CommCare Fundamentals

Welcome to **CommCare Fundamentals**- an overview of what CommCare is and how it works!

If you are new to CommCare, this should provide you with a good understanding of how CommCare works.

The learning objectives covered in CommCare Fundamentals are recommended or required for everyone working on a CommCare project.

Learning Objectives

When you complete this section you should understand and be able to explain the following:

- CommCare overview
- The structure of CommCare
- Case management
- General principles of data in CommCare
- CommCare user types
- CommCare implementation process

Review each of the following sections to learn more the main features and principles of CommCare:

1. CommCare Overview
2. CommCare Structure
3. Case Management
4. Data in CommCare
5. Mobile and Web Users
6. Project Roles and Implementation

It is critical that you understand all of the material in these sections before going on to other CommCare tutorials.

Part 1: CommCare Overview

Learning Objectives

1. General description of CommCare
2. The distinction between CommCare mobile and HQ
3. The developers of CommCare
4. How CommCare can be used
5. CommCare community and resources

What is CommCare?

CommCare is a mobile phone-based case management tool for tracking clients, facilities, transactions, or anything else that needs to be followed over time. It is a software tool which allows people to create, edit, and deploy applications without a software developer.

It aims to help frontline workers better track and support registration and follow-up.

There are two components of CommCare:

1. **CommCareMobile** is the mobile device part of CommCare, usually a mobile "application." This could be a phone, tablet, or someone entering data using a computer. Someone using CommCare Mobile could be a field worker, a community health worker, an agricultural extension agent, or a surveyor.
2. **CommCareHQ** is the website (www.commcarehq.org) where users can access data, design applications, and manage mobile workers. CommCareHQ users are typically supervisors, researchers, project managers, or data analysts.

CommCare runs as a mobile phone-based application on two types of devices:

1. Android smartphones
2. Basic feature phones (like Nokia phones; complete list here)

How Does CommCare Work?

Here is a brief overview:

Build an Application
Use CommCareHQ's Application builder to build a new application or download an existing application from the CommCare Exchange, CommCare's open source application store.

Install Applications on Phones
Download the application to Android smartphones or basic feature phones so that mobile workers can start collecting data and managing records on their phones.
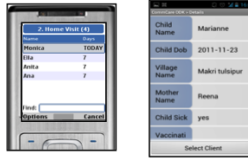
Collect Data and Assist in Work
Mobile users can collect many types of data, including text, numbers, dates, GPS, pictures, etc. They can also use CommCare to guide them in decision making and tracking their clients or tasks.

Analyze Data and Monitor Workers
Export collected data for further analysis and use CommCareHQ's worker monitoring reports to view the performance of a project's mobile workers.
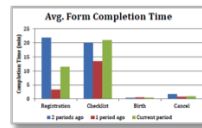
Who Develops CommCare?

CommCare is developed by a software company called Dimagi:

CommCare is Dimagi's biggest project, but Dimagi also develops other mobile-based, open source technologies.

What does it mean that CommCare is "open source"?

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The CommCare software is "open source," which means that the source code is openly available on the Internet to be downloaded, modified, or distributed. Details about how to access the source code are here. It's important to note that it is not easy to set up and run the software on a local server, which is why we strongly recommend using the CommCareHQ server. The open nature of the code makes it easier to integrate with other systems and explore the way that CommCare functions. You can learn more about CommCare's open source practices here.

How is CommCare Used?

CommCare can be used for a number of purposes, including:

- Data collection - a tool for mobile users to directly digitize information so that it can be accessed via a computer
- Decision support - supports complex logic that can guide a user to asking the right questions and providing appropriate advice
- Job aid - as a case management tool CommCare can help users to prioritize tasks, remind users to make visits, and do complex calculations
- Counseling tool - with embedded multimedia like images, audio, and video, CommCare can enhance the counseling experience

Although CommCare was initially developed as a case management tool for Community Health Workers, it is now used in many different areas, including clinics, agriculture extension, microfinance, education, and research.

