ActivityInfo

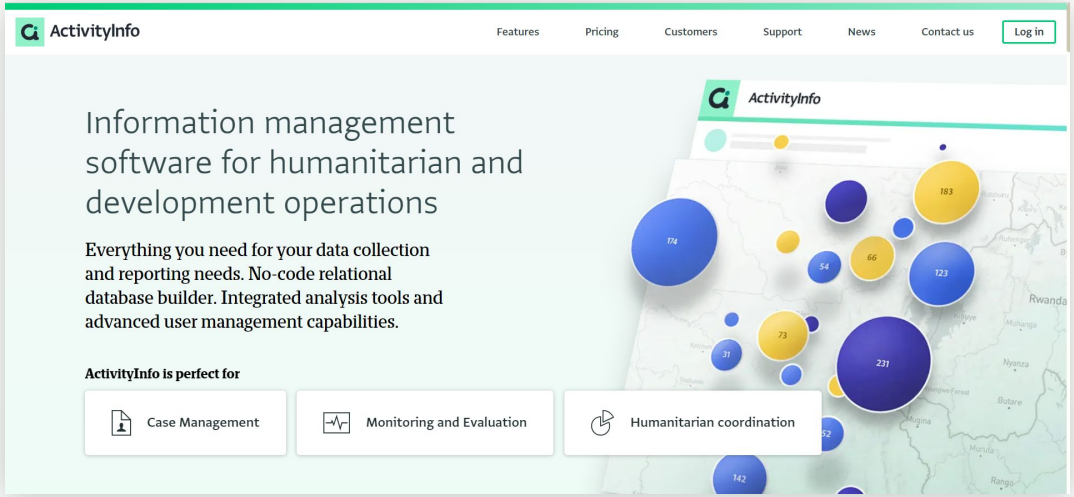
Data modelling in practice

Starting shortly, Please wait!

Presented by the ActivityInfo Team

All in one information management software for humanitarian and development operations

- Track activities, outcomes
- Beneficiary management
- Surveys
- Work offline/online



Meet your instructor

Victoria Manya
Customer Education Specialist
BeDataDriven

ActivityInfo

Webinar Series

The series title

July 10

SESSION 1

Fundamentals of data modelling in humanitarian and development contexts

July 24

SESSION 2

Data modelling in practice

ActivityInfo

Outline

01 Overview of session 1

02 Creating and using data models for ActivityInfo

03 Best practices for effective data modelling

04 Q/A session

Overview of session 1

Designing a data model: Glossary of terms

Entity: a discrete data object, the basic building block of your database

Attribute: a characteristic that describes your entity in some way

Relationship: how entities relate to each other

Cardinality: how many on one side of the relationship relate to how many on the other side of the relationship

Key: an attribute or combination of attributes used to uniquely identify an entity

Normalization: the process of organizing your data in your database more efficiently

