



HEALTHCARE IT, INC.
TARGETED INNOVATIONS FOR RESEARCH

caCURE:
an Open Source Survey Tool Suite

Rapid, Iterative, Standards-based, Data Collection

March 21st, 2013

HealthCare IT, Inc. - Overview

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We provide innovative solutions for research in pursuit of individualized healthcare.

Our products and services include:

- BIGR[®] - a biospecimen management solution with extensible annotations
- CURE[™] - a highly functional solution for collecting, integrating, curating, and analyzing healthcare and research data
- HICloud[™] - cloud based hosting for healthcare and research
- HITS[™] - Integrated IT solutions development services leveraging open source

Motivation & Background

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Traditional approach to web-based data collection:

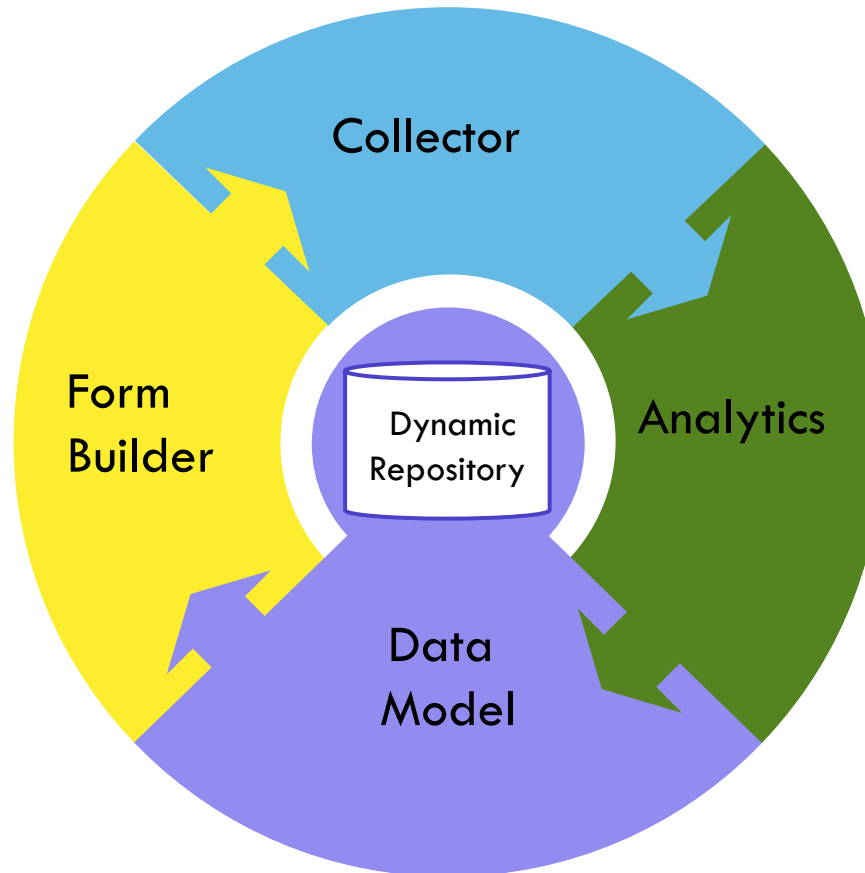
- ▣ Long initial implementation times
- ▣ Additions and modifications are slow and costly
- ▣ Data models are rigid
- ▣ Difficult to leverage data standards
- ▣ Difficult to conduct analyses as data are collected

Introducing . . .

caCURE Suite: faster, better, cheaper

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**Integrated
Components**



**'Developer-less'
survey design, data
collection, and
analysis**



Introducing . . .