CommCare Community

Many people are using CommCare all around the world.

There are several excellent resources to learn more about CommCare and participate in the community of users:

- **CommCare Help Site:** You can get a good overview of what CommCare is by reading through the public CommCare site. The Help Site is maintained by Dimagi staff and some CommCare users. It has material on everything from building applications, to project implementation, and even data analysis.
- **CommCare Users Group:** Join the CommCare Users mailing list to ask questions and learn from the experiences of other people.

In the next section you will learn more details about the structure of CommCare.

Part 2: CommCare Structure

Learning Objectives

1. The basics of CommCare software
2. The definition of a CommCare project
3. The structure and role of forms in CommCare
4. Modules and how they provide structure to CommCare Applications

1. CommCare Software

CommCare is a software program that allows people to create and manage mobile applications through the website, CommCareHQ. CommCare is the overall tool for building applications, making changes, downloading applications to phones, registering the application users, and viewing data submissions.

A CommCare application ("app") can take many shapes and levels of complexity- there are CommCare apps for maternal and child health, for simple surveys, for agricultural extension agents, nutrition, education, and all sorts of domains where there is a need to help frontline workers do their jobs better and collect data digitally. To test out some applications that have been made with CommCare, please visit the free CommCare Exchange where anyone can share CommCare applications they have created. There is additional information about the CommCare Exchange here.

Applications are built on the CommCareHQ website. It is not necessary to download any software; you can just create an account from any computer and start using CommCare.

Note for CommCareHQ Users on Browsers

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CommCareHQ works best on the following browsers: Google Chrome, Mozilla Firefox, or Internet Explorer Version 10 or higher. If you have an older version of Internet Explorer CommCareHQ will not work well. You can find more hints on using Internet Browsers for CommCareHQ here.

2. CommCare Projects

Each program has its own **project space** on CommCareHQ with its own name. A project is a secure web portal in the CommCare system that contains all data related to your CommCare applications, as well as tools that help you create, manage, and deploy your applications and workers. Anyone can create their own project space, and can choose to let other people have access to their project space.

For example, there is a project called "helpsite" where we keep applications that are used on the help site. We decided to name the project "helpsite" because it is simple and easy to remember. Whenever I visit a page in my project I can see "helpsite" in the address. For example, reports from the helpsite project are located here: **www.commcarehq.org/a/helpsite/reports**

You will see all websites in CommCareHQ have a similar structure.

A project can have one application or many applications. Applications can all be separate, or they can communicate with each other using "case management," which we will discuss later.

To have access to any project space, you must have a CommCareHQ account.

As a CommCareHQ user, you can create or be invited to multiple project spaces. If you belong to multiple project spaces, after logging into CommCareHQ you will be able to choose which space you want to work in at that time. Data is not shared among project spaces, so unless you invite someone else to your project, no one else will be able to see your application or your data.

3. Forms

The basic unit of data collection in CommCare is called a **form**. It's just like most paper-based systems- if you want to complete a task like registration, a transaction, or a updating information, you often have to fill out a form to create a record. Sometimes a project requires lots of forms.

For example, if you are monitoring the condition of a river, you might have to fill out one form the first time you visit the river to collect basic data about it. When you return to the river, you may have to take measurements that require filling out a different form. If there is a flood or an oil spill there is a third type of form you have to fill out.
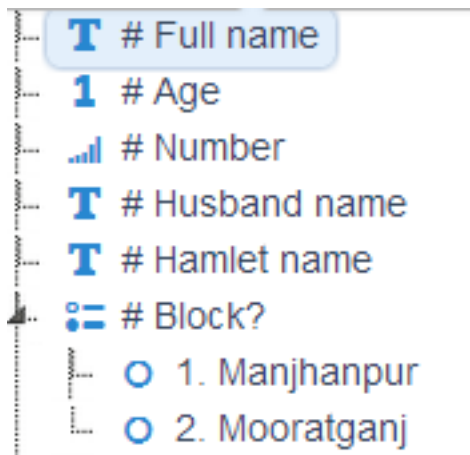
A CommCare form is a group of questions and messages that the user views sequentially on the phone. This is the core content of CommCare applications. When users submit data, they submit completed forms. They are fully customizable and support all kinds of useful features like multiple languages, skip logic, and multimedia content.

