REDCAP INTRODUCTION (101)

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REDCap
Research Electronic Data Capture

ITHS Partnership

- Speeding science to clinical practice for the benefit of patients and communities.

- Promotes translation of scientific discovery by:
  - ❑ Fostering innovative research
  - ❑ Cultivating multi-disciplinary partnerships
  - ❑ Training the next generation of researchers

- More information: www.iths.org

| Laboratory | Clinic | Community |

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Agenda & Project Workflow

| **Overview**	**Getting Access**	**Design/Test**	**Production**	**Data Collection**	**User Rights**
About REDCap	*Project creation & navigation*	*Designing instruments and variables*	*Moving the project to production*	*Creating records/ Printing & Exporting*	*Adding users to your project*
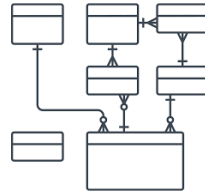
What is REDCap?

- Research Electronic Data Capture (REDCap)

- Web-based

- Built for research

- User-friendly

- ITHS REDCap

  - Free to use
  - Highly secure
  - Backed up daily
  - User support

7500+ installations worldwide
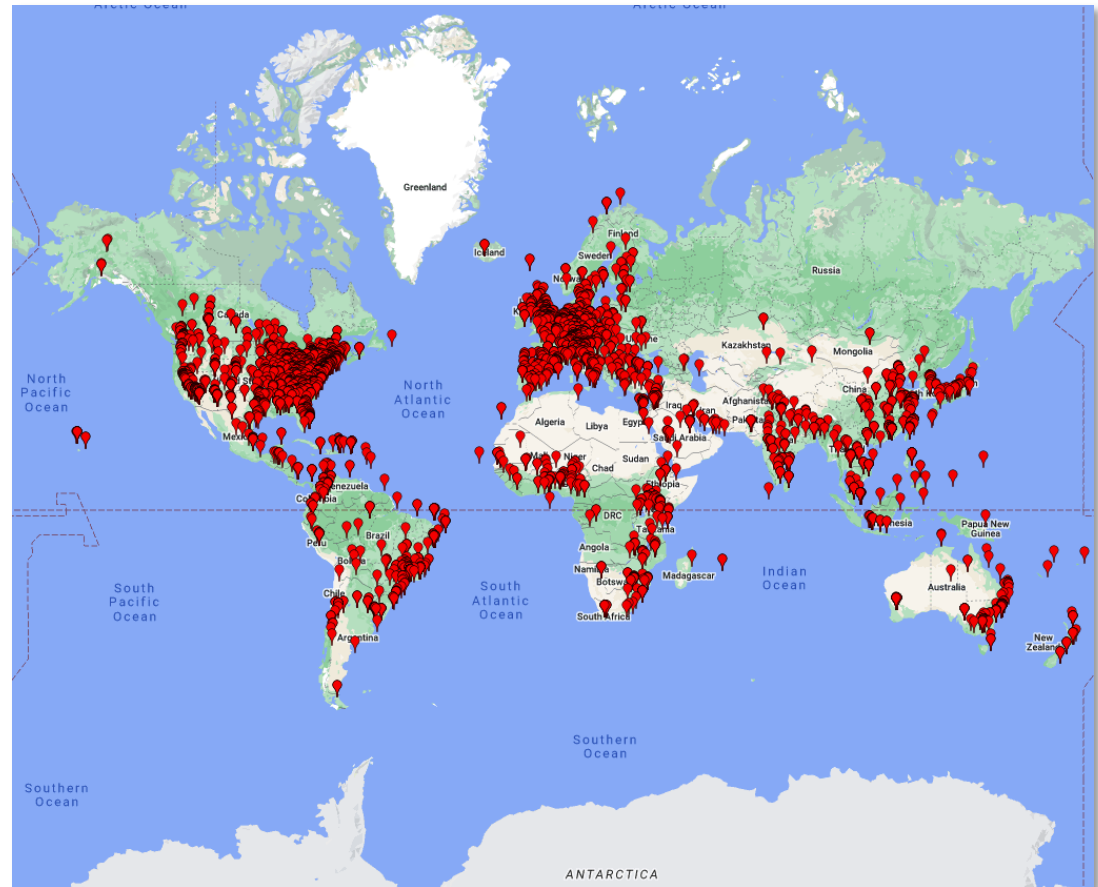
Security Concerns