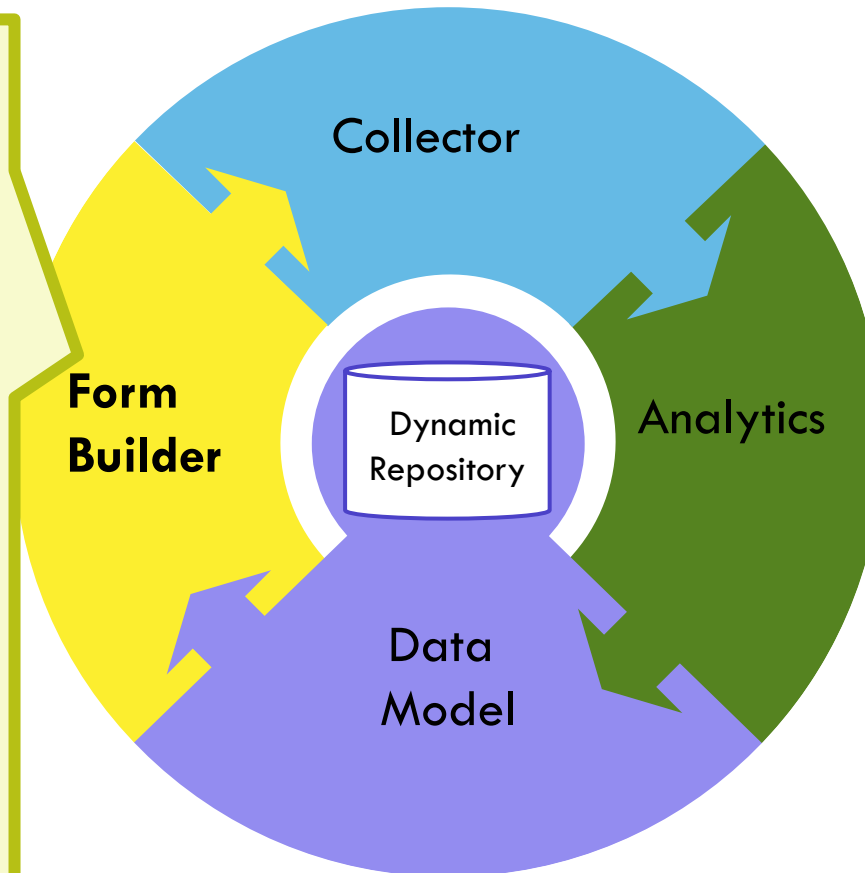
caCURE Form Builder

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Form Builder:































- Web-based
- Imports standard data elements ... or
- Define new elements and skip pattern logic
- Built-in element library
- Supports author, edit, review, publish lifecycle
- Generates dictionary
- Produces portable instruments in multiple formats
- Dynamically deploys instruments to collector

No developers required!



Simple, efficient, intuitive

The screenshot displays the CURE™ Form Builder web application. At the top, there is a navigation bar with links for Home, Admin, Logout, and Help. The main header area contains the title 'CURE™ Form Builder' and the logo for HEALTHCARE IT, INC. Below the header, a breadcrumb trail shows 'Home > Living With Meningitis'. A green bar contains the text 'Manage Sections' and two buttons: 'ADD SECTION' and 'IMPORT SECTION'. The central part of the interface is a table listing various form sections. Each row includes a set of icons (a red X, a pencil, a lock, and a house), the section name, the author, the status, the last update date and time, the user who last updated it, and an export icon.

	Name	Author	Status	Last Update	Last Update By	Export
   	Patient Information	wtulskie	In progress	3/14/13 10:31 AM	wtulskie	
  	Primary Hospitalization	 pgupta	In progress	1/9/13 12:34 PM	pgupta	
   	Secondary Hospitalization	 wtulskie	In progress	1/9/13 12:35 PM	wtulskie	
  	Ongoing Care	 wtulskie	In progress	1/9/13 2:16 PM	pgupta	
  	Home, Work, and School	wtulskie	In progress	1/9/13 6:38 PM	pgupta	
   	Support	wtulskie	In progress	1/9/13 8:10 PM	wtulskie	

At the bottom of the interface, there is a footer with the text 'About CURE Form Builder' and the HEALTHCARE IT, INC. logo. Below the screenshot, the copyright notice reads: 'Copyright 2013 © HealthCare IT, Inc. All Rights Reserved.'

Working with the instruments in a survey module

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The screenshot displays the CURE™ Form Builder interface. At the top, there is a navigation bar with links for Home, Admin, Logout, and Help. The main header reads "CURE™ Form Builder" and "HEALTHCARE IT, INC.". Below this, a breadcrumb trail shows "Home > Living With Meningitis". A green bar contains "Manage Sections" and buttons for "ADD SECTION" and "IMPORT SECTION".