A form can contain many types of questions. For example:

- Text Questions - words or phrases
- Numeric Questions - numbers
- Date Questions
- GPS Questions

You can find a complete list of all supported question types here.

A form will usually contain a series of questions like this:

- **T** # Full name
- **1** # Age
- **ııl** # Number
- **T** # Husband name
- **T** # Hamlet name
- **:=** # Block?
  - O 1. Manjhanpur
  - O 2. Mooratganj

In CommCare, you can combine all of the forms we need over the course of a particular project and link them together.

4. Modules

In CommCare, forms that are all related to the same type of thing are grouped together in **modules**. A module can have one or many forms, and an application could have many modules; it is like a folder full of forms that are all about the same thing. A module about pregnancy could contain a registration form, a home visit form, a pregnancy outcome, and a danger signs form. Each form has a different purpose but they are all related to the pregnancy.

For example, if we have an application for a community health worker, we could have a pregnancy module, a malaria module, and an HIV/AIDS module.

A single CommCare **application** can contain multiple modules. So here is what an application's structure might look like:
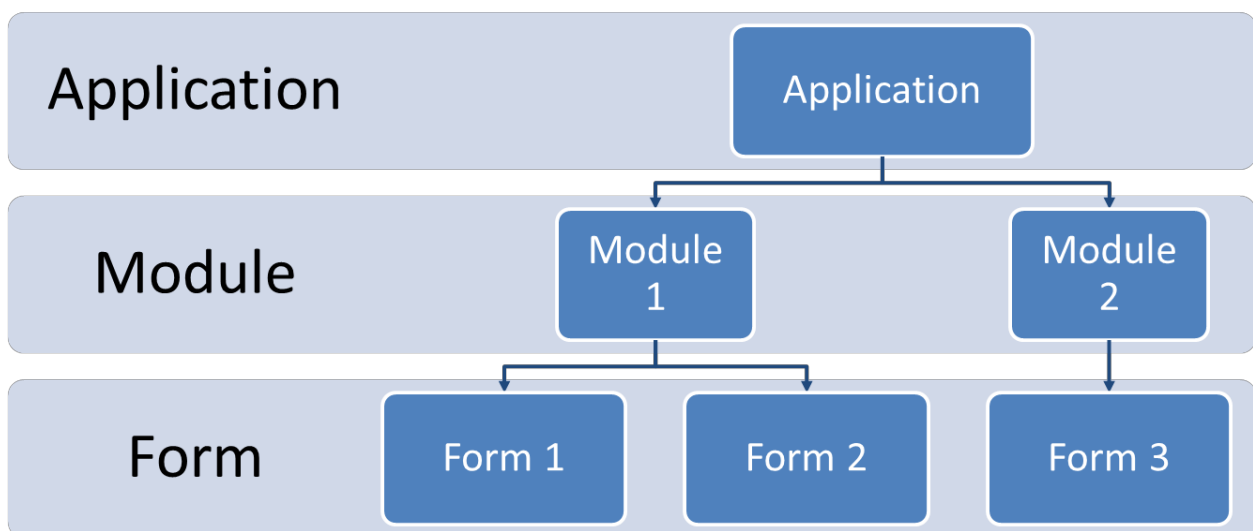
In the example above, Forms 1 and 2 are probably referring to the same type of individual, facility, or thing- maybe about a child- so they are grouped into the same module. Form 3 may refer to something or someone different- maybe a village- so it is in a different module. Sometimes two modules may be about the same type of person, facility, or thing, but it depends upon how the application is being used.

