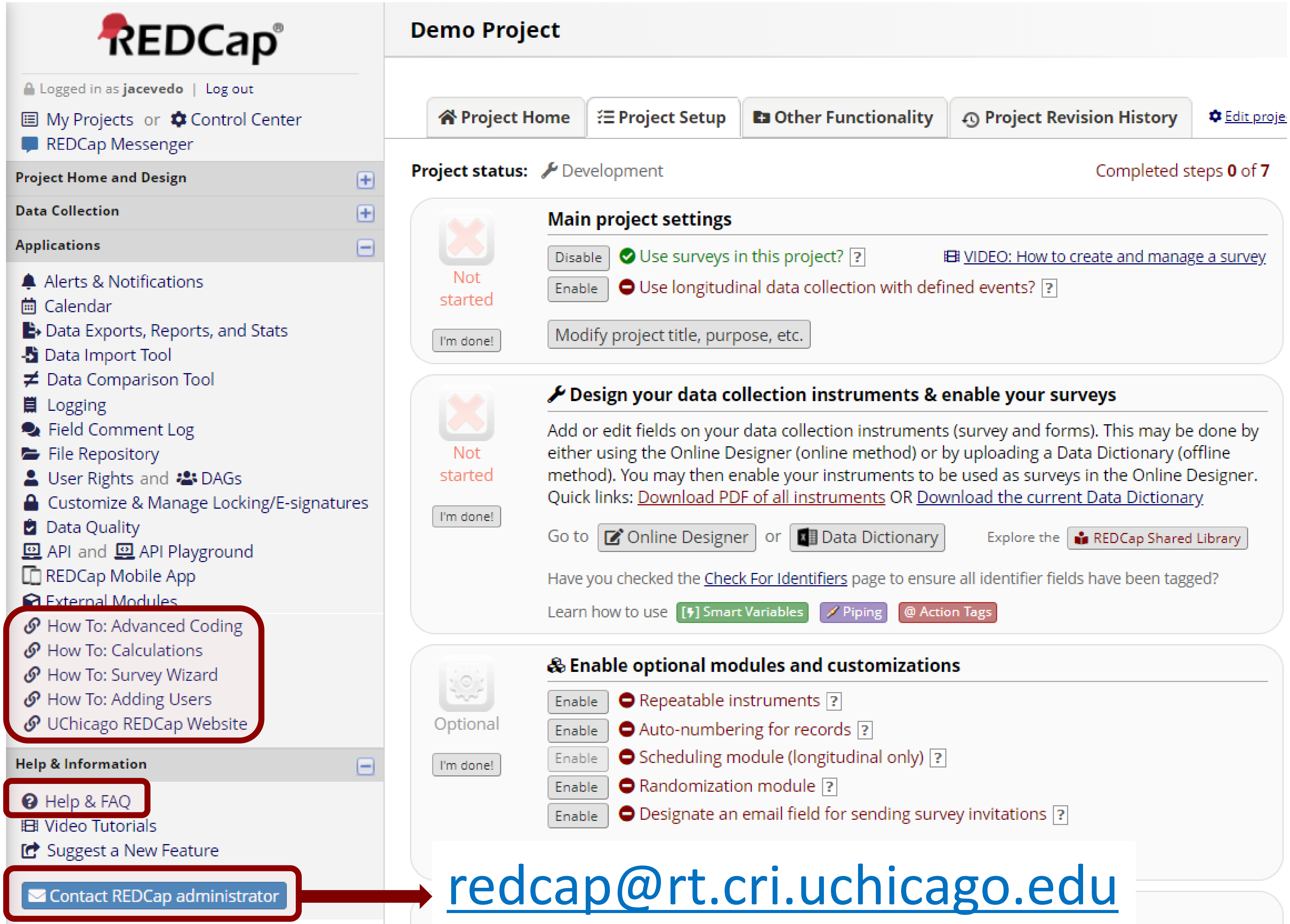
Today…



no HTML needed

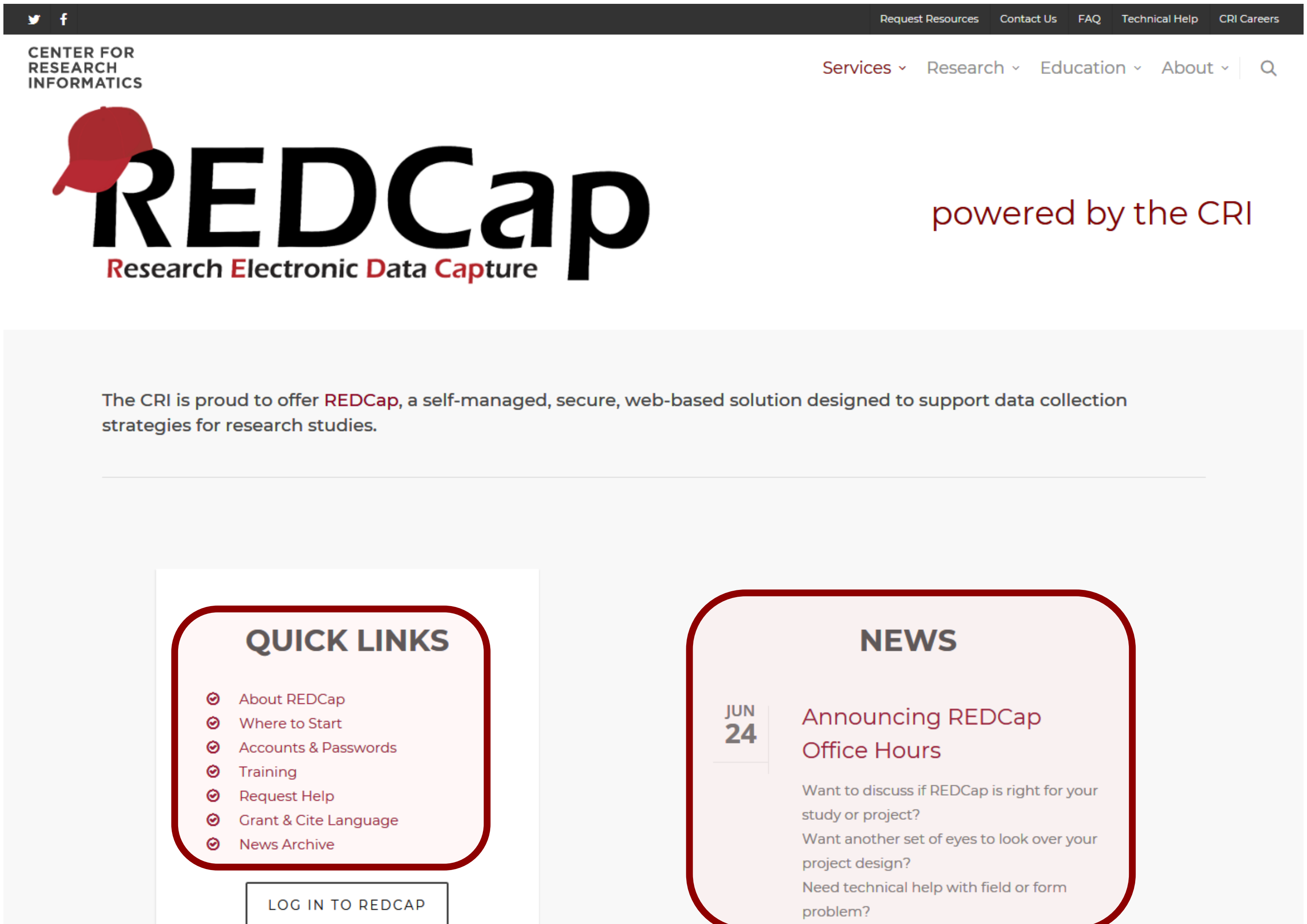
Help Resources

HELP RESOURCES