The main content area is divided into two sections. On the left, a list of instruments is shown with icons for delete, edit, and lock. On the right, a table provides details for each instrument.

Name	Author	Status	Last Update	Last Update By	Export
Patient Information	wtulskie	In progress	3/14/13 10:31 AM	wtulskie	
Primary Hospitalization	pgupta	In progress	1/9/13 12:34 PM	pgupta	
Secondary Hospitalization	wtulskie	In progress	1/9/13 12:35 PM	wtulskie	
Ongoing Care	wtulskie	In progress	1/9/13 2:16 PM	pgupta	
Home, Work, and School	wtulskie	In progress	1/9/13 6:38 PM	pgupta	
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Grey Bars: Drag & Drop controls to rearrange Collections

Delete, Edit, and Lock controls

Library indicator

Click an instrument to view or edit the questions

Workflow tracking information

Publishing & export controls

The Instrument Editor

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Home | Admin | Logout | Help

CURE™ Form Builder

HEALTHCARE IT, INC.

Home > Living With Meningitis > Patient Information

Patient Information ADD CONTENT ADD QUESTION ADD TABLE QUESTION IMPORT QUESTION

This questionnaire is about you or your family member's experience with meningitis. We thank you in advance for providing the information requested below.

Are you the patient?

Yes, I am the patient

No, I am responding for the patient

Please indicate your name:

Please indicate your name:

Please indicate your contact information:

Please indicate your contact information: (phone, email, etc)

Please indicate your relationship to the patient:

Parent

Sibling

Other family member

Healthcare Provider

caCURE's Instrument Editor uses the same UI controls

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The screenshot displays the 'CURE™ Form Builder' interface. At the top, there are navigation links for 'Home', 'Admin', 'Logout', and 'Help', along with the 'HEALTHCARE IT, INC.' logo. Below this is a breadcrumb trail: 'Home > Living With Meningitis > Patient Information'. A green bar contains a lock icon and the text 'Patient Information', followed by buttons for 'ADD CONTENT', 'ADD QUESTION', 'ADD TABLE QUESTION', and 'IMPORT QUESTION'. The main content area shows a questionnaire form with several questions and options. A vertical toolbar on the left contains icons for deleting, editing, and locking questions. A search icon is located in the top right corner. On the right side of the form, there are green arrows pointing downwards, indicating skip logic.

Instrument Editor lock control

Grey Bars: Drag & Drop controls to rearrange questions

Delete and Edit controls

Library indicator

Click the Edit Icon to open a Question

The Previewer shows how an automatically generated data collection form will appear.

Explanatory text and skip logic indicators for each Question

Introducing . . .