The key points to remember are:

- The unit of data submission and work is a form. Every time a mobile phone user fills out a form, it is sealed and sent over to the CommCareHQ server through the cellular or WiFi network.
- Forms can be grouped into modules and applications.

There are lots of tutorials on the CommCare Help Site to help you navigate the structure of an application, but now you know all of the basics!

Now it is time to learn a bit about one of the key concepts of CommCare: Case Management.

Part 3: Case Management

Case management is one of the most powerful features of CommCare- and also one of the most complex! In this section we will not get into technical details about case management; we are only focused on the fundamental concepts.

Case Management Learning Objectives

1. The definition of a case in CommCare
2. Through the use of an example, how CommCare Forms are used to open, modify, and close cases

1. Cases

A case is something that you track over time with your CommCare mobile application.

Below are some examples of things that might be considered cases in CommCare:

Baby   Household   Mother   Farm

Cases store information about something over time. You can think of it as a file about that thing.

For example, you can imagine a case or file about a mother. When you are registering a mother in the system, you will want to keep some key information in her file. This may include her name, age, and health history. When you visit her again you may add some more details about her to that file. And if that mother moves away, you may remove her file from your system.

Every time you visit or interact with that specific mother, you are completing a CommCare form about that woman. But you are also updating the "case" which links all of those forms together.

There are three major ways you can interact with a case:

1. Opening a new case ("registering a case")
2. Updating an existing case ("followup with a case")
3. Closing a case

A case could be like a mini patient record on the phone, o r like a doctor's chart:

- A case does not contain ALL collected data
- A case contains data you have chosen to save, because it is useful during the visit

Let's walk through an example.

2. Shaila the Pregnant Woman

Part I: Registration ("opening a new case")

You are a Community Health Worker and you go to meet with your neighbor Shaila, who you just found out is pregnant. You take out your phone and open your CommCare application. You log in as a mobile user and navigate to your Registration form. The form has a series of questions about Shaila - including details like name, date of birth (DOB), and weight. At the end of the form you hit "submit" and the form is sent to the CommCareHQ server. However, some pieces of information are copied and kept on the phone. Later on you will be able to provide more information about Shaila.
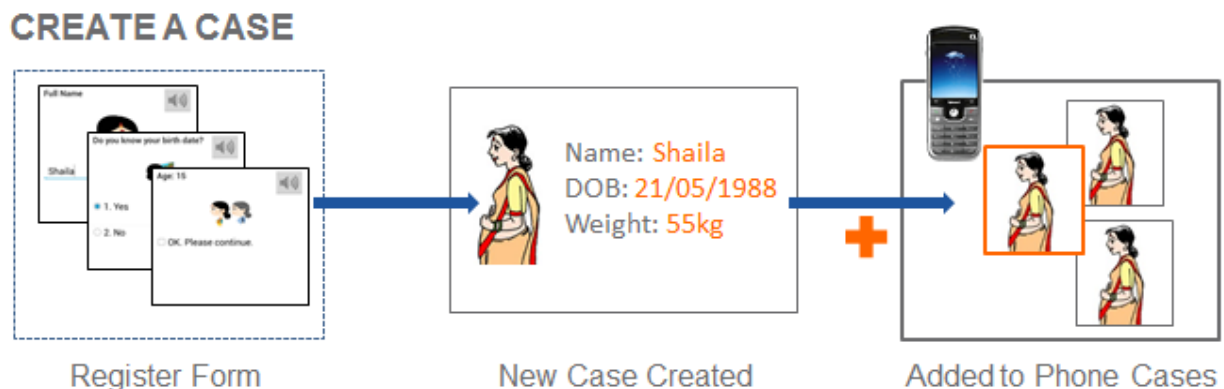

Part II: Follow-up ("update an existing case")

It is a month later and it is time to visit Shaila again. You make your way to Sahila's house and take out your phone.