Designing a data model: Glossary of terms

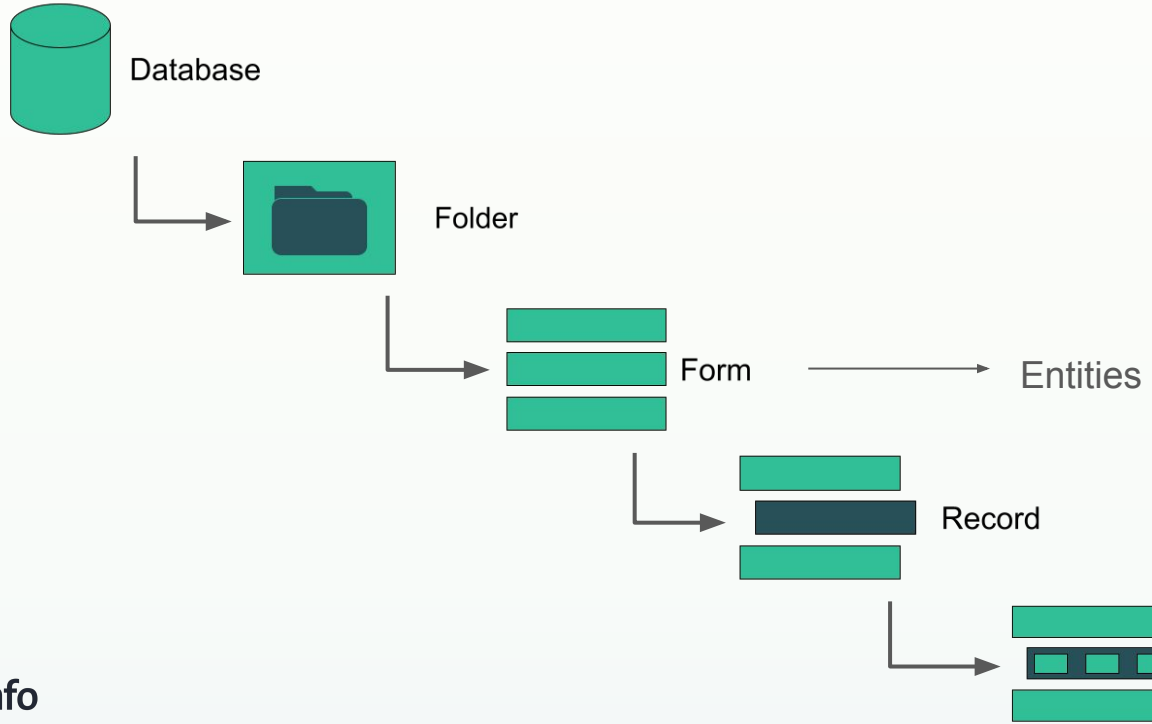
A little overview of Normalization

- **Reduce Anomalies:** Minimize data anomalies by splitting data into logical pieces and linking them through relationships.
- **Remove Redundancy:** Ensure that data is stored only once by organizing data into tables and defining relationships.
- **1st Normal Form (1NF)**: Ensure all fields contain atomic (indivisible) values. E.g., separate full name into first name and last name.
- **2nd Normal Form (2NF)**: Ensures no partial dependencies (non-primary key attributes should fully depend on the primary key).
- **3rd Normal Form (3NF)**: Ensures no transitive dependencies (non-primary key attributes should depend only on the primary key, not on other non-primary key attributes).

Creating and Using Data Models in ActivityInfo

The relational nature of ActivityInfo Databases

An intuitive hierarchy for organizing data



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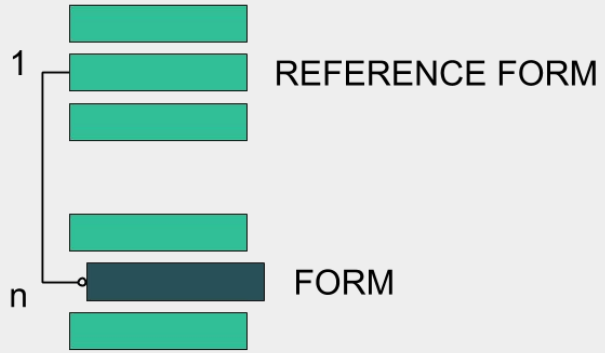
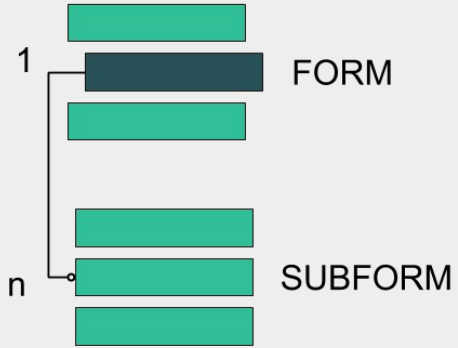
Subforms versus Reference forms

Reference Forms



Use Reference Forms when you have standard lists that are to be reused across multiple forms (e.g. locations)

Subforms



Use Subforms when you need to capture recurring or repetitive information relating to a specific record (e.g. periodic reports)

Subforms versus Reference forms

Subform

Use when:

- you want to create a **parent-child** relationship between a two records
- related data is **dependent** on another, in other words, the subrecord would not make sense without being attached to the parent record