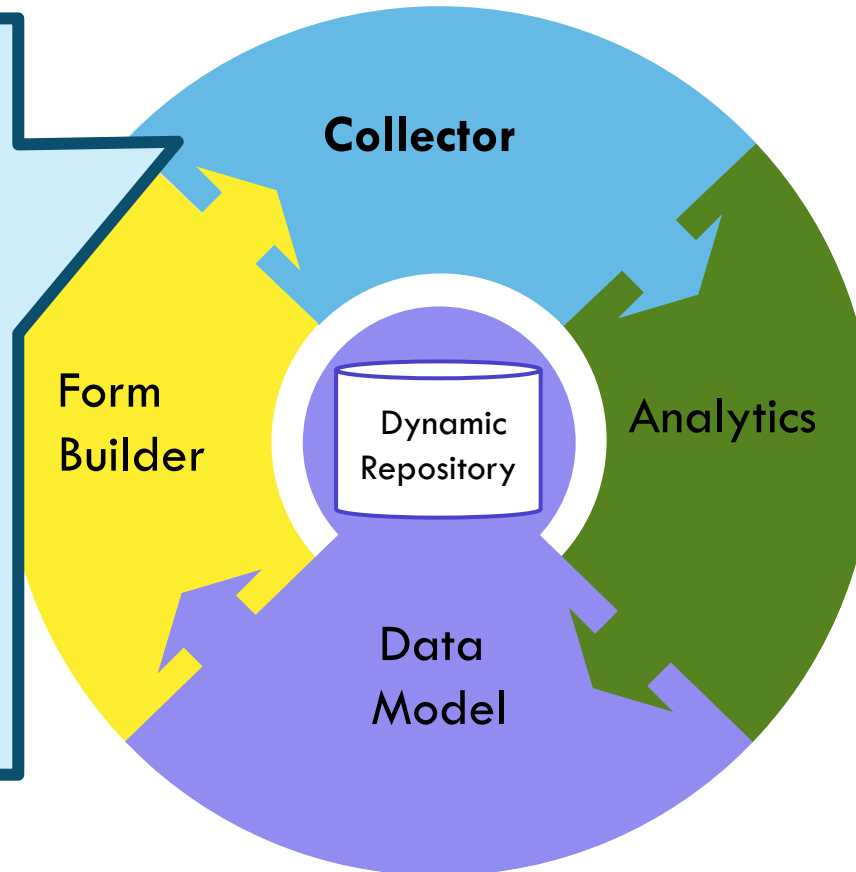
caCURE Collector

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Collector:

- Designed to integrate with existing websites
- Integrated open-source CMS (Drupal)
- Flexible styling
- Can detect mobile devices for dynamic page layouts
- Flexible submission workflows

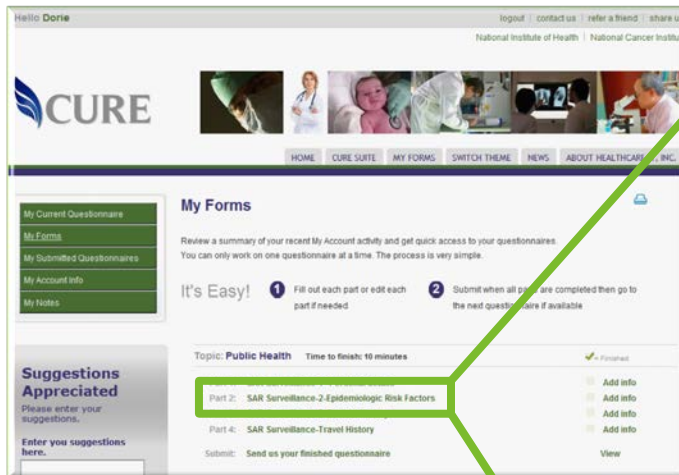
No developers required!



caCURE Data Collector

The screenshot shows the user interface of the caCURE Data Collector. At the top, it says "Hello Dorie" and includes links for "logout", "contact us", "refer a friend", and "share us". Below this is the "National Institute of Health | National Cancer Institute" logo. The main header features the "CURE" logo and a collage of medical images. A navigation bar contains links for "HOME", "CURE SUITE", "MY FORMS", "SWITCH THEME", "NEWS", and "ABOUT HEALTHCARE IT, INC.". The "My Forms" section is active, showing a sidebar with "My Current Questionnaire", "My Forms", "My Submitted Questionnaires", "My Account Info", and "My Notes". The main content area for "My Forms" includes a "My Forms" title, a brief description, and a "It's Easy!" section with two numbered steps: 1. Fill out each part or edit each part if needed, and 2. Submit when all parts are completed then go to the next questionnaire if available. Below this is a list of questionnaire parts for the topic "Public Health", with "Part 2: SAR Surveillance-2-Epidemiologic Risk Factors" highlighted in a green box. The list includes "Part 1: SAR Surveillance-1-Personal details", "Part 2: SAR Surveillance-2-Epidemiologic Risk Factors", "Part 3: SAR Surveillance-3-Contact History", and "Part 4: SAR Surveillance-Travel History". Each part has an "Add info" link. The "Submit" button is labeled "Send us your finished questionnaire". A "Suggestions Appreciated" sidebar is on the left, and a "Finished" status indicator is visible.

caCURE Data Collector



SAR Surveillance-2-Epidemiologic Risk Factors

EPIDEMIOLOGIC RISK FACTORS

Occupation

* Is the individual a healthcare worker?