After you open CommCare and log in as a mobile user, you go to the Home Visit form. However, this time you have to choose Shaila's name from a list of all of the pregnant women you are visiting. You have 15 women you are currently providing care for, so you search for Shaila in your list and then choose her name to open up her file. You can see some of the details that were kept on the phone, like her date of birth (DOB) and weight. You review those details and open up the form. Again there are a series of questions in the form and you gather additional information, like whether or not Shaila was vaccinated (turns out she wasn't!). You complete the form and the data is again sent to the CommCareHQ server. Again, some pieces of information that you collected are copied and kept on the phone so that you can review them next time.

Back on CommCareHQ, your supervisor can open Shaila's file and see that you registered her a month ago, and that today you made a home visit. Your supervisor can also see all of the information that Shaila provided in her answers to your questions!

FOLLOW UP WITH CASE

Pick Existing Case   Follow Up Form   Update Existing Case
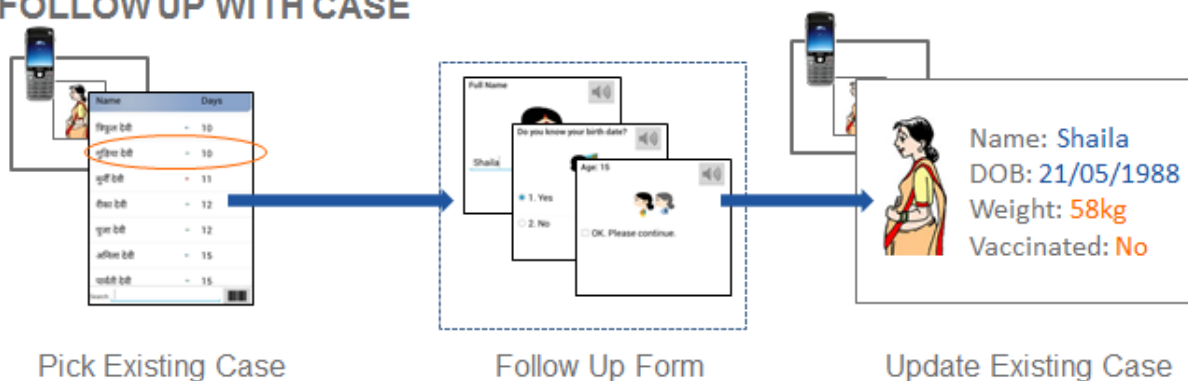
Part III: Close

Shaila's estimated date of delivery arrives, so you go to her house. You arrive and find that she is there with her new baby!

You open up your CommCare application and again Shaila's name on your "case list." You pick her name and open up a different form, the "pregnancy outcome" form. Again, there are a series of questions for you to fill out. You submit the form and it is sent to the CommCareHQ server. But this time something different happens- the outcome form is configured so that when you fill it out, it removes Shaila's file from your phone! All of the data is still on the CommCareHQ server, but you no longer want Shaila's name in your phone, since you are done caring for her.

CLOSE A CASE

Pick Existing Case   Close Case Form   Update and Remove Case
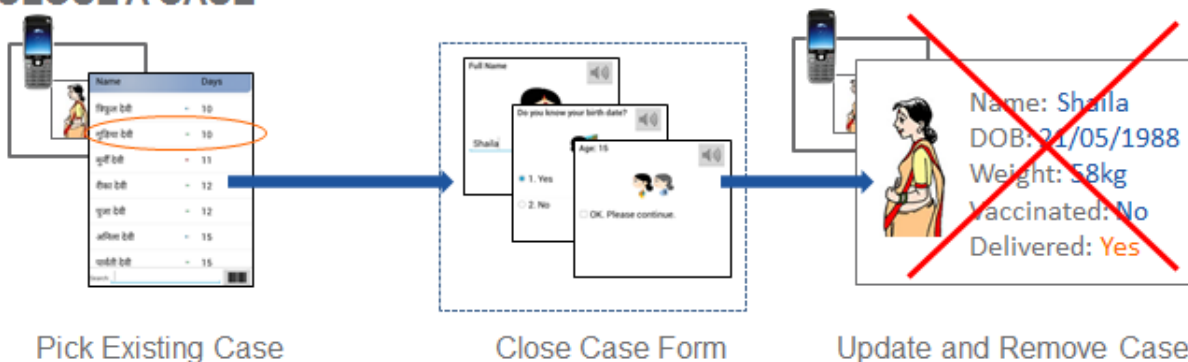
Now that you understand what a case is, we can go ahead and learn about how data works in CommCare.