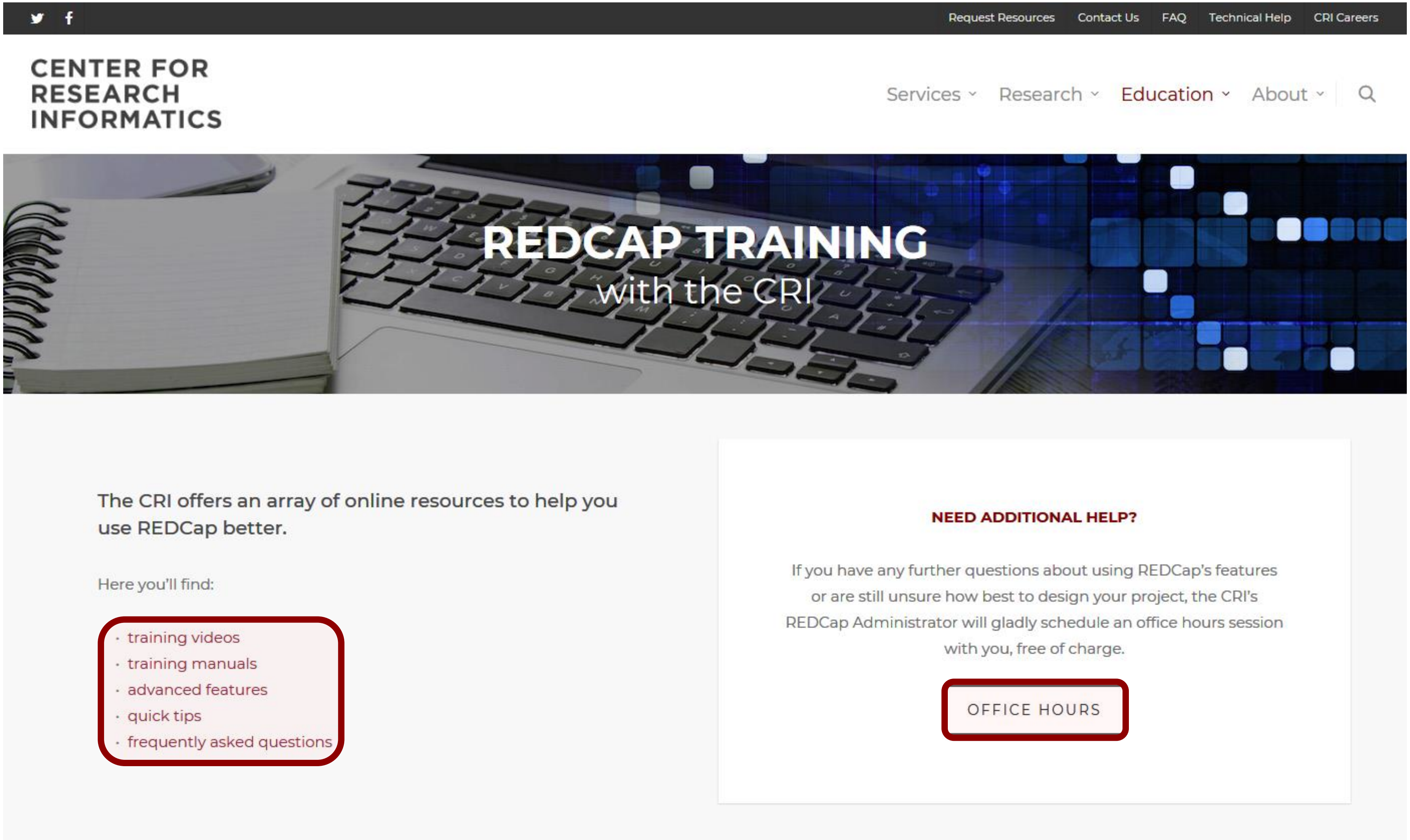
ADDITIONAL HELP

http://cri.uchicago.edu/redcap/



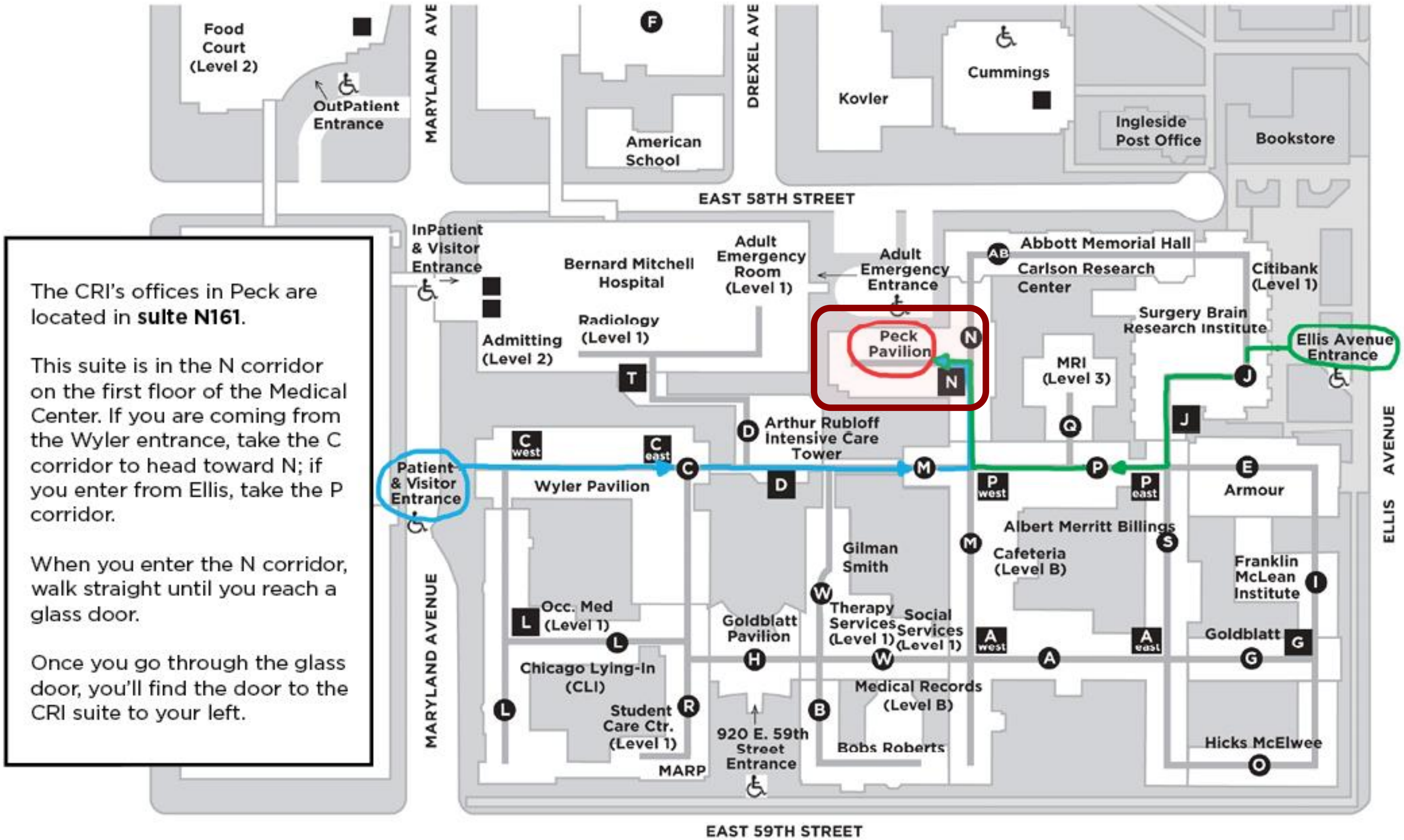
ADDITIONAL HELP

http://cri.uchicago.edu/redcap-training/



OFFICE HOURS

Wednesdays, 12-3pm, N161, redcap@rt.cri.uchicago.edu



NEXT SEMINAR

Making the Most of REDCap:

All About Surveys

- Thursday, April 14th, 2020
- KCDB 1103
- Time TBD
- https://cri.uchicago.edu/seminar-series/