Yes No Unknown

[Need help?](#)

Please specify healthcare worker type:

Physician

Nurse/PA

Lab

Other

Does patient have DIRECT patient care responsibilities?

Yes No Unknown

Contact and Travel

In the 10 days prior to symptom onset, did the patient have the following:

* Close contact in the 10 days prior to symptom onset with a confirmed SARS-CoV case or a probable SARS-CoV case?

Yes No Unknown

* Close contact with a person considered an RUI-2 or RUI-3?

Yes No Unknown

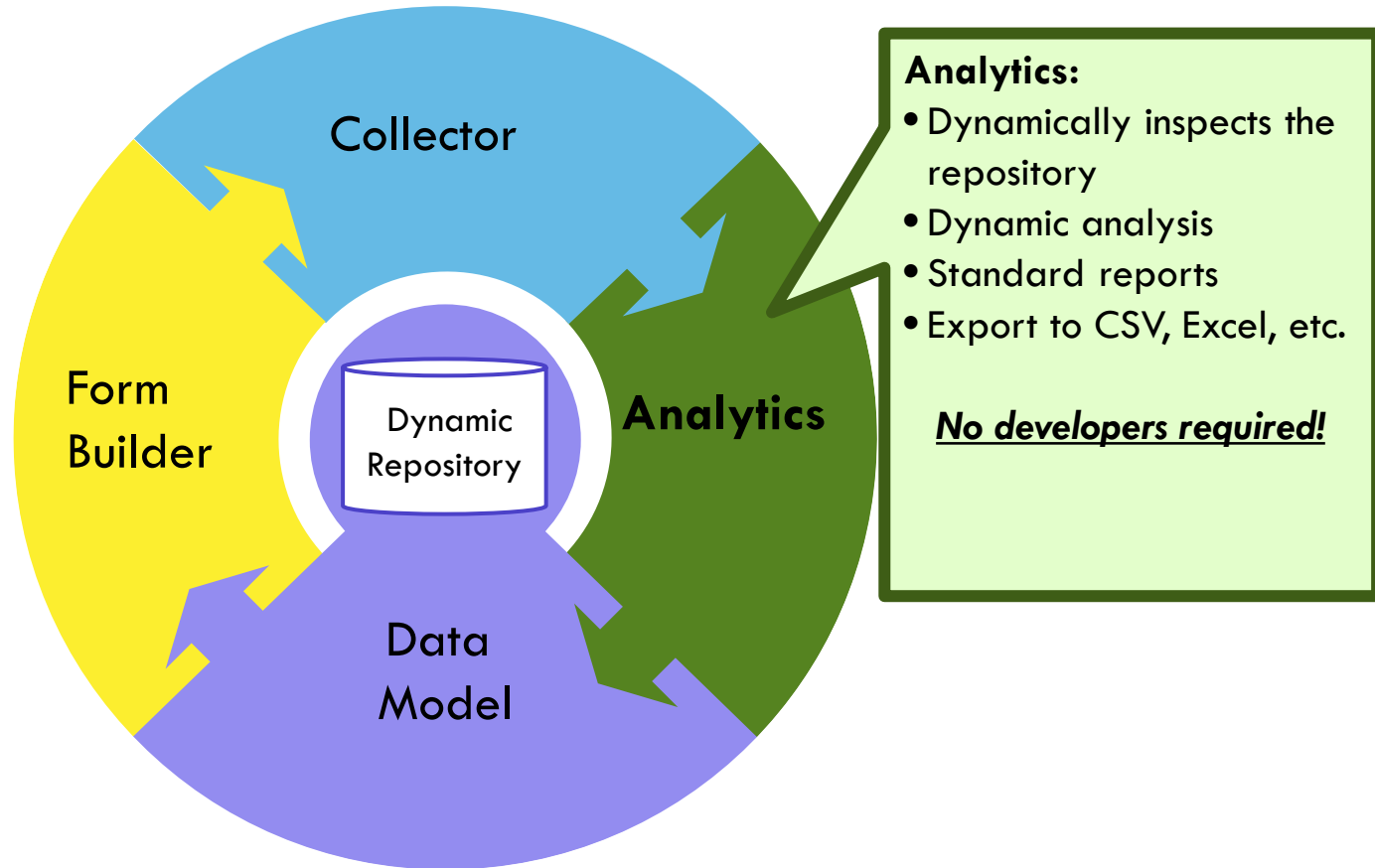
* Has patient traveled to foreign or domestic area with documented or suspected recent local transmission of SARS cases?