Part 4: Data in CommCare

Data in CommCare - Learning Objectives

1. The different data types in CommCare and the general workflow
2. Types of Worker Data available in CommCare
3. The two types of Raw Data available in CommCare- Form Data and Case Data

1. CommCare Data Overview

In CommCare, the general flow of data is from a mobile user to CommCareHQ. From CommCareHQ it is visible to any CommCareHQ/web user with permission to view it.
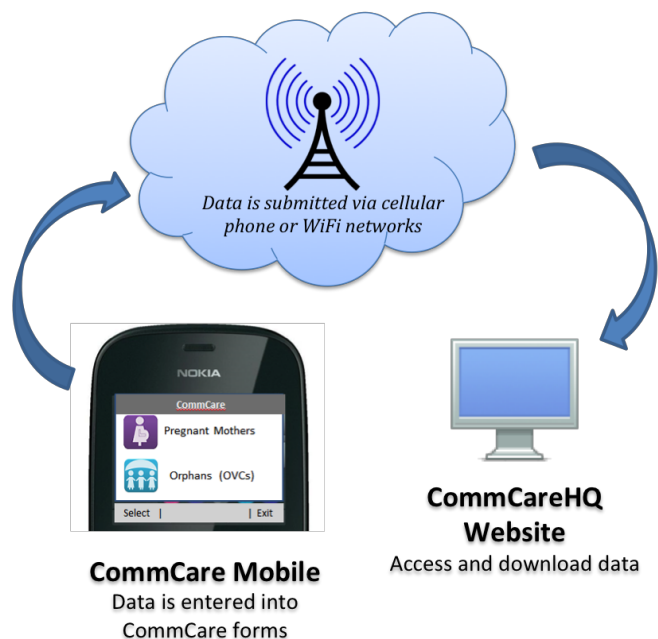
In some cases, where mobile users are sharing the same case list, one mobile worker may be able to see data that was submitted by another mobile worker. However, case sharing is an advanced concept; you can learn more about it here.

In general there are two levels of data in CommCare:

1. Raw Data – this is data from the questions contained in a form. For example, if you have a question like "what is the patient's birthday," that data is then visible in CommCareHQ as raw or key indicator data.
2. Worker Activity – this is data about how and when mobile workers are submitting forms. The technically inclined can think of this as "metadata." This may be information like "yesterday mobile user Samantha submitted 10 forms"

CommCare Without Connectivity

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What happens to data collected on a phone when there is no signal? It stays on the phone until there is signal! CommCare was designed to function in places where there is not always consistent access to network.

In addition, on CommCareHQ you can view lots of important data about a form:

- Which mobile user submitted it?
- How long did it take to complete the form?
- When was the form sent to the CommCareHQ server over the cellular or WiFi network?
- What are the answers to the questions in the form (raw data)?
- To whom or what was the form related (see case management)

2. Worker Data

There are a variety of worker activity reports available on CommCareHQ. These reports are derived from form submission metadata.

These reports are discussed in-depth elsewhere on the CommCare help site. Some examples include:

- Case Activity - how frequently does a given mobile worker submit a form related to a given case
- Daily Form Submissions - how many forms does a given mobile worker submit over a time period
- Submissions by Form - which forms are being submitted by a given mobile worker over a time period

3. Raw Data

There are two forms of raw data that can be downloaded or exported:

1. Form Data - you can download submissions for any form in an application.
2. Case Data - all of the data which has been flagged as part of the case file.

There is a lot more detail about CommCare Data in this section of the Help Site.