Web servers

- Managed by the institution
- Installed on secure servers
- UW HIPAA compliant

Three-tiered access

- System login
- Project access
- User restrictions within project

Audit trails

- REDCap logging features

De-identified data export

- Identify variables as Personal Health Information (PHI)
- Export module with de-identification option

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Accessing REDCap at the UW

University of Washington Net ID's

- Use your UW NetID to login to REDCap
- Create an account upon first login

redcap.iths.org

Other University ID's

Check with your institution for access to REDCap

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In order to access this resource, you must be affiliated with one of the following organizations:

University of Washington ▾ [proceed]

☑ Remember my selection

If you are not affiliated with a listed organization but feel you should have access to this resource, create a free account with ITHS assistance.

Partner Institutions

- WWAMI (Washington, Wyoming, Alaska, Montana and Idaho) regional institutions can request ID's
- If affiliated with another one of our partner institutions, you may need to request a sponsored account.

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Navigating the REDCap Top Menu
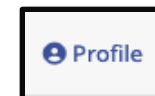
My Projects ⟶

+ New Project – create new

Help & FAQ – searchable help

Training Videos – get started

Profile – your info & settings

*Add alternate email addresses to your profile - i.e., dept. email

Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. Read more

Project Title	PID	Records	Fields	Instruments	Type	Status
REDCap Class (1)						
Office Hours (1)						
Consultations (8)						
Closed Consultations (20)						
REDCap Admin (10)						
External Modules (4)						
Class Demos (1)						
Demonstrations (15)						
CoVPN (42)						

My Projects 📂 Organize 📁 Collapse All   Filter projects by title

Project Requests / Approvals

New Project requests

Approved within one business day

+ New Project

Needed information for projects:

- Project title
- Purpose
  - o If Research, please provide:
    - Principal investigator
    - IRB number
    - Type of research

Project creation options

Project creation option:
- ⦿ Empty project (blank slate)
- ○ Upload a REDCap project XML file (CDISC ODM format) [?]
- ○ Use a template (choose one below)

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Project Templates

When creating a new REDCap database (referred to in REDCap as a 'Project') you have the option of using a template with instruments already created for you to modify and use. Each institution will have a different list of available templates including classic database, surveys, longitudinal projects, etc.

Project creation option:
- ○ Empty project (blank slate)
- ○ Upload a REDCap project XML file (CDISC ODM format) [?]
- ● Use a template (choose one below)

★ **Choose a project template**

select template	Template title (sorted by title)	Template description
○	Basic Demography	Contains a single data collection instrument to capture basic demographic information.
○	Classic Database	Contains six data entry forms, including forms for demography and baseline data, three monthly data forms, and concludes with a completion data form.
○	CTCAE v4.03 Adverse Events Log	Contains a single survey for logging Adverse Events using the Common Terminology Criteria for Adverse Events (CTCAE). This tool is often used for oncology research studies. This template is based on version 4.03 of the CTCAE.
○	e-consent Template	Regular e-consent template and HIPAA authorization. Based on University of Washington Human Subject Division's standard consent form.
○	e-consent/assent Template	e-consent/assent Template to be used with minors. Based on University of Washington Human Subject Division's standard consent form.

[Create Project] [Cancel]

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Project Navigation

REDCap Left Menu Sections

Project Home & Design

Data Collection

Applications

Dashboards/Reports

Help & information – helpful links at bottom

*The Applications list will change depending on user rights.

Project Home and Design

🏠 Project Home · ≣ Project Setup
📝 Designer · 📘 Dictionary · 📗 Codebook
📚 Project status: **Development**

Data Collection

📇 Survey Distribution Tools
- Get a public survey link or build a participant list for inviting respondents
📅 Scheduling
- Generate schedules for the calendar using your defined events
⊞ Record Status Dashboard
- View data collection status of all records
📄 Add / Edit Records
- Create new records or edit/view existing ones

Applications

🖥 Project Dashboards
🔔 Alerts & Notifications
🌐 Multi-Language Management
📅 Calendar
📊 Data Exports, Reports, and Stats
📥 Data Import Tool
≠ Data Comparison Tool
📋 Logging and 📧 Email Logging
📁 File Repository
👤 User Rights and 👥 DAGs
🔒 Customize & Manage Locking
🗂 Data Quality and 💬 Resolve Issues
🔌 API and 🔌 API Playground
📱 REDCap Mobile App