Yes No Unknown




Introducing . . . caCURE Analytics


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caCURE Analytics



CURE™ Analytics



[Home](#) | [Create Reports](#) | [View Reports](#) | [Admin](#) | [Logout](#)

Selected Questions

Age By Hospital Stay

Independent Variables

- AgeAtDiagnosis

Dependent Variables

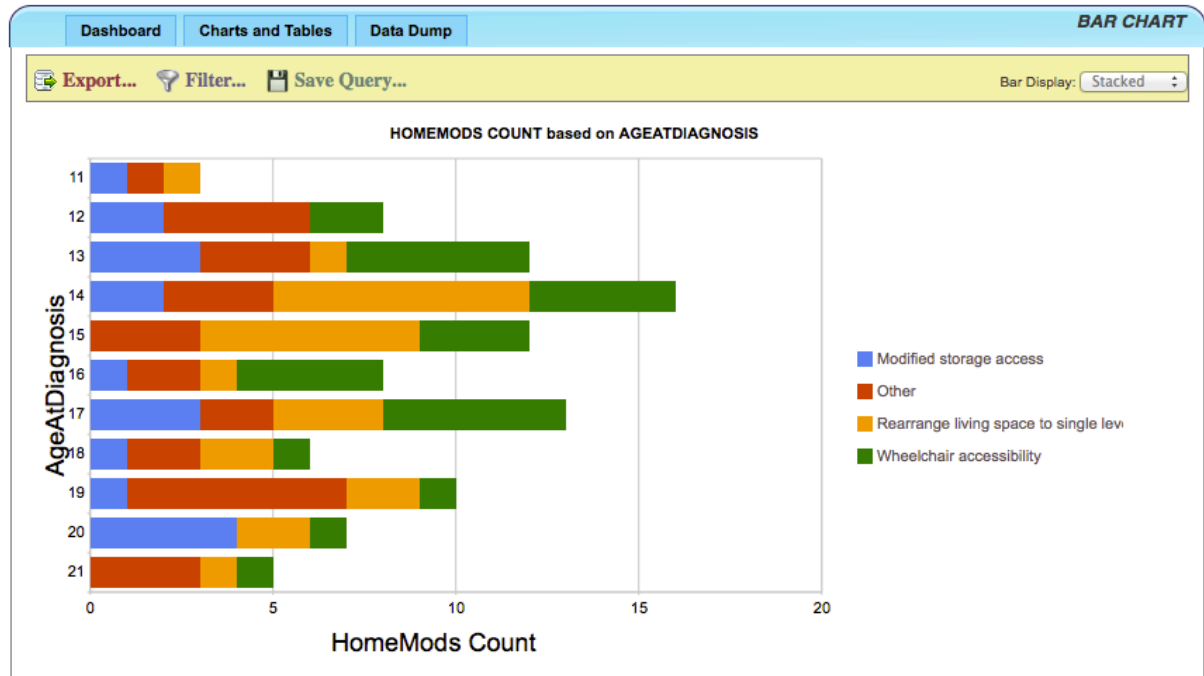
- HomeMods

Aggregation:

Filter Variables

- (None selected)

PROCEED
CLEAR



Introducing . . .