Reference forms

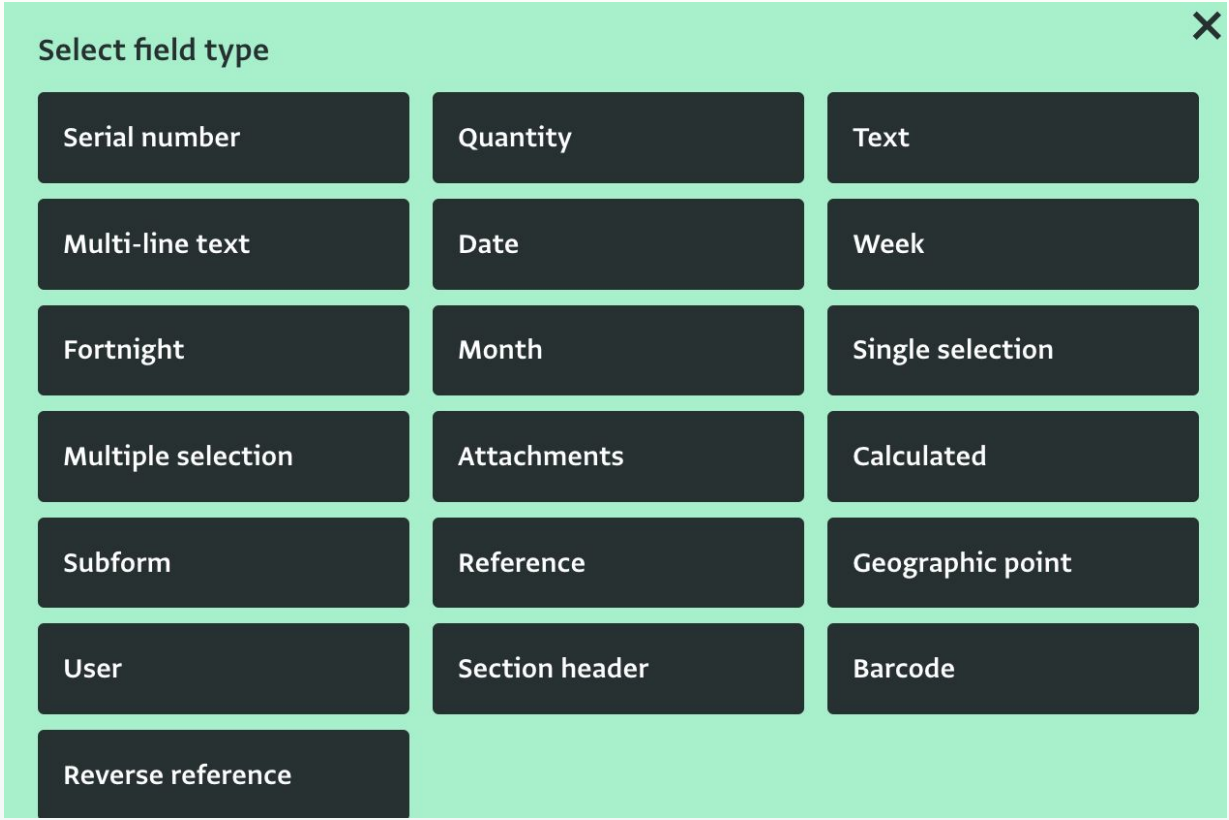
Use when:

- data is known in **advance** and managed **centrally**
- data is **shared** across multiple forms
- you want to better manage a **long list** of options
- you need to make **updates** to the reference data that will be reflected in all forms using the reference
- you want to manage data to be used for **categorization** of other information e.g. geographic locations

The relational nature of ActivityInfo Databases

Relational databases are flexible

- Can handle various types of data, making them suitable for a wide range of use cases
- Improve data consistency



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Creating and Using Data Models in ActivityInfo

Our Case study

In the city of Maiduguri, Nigeria, Reach out Initiative launched an HIV/AIDS program to provide comprehensive care and support to patients in the region. The program aims to

- Improve patient outcomes by increasing viral load suppression and retention rates,
- Achieve efficient data management through a centralized repository and accurate data collection, and
- Enhance reporting and accountability with detailed impact reports and transparent operations.

Overview of checklist for identifying datasets/data flows and understanding objectives of your data model

Step 1: WHY | Define your objectives

Use Cases:

- Monitoring the performance of the HIV/AIDS program.
- Reporting the impact of the program to donors and stakeholders.
- Improving patient care and treatment outcomes.
- Enhancing data accuracy and centralization.