🔗 Free REDCap Classes
🔗 ITHS REDCap (User) FAQ
🔗 ITHS REDCap Tip of the Month
🔗 REDCap Support Request

Project Dashboards 🔍 Search 📁 Organize ✏ Edit
1) Cats or Dogs?
2) testing

Reports 🔍 Search 📁 Organize ✏ Edit
1) Test
2) Counts

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Project Navigation

Project Setup Page

- Enable project settings and link to project design options.
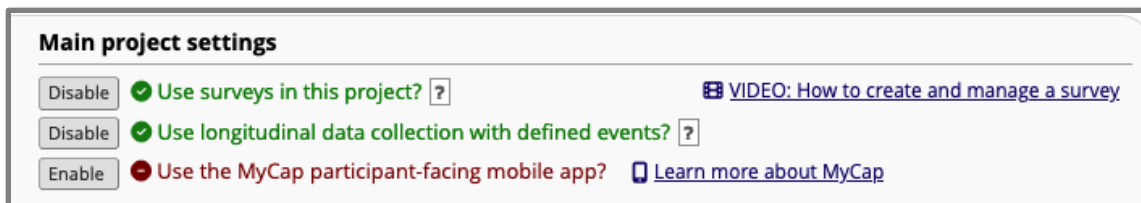
Other Functionality Page

- Contains project status info and backup options.

Data Collection Options

Main project settings

Disable	✔ Use surveys in this project? [?]	⊞ VIDEO: How to create and manage a survey
Disable	✔ Use longitudinal data collection with defined events? [?]	
Enable	⊖ Use the MyCap participant-facing mobile app?	▯ Learn more about MyCap

Classic Data Entry

A classic or traditional project is used for basic data collection. All data will be entered directly into REDCap by users who log in to REDCap to access the project and perform data entry, or through data import. Data collection instruments are created as basic forms.

With this type of project, Surveys are not enabled in the project. Longitudinal data collection is also not enabled.

Survey

Enabling Surveys in your REDCap project allows a form to be enabled as a survey and completed by survey respondents who do. Not need to log in to REDCap. Data can still be entered manually by REDCap users who are logged in and doing data entry.

After enabling surveys in your project from the Project Setup page, you will see a new menu item for Survey Distribution tools.

Longitudinal

Enabling longitudinal data collection in your REDCap project allows any form or survey to be reused multiple times throughout the project. This eliminates the need to recreate the same form for individual time points. Instead, the form is created once and then assigned to various time points, called 'Events' throughout the project.

The longitudinal module should be used for very structured studies which do not last indefinitely. Clinical trials are an example of this project type.

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Designing Forms & Surveys

Online Designer

- Wizard type instrument design interface
- Very forgiving tool
- Great way to learn and experiment

REDCap Shared Library

- Library of validated instruments
- Curated by Vanderbilt University
- Quick way to load a validated instrument

ZIP Files

- Import individual instruments from other projects
- Great for re-using instruments between projects

Data Dictionary

- Advanced feature that can define all your instruments at once
- CSV file that you customize outside of REDCap

Data Collection Instruments

Form options:

🔍 Form Display Logic ▾

📷 PDF Snapshots

+ Create a new instrument from scratch
🔁 Import a new instrument from the official REDCap Instrument Library
⬆ Upload instrument ZIP file from another project/user or external libraries

Instrument name	Fields	View PDF	Instrument actions
Form 1	19	📄	Choose action ▽

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Create an Instrument with the Online Designer

- If you created a new blank project, you will see Form 1 already created with a field for Record ID.
- You can rename the form using the 'Choose action' menu.
- Click on the name 'Form 1' to edit your new form.
- Add a new form or edit with the green + Create button.
- Rename, copy, delete, or download an instrument ZIP file from the 'Choose action' menu
- There is no limit on the number of forms you can create in a project.

Data Collection Instruments

+ Create a new instrument from scratch
Import a new instrument from the official REDCap Instrument Library
Upload instrument ZIP file from another project/user or external libraries

Form options:
Form Display Logic ▼
PDF Snapshots

Instrument name	Fields	View PDF	Instrument actions
Form 1	19	📄PDF	Choose action ▽
Form 2	0	📄PDF	

▷ Rename
📄 Copy
✖ Delete
⬇ Download instrument ZIP

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Online Designer Basics

Instruments (Forms & Surveys)

- Create, Import, Upload
- Rename, Copy, Delete, Download instrument ZIP
- No limit on the number of forms in a project

Variables in REDCap Projects are called 'Fields'

- Each instrument must have at least one field within it
- Fields can be edited, moved or deleted in the Online Designer

Field limits

- There is no real technical limit to how many fields you can have in an instrument, but best practice is no more than 1,000 fields per instrument – consider splitting up large instruments.