The next piece of CommCare Fundamentals is to learn about Mobile and Web Users.

Part 5: Web and Mobile Users

Web and Mobile Users: Learning Objectives

1. The two types of CommCare users- HQ/Web users and Mobile Users
2. The tasks that can be accomplished by CommCareHQ/Web Users
3. The different ways mobile workers can access mobile applications and submit data

1. CommCare User Types

In CommCare there are two types of users:

- Mobile Users- these are the accounts for using CommCare on a phone or tablet (or, for using CloudCare)
- Web (CommCareHQ) Users – these are the accounts for accessing the CommCareHQ website, where you can build applications, manage users/settings, and view data

Let's dive into the difference between these two users a little more.

2. CommCareHQ/Web Users

CommCare web users have access to the CommCareHQ website. Most of the information on the help site is directed at CommCareHQ/Web users- users log into CommCareHQ using their email addresses. In a given project, you might have a number of people with access to CommCareHQ. The main tasks that people with access to a project can do include the following:

- Create, modify, and download/deploy CommCare applications
- Create, manage, and delete mobile user accounts
- View and export data submitted by mobile workers
- Send text messages to mobile workers
- Manage workspace settings

By exploring the Help Site you should be able to understand the many important tasks that a CommCareHQ user can do! There is one important thing that a Web user cannot do (in general) and that is submit data; for that they need a mobile user account or an advanced CommCare tool.

Additionally, a web user can belong to more than one project.

3. CommCare Mobile Users

CommCare mobile user accounts give people access to a set of data on a CommCare mobile device or CloudCare. When you open a CommCare application on any mobile device you have two options for viewing the application:

- Demo User
- Log In

Each mobile user has their own username and password. In most projects, mobile users are the people who go out into the field or work in an office to collect data, follow up with patients/clients, or otherwise use CommCare mobile as part of their work.

When someone has a mobile user account, they can create and modify their own "case list." When they submit a form via CommCare, that form will have their username on it so if a web user views that form submission, they can see which mobile user sent in the data.

Mobile users can only belong to one project.

The next section is not about technology, but how projects are structured.

Part 6: Project Roles and Implementation

CommCare Projects take lots of different shapes and sizes. However, there are some key roles and practices that are associated with successful projects.

Learning Objectives

- The main roles in a CommCare project
- The main phases in the deployment of a CommCare project

Project Roles

- **Project Manager (PM):** Oversees the entire execution of the CommCare project.
- **Mobile User:** Uses phones to collect data
- **Project Coordinator (PC):** Manages and supervises mobile users on the CommCareHQ website
- **Application Manager (AM):** Makes updates to the application and create new versions; may also be able to design and build applications
- **M&E Officer (MO)**: Uses data from CommCareHQ for analysis
- **Technical Officer (TO):** Manages the phones, installs applications, and resolves technical issues.
- **Trainer:** Leads the training along with the Dimagi team

In some projects a single person might play more than one role. But it is important to make sure you know who is going to be in each role, and to ensure that they have the appropriate training and resources.

Project Implementation

Projects vary a lot, but below are the major phases in a CommCare Project. Bullets represent some examples of what must be accomplished in each phase, though not everything is listed here.

Phase 1: Design and Preparation

- Design and scope application
- Complete Project Needs Assessment
- Determine who will fill each project role

Phase 2: Refinement and Iteration

- Built prototype application
- Pilot with users to gather feedback
- Refine application

Phase 3: Training and Deployment

- Prepare all training materials and logistics
- Prepare phones and applications
- Train all users

Phase 4: Maintenance and Monitoring

- Monitor workers
- Address phone or other technical issues
- Consider changes to application

You can find much more detail about CommCare Implementation plans here.

An example of a key step in implementation is developing a user contract with whoever will be using phones in your program. This allows you to discuss and set policies related to what will happen if a phone if a phone is broken, lost, or needs additional airtime/balance. You can find lots of example contracts here.

You have completed CommCare Fundamentals.