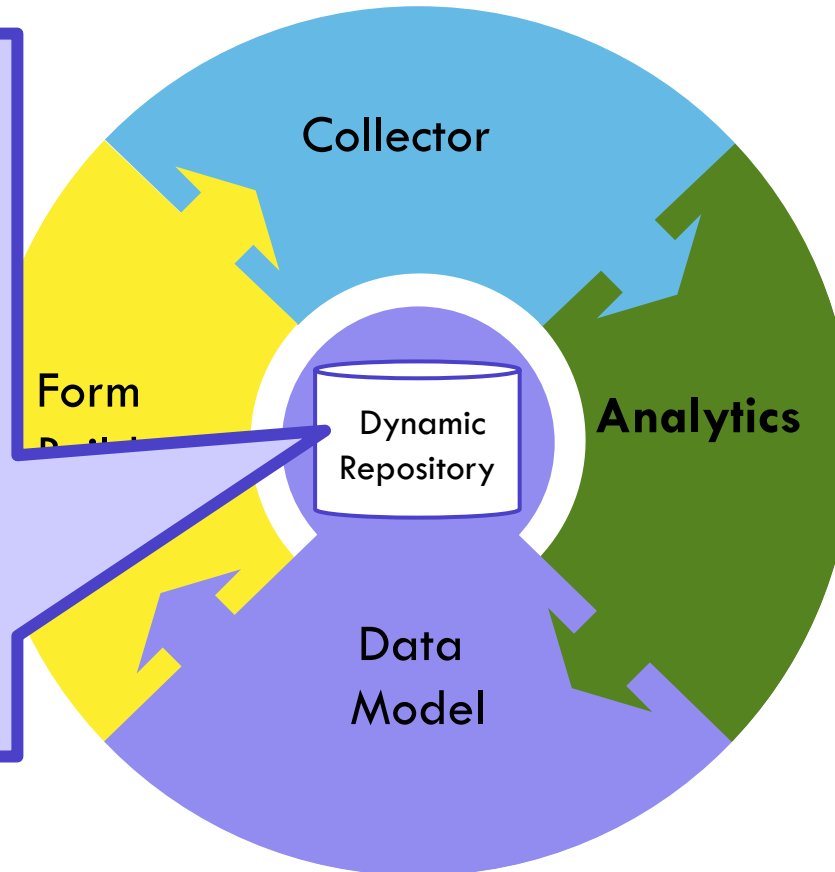
caCURE Dynamic Data Repository

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Dynamic Repository:

- NoSQL based
- Non-relational model dynamically accepts new data elements
- Built using high reliability, high-performance open-source DBMS
- Easily exports to relational and Big-Data formats for analysis

No developers required!



for the Radiation Oncology Institute:

A national registry for radiation oncology

Scientific challenge: identify factors that ensure comparative effectiveness of radiation treatment



DASHBOARD MY FORMS ADMINISTRATION CONTACT US

- Facility
- Physicians
- Patients

Patients

PREREGISTER PATIENT BULK PATIENT IMPORT ASSIGN PATIENTS TO PHYSICIANS

<input type="checkbox"/>	Patient	Physician	Status	Actions
<input type="checkbox"/>	Patient One	Physician 2 Two	active	Edit Block Delete
<input type="checkbox"/>	Patient 2 Two	Physician 2 Two	active	Edit Block Delete
<input type="checkbox"/>	Patient 3 Three	Physician 1 One	active	Edit Block Delete
<input type="checkbox"/>	Patient 4 Four	Physician 1 One	active	Edit Block Delete

DELETE CHANGE STATUS

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- The technical challenges:
 - ▣ Electronic submission from EMR's
 - ▣ Evolving data model
 - ▣ Complex data (DICOM/RT, Images)
 - ▣ Patient reported outcomes

Patient Initial Evaluation Form-1

Please specify date of diagnosis:

What was the Histologic type?

What was the method of diagnosis?

- US - guided needle biopsy
- TURP (Transurethral Resection of the prostate)
- Other
- Unknown

What is the prostate size according to ultrasound (cc)?

	Prostate size (cc):	Unknown
What is the prostate size according to ultrasound (cc)?	<input type="text"/>	<input type="checkbox"/>

Please answer the following:

	Number	Not reported	Unknown
What was the number of cores taken during the Prostate Biopsy?	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
What was the number of positive cores from the Prostate Biopsy?	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
What is the maximum percent of cancer tissue in the core with the highest Gleason Score from the Prostate Biopsy (%)?	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>

What is the Gleason Grade (GG) - primary?

- 1
- 2
- 3
- 4
- 5
- Not reported

What's in the build plan?

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- HTML5
- Mobile enablement
- New standards in healthcare and other domains
- Ongoing Enhancements across the suite
- Application integration in collaborative projects