Survey versus Form

- Each instrument starts as a Form and can be enabled as a Survey
- Any enabled Survey can still be filled out as a Form

Using the REDCap Online Designer

Open a form using the Online Designer to add variables or 'fields' to your instruments and to edit fields.

Always leave Record ID as the first field in your first instrument. Although you can rename this field, you must not move it. Record ID is what ties all your instruments together for each individual record.

Variable/Field Creation

Each field must have these values:

- Field type
- Field name
- Field label (optional in some cases)

Fields can also have optional values:

- Required
- Identifier
- Custom alignment
  Field note
- Field annotation
- Action tags

Some fields have conditional values:

- Validation
- Minimum
- Maximum
- Ontology lookup

Creating Fields in REDCap

1. Click on 'Add Field' to add a new field
2. Select the type of field from the Field Type drop-down
3. Fill out required field values
4. Add optional field values such as validation, required or identifier
5. Add conditional values required by different field types

Editing Fields

- Use the pencil icon to edit fields
- The green arrows allow you to edit branching logic
- The black and white squares icon allows you to copy fields
- The multi-directional blue button is used to move fields
- To delete a field, click on the trash can icon
- Brackets allow you to enter a custom survey question number

- Quickly select multiple fields and update them all at the same time by checking the Quick-modify box to the right.
- Available actions include: copy, move, delete, tagging as required or identifier, updating branching logic, or field alignment settings.

Types of REDCap Fields

Unstructured field types

- Free text box
  - Can be validated as date, number, etc.
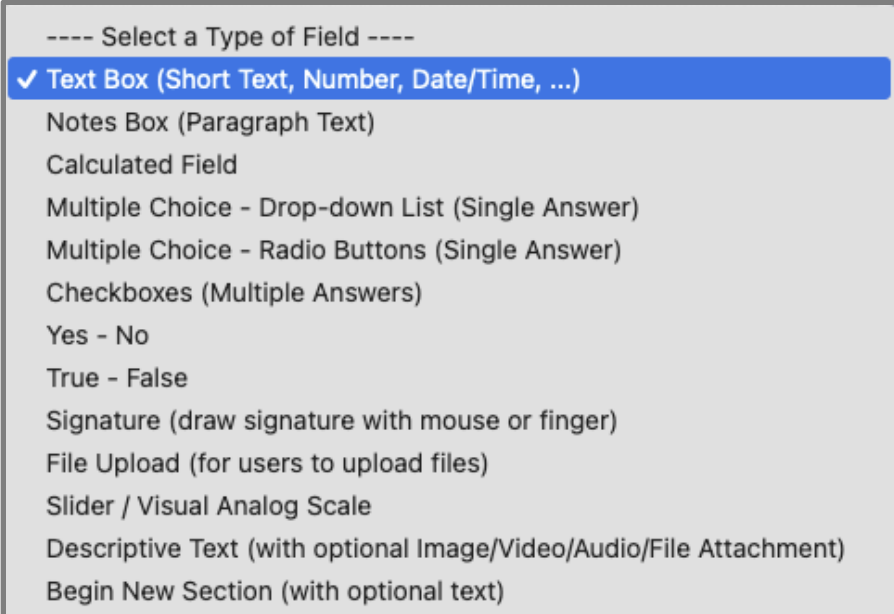- Notes box for comments

Display field types

- Plain text, HTML, pictures
- Audio and video files
- Files for download
- Begin new section

Special & calculated field types

- Signature
- File. upload
- Calculated field

Structured field types
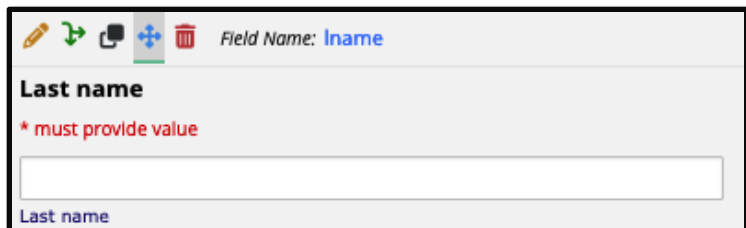
- Limited set of answers
- Pre-defined
- Single selection: radio buttons, drop-down list, slider
- Multiple selections - checkboxes