Primary Goals:

- Increase data accuracy and centralization.
- Enhance the monitoring of patient progress.
- Streamline reporting processes to donors and stakeholders.

- **Identify key indicators:**
  - Number of patients enrolled in the program.
  - Patient retention rates.
  - Viral load suppression rates.
  - Adherence to treatment protocols.
  - Mortality rates.
  - Number of new HIV infections.
- **Targets:** Set targets for each indicator based on program objectives and donor requirements.
- **Data Support:** Ensure datasets accurately reflect patient demographics, treatment adherence, and clinical outcomes.
- **Decision Making:** Decisions on resource allocation, program adjustments, and strategic planning will be based on these indicators.

Overview of checklist for identifying datasets/data flows and understanding objectives of your data model

Step 2: WHAT | Identify what data will be captured in the system

List the datasets that need to be stored in your database

- **Datasets Inventory:**
  - Patient demographics.
  - Clinical data (e.g., viral load, CD4 count).
  - Treatment adherence data.
  - Program engagement data.
  - Mortality data.
  - Survey data.
  - Geographic location data.
- **Master Data:**Participant, clinic, and staff data.
- **Purpose:**
  - Track and analyze patient characteristics, health outcomes, compliance, and program impact.

- **Identify data Sources:**Surveys, clinical records, EHR systems, manual entries, external databases.
- **Update Frequencies:**Real-time for clinical data, weekly for adherence, monthly for surveys.

Understand the structure of your data

- **Entities and Attributes:**
  - Patients: age, gender, location, HIV status.
  - Clinical records: viral load, CD4 count.
  - Adherence records: medication adherence, appointments.
  - Program data: counseling sessions, workshops.
- **Relationships:**Link patients to clinical and adherence data, clinics to patient records.
- **Data Formats:**Numbers, text, dates, with placeholders for missing data.

Overview of checklist for identifying datasets/data flows and understanding objectives of your data model

Step 3: WHO | Identify who will use the database

Identify your key stakeholders

- **Stakeholders:**
  - Project managers, field staff, donors, patients, national health authorities.

Understand their needs

- **Needs and Expectations:**
  - Detailed project data for managers, easy data entry for staff, impact reports for donors, confidentiality for patients, aggregate data for policymakers.

Identify their roles

- **Roles:**
  - Data entry by field staff, validation by M&E officers, analysis by project managers, reporting by communication officers.

Identify data owners

- **Data Owners:**
  - Patient data: field staff and clinic managers.
  - Clinical data: healthcare providers.
  - Adherence data: program coordinators.
  - Survey data: M&E team.

Overview of checklist for identifying datasets/data flows and understanding objectives of your data model

Step 4: HOW | Describe how users will work with the data

Understand how data will flow throughout the life cycle

- **Data Collection Activities:**Patient registration, clinical assessments, monthly adherence tracking, regular surveys.
- **Data Validation:**Review by M&E officers, final approval by project managers.
- **Analysis:**Aggregate clinical outcomes, analyze adherence trends, evaluate program impact.
- **Access to Reports:** Accessible to project managers, donors, health authorities.
- **Data Retention:**Retain patient data for program duration plus five years.

Decision-Making Processes: Adjust treatment protocols, allocate resources, plan strategies based on data.

- **Key Decision-Makers:**Program directors, donors, health authorities.

Identify data security and privacy requirements

- **Sensitive Data:**Personally identifiable information, health data.
- **Compliance:**Adhere to GDPR, HIPAA regulations.
- **Access Controls:**Role-based access to sensitive data.
- **Reporting Formats:**Monthly progress reports, quarterly donor reports, annual impact assessments.
- **Data Sources for Reports:**Clinical records, adherence logs, survey results.
- **Report Schedules:**Monthly and quarterly regular reports, ad-hoc reports as needed.

Hands-on demonstration

Designing our data model in ActivityInfo

Best Practices for Effective Data Modelling

Tips to ensure your data models meet organizational needs

Align with Organizational Goals	Regular Training and Support
Engage Stakeholders Early	Continuous Improvement
Comprehensive Data Requirements Gathering	Detailed Documentation
Design for Flexibility and Scalability	Perform regular data audits to detect and correct errors and inconsistencies.
Consistent Data Entry	

Questions?

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