---- Select a Type of Field ----
✓ Text Box (Short Text, Number, Date/Time, ...)
Notes Box (Paragraph Text)
Calculated Field
Multiple Choice - Drop-down List (Single Answer)
Multiple Choice - Radio Buttons (Single Answer)
Checkboxes (Multiple Answers)
Yes - No
True - False
Signature (draw signature with mouse or finger)
File Upload (for users to upload files)
Slider / Visual Analog Scale
Descriptive Text (with optional Image/Video/Audio/File Attachment)
Begin New Section (with optional text)

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Unstructured Field Types

Text box

- Free text

- Validation
  - Date, number, email, phone number etc.
  - Minimum & Maximum for numbers

- Bio-medical ontologies (look-up tables)
  - Over 400 different ontologies available
  - Examples: ICD-10, LOINC, RxNORM

Notes box

- Use for larger text, paragraphs
  - Clinical notes
  - Comments on surveys
  - Descriptions

Structured Field Types

Single answer

- Drop down

- Radio button

- Pre-set choices:
  - Yes/No
  - True/False

Slider

- Default scale 0 to 100 but adjustable to any scale

Multiple answer

- Checkboxes
  - Acts as multiple fields, one for each choice
  - Stored differently than single answer
  - Different branching logic syntax
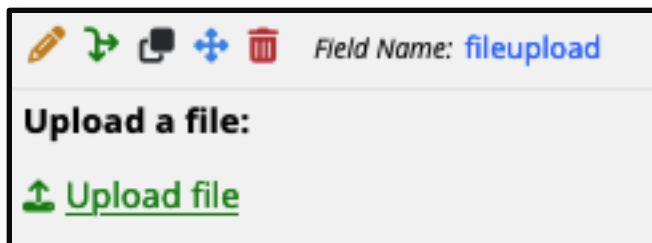
Special Field Types

Field Name: sign
Sign below:
Add signature

Field Name: fileupload
Upload a file:
Upload file

Signature

- Allows people to "sign" a document online

- Captures a small PNG file

- Works on both computers and mobile devices

- Useful for e-consent

File upload

- Most commonly used file types allowed

- REDCap stores the file with the record

- 100 MB limit per upload

- Useful for uploading:
  - Photos
  - Consent documents
  - Scanned documentation

Calculated Field Type
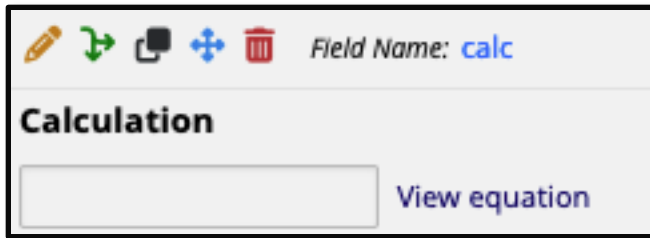
Calculations

- Result must be a number or empty value

- Limited to fields within one project

- Similar syntax as branching logic

- Special functions can be used in calculations such as:
  - Datediff()
  - Sum()
  - Mean()
  - Many more…

- Used for:
  - Scoring tools
  - Simple calculations (like BMI)

- Always test your calculations with test records before moving to production to make sure they are working!

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Display Field Types

REDCap logo

Section Header/Page Break

Descriptive

- Text – use rich text editor, or HTML

- Add video/audio files
    - Hosted outside of REDCap (YouTube, Vimeo)
    - Inline display or popup

- Picture or logo display

- File sharing (100 MB size limit)

Begin new section

- Used to separate blocks of fields

- Can be used in surveys to create separate pages

- Can add text to new section to use as a section header

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Matrix Fields

Add Matrix of Fields

Matrix of Fields

- Groups a set of related fields together
  - Radio buttons
    - Ranking is optional – one choice per column
  - Checkboxes
- Columns show choice options
  - All choice options must be the same for each field
- Rows are questions/individual fields

Review – What are the general Types of Fields available in REDCap?

Branching Logic

Branching logic is the art of showing or hiding fields

- Setup true/false logic statements

- If the statement evaluates to true the field will show

- If the statement is false, the field will not be shown

- Click on the green arrows in the Online Designer to setup branching logic on a field

Project limited

- Use project field values that have already been entered in the project for your logic statements
- Use values in other forms or events, but not other projects

Setting up Branching Logic

Two methods:

Drag-n-Drop Logic Builder:
- Select fields and logic from a dropdown menu
- No knowledge of syntax or programming needed
- Start with this method to learn how to craft logic statements

Advanced Syntax Method:
- Uses the Logic Editor for directly typing in syntax logic statements
- More complex statements can be created
- Advanced knowledge of REDCap syntax logic needed

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Moving to Production

- Be sure to test every aspect of your project in Development mode – the initial project status when creating a REDCap project.
- After thorough testing, move your project to Production by clicking the button on the bottom of the Project Setup Page.
- This will keep your data safe from accidental deletion.
- You can choose to delete your test data or save it before moving to Production
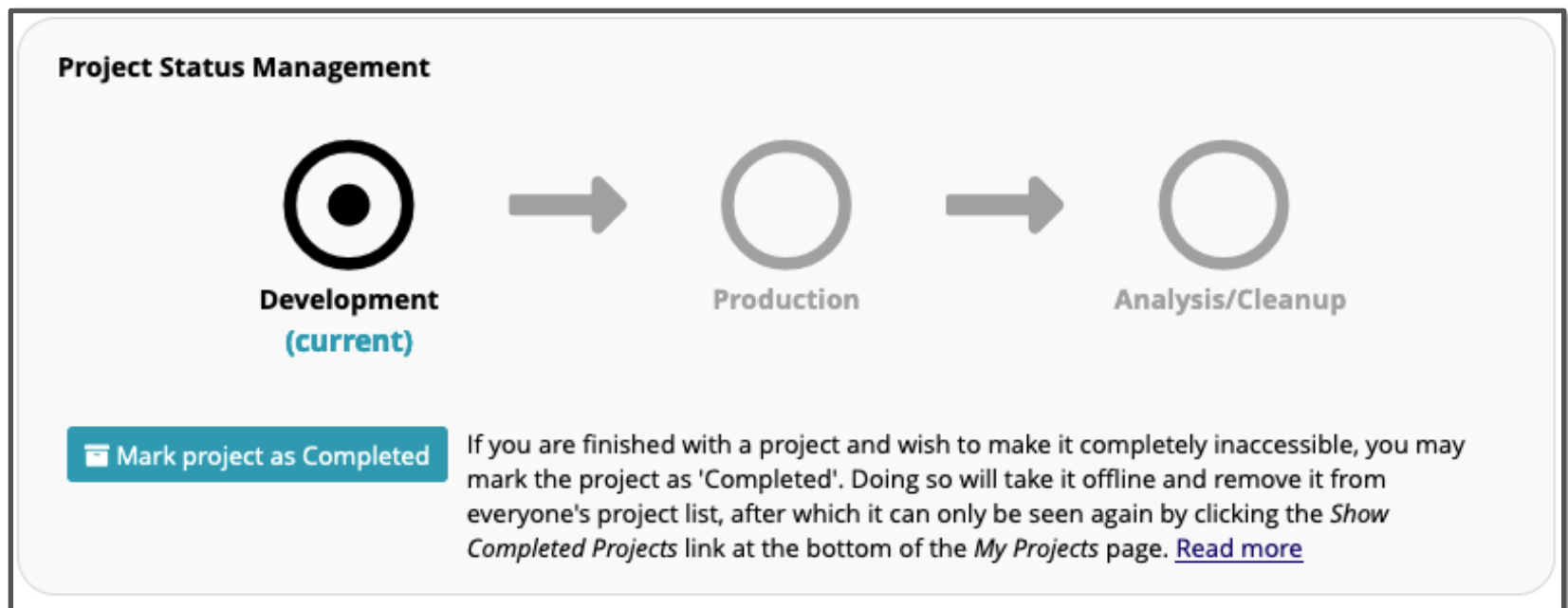
Approval Process

Draft Mode

- Once you move your project to Production status, your data is protected.
- You must click on Enter Draft Mode from the Online Designer to make any changes to your instruments.
- Once you submit your changes, REDCap will identify if any data loss might be caused by the changes.

Change approval

- Changes are automatic if data will not be affected.
- Changes that may result in data loss will be routed to REDCap administrators for review.
- An administrator will either approve the changes or reach out to discuss your changes within 1 to 3 business days.

Since this project is currently in **PRODUCTION**, changes will not be made in real time. <u>Tell me more</u>

Submit Changes for Review

Fields to be added: **0** / Total resulting field count: **9**
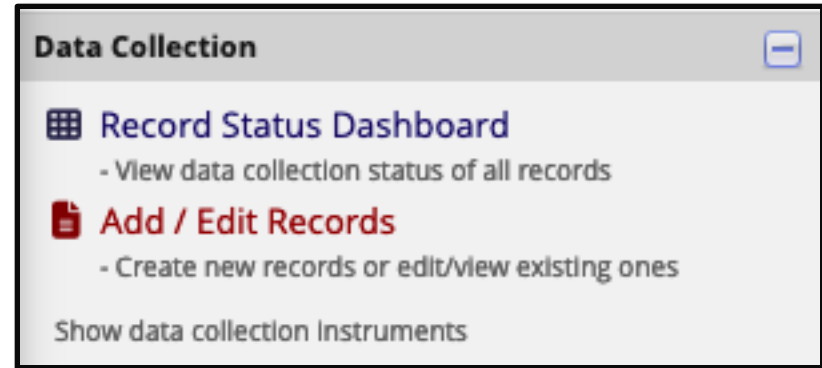Fields to be deleted: **0** / Existing field count: **9**

Remove all drafted changes

🔍 View detailed summary of all drafted changes

Basic Data Collection

Data Collection menu options are located on the left side menu in REDCap.

Add / Edit Records

- Click + Add new record to create a new record
- Select an existing record to edit the record

Data Search

- Choose a field to search
- Enter a search query

Record Status Dashboard

- You can also add a new record from the Record Status Dashboard

Data Collection

⊞ Record Status Dashboard
  - View data collection status of all records

📄 Add / Edit Records
  - Create new records or edit/view existing ones

Show data collection instruments

📄 **Add / Edit Records**

You may view an existing record/response by selecting it from the drop-down lists below. To create a new record/respor below.

Total records: **307**

| **Choose an existing Record ID** | -- select record -- ∨ |
| | + Add new record |

Data Search

| **Choose a field to search** (excludes multiple choice fields) | All fields ∨ |
| **Search query** Begin typing to search the project data, then click an item in the list to navigate to that record. | |

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Record Status Dashboard

- View all your records in the Record Status Dashboard

- Legend shows current record status

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User Rights

Use the 'Users Rights' application to set up project user rights

- Add users to your project
- Anyone that has a user account in REDCap can be added
- Customize each user's rights
- Set up user 'Roles' for similar groups of users

Form rights

- Hide forms completely, allow view-only or full access

Application rights

- Give users only access to applications they need to do their job

Data Export rights

- No access, de-identified, remove identifier fields, or full access to data set

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Basic Data Export

- You can export your entire data set in a few seconds from the Date Exports, Reports and Stats application.

- Multiple export formats are available.

- You can also create and save custom reports that display subsets of your data.

- These custom reports are exportable in the same way as the entire data set.

Choose export format

- CSV / Microsoft Excel (raw data)
- CSV / Microsoft Excel (labels)
- SPSS Statistical Software
- SAS Statistical Software
- R Statistical Software
- Stata Statistical Software
- CDISC ODM (XML)

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Getting Help

✉ Contact REDCap administrator

- REDCap has built in help on the Project Setup page and when building forms through Online Designer

- Click on the Contact REDCap administrator link at the top or bottom of the left menu to send a question

- Find more classes on the ITHS web page

- Information on our weekly office hours is located at the top of the My Projects page.

🔧 **Design your data collection instruments & enable your surveys**

In progress

Add or edit fields on your data collection instruments (survey and forms). This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method). You may then enable your instruments to be used as surveys in the Online Designer. Quick links: Download PDF of all instruments OR Download the current Data Dictionary OR Download Data Dictionary with drafted changes

I'm done!

Go to [✏ Online Designer] or [📗 Data Dictionary]   Explore the [📕 REDCap Instrument Library]

Have you checked the Check For Identifiers page to ensure all identifier fields have been tagged?

Learn how to use [⚡ Smart Variables] [✏ Piping] [@ Action Tags] [✛ Field Embedding] [√x Special Functions]

Thank You!

Questions?

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Funding

Members can apply for local and national pilot grants and other funding opportunities. ITHS also offers letters of support for grant submissions.

Collaboration

Members can connect with collaborators across the CTSA consortium.

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