

# Igniting Innovation with Cerner's Open Developer Experience

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Collaboration



Access

Open is the attitude that drives our collaborative business approach focused on speeding up innovation to advance health care.



Trust



Opportunity

# Emerging standards are making “apps” a reality



**HL7® FHIR®**

# Emerging standards are making “apps” a reality



- SMART = “Substitutable Medical Applications and Reusable Technology”
- A SMART App is a Web App
  - HTML5 + JavaScript
  - Typically embedded in EHR
- EHR Data Access is via FHIR
- OAuth2 for security and context passing
- Also supports smart-phone and patient-controlled apps



- FHIR = “Fast Health Interoperability Resources”
- A standard for accessing health care data (“Resources”)
- RESTful API design leverages Internet standards (HTTP, etc.)
- Created by Health Level 7 International (HL7)
- Emerging support by most major HIT providers (e.g., Argonaut Project)
- Meets EHR Certification for MU3

# EHR as an Open Platform Philosophy

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- EHR becomes a Platform
  - User and patient management
  - Core transactional services (orders, documentation, etc.)
  - Common workflow orchestration (admission, discharge, etc.)
  - Legal record
- Use the “Public API” to extend EHR functionality
  - No single vendor can supply every needed function
  - Innovation moves faster at the edge
  - Niche workflows and local use cases solved efficiently
  - A new ecosystem for developers and researchers

# Regulatory Environment

## 114 Congress

### 21<sup>st</sup> Century Cures Act

- Specifies that HIT vendors do not take any action that constitutes information blocking
- Provides assurances they will not prohibit appropriate exchange, access, or use of Health IT
- Has published APIs and allows health information to be accessed, exchanged, and used ***without special effort***

## CMS

### Promoting Interop

- Proposed IPPS Rule – finalized in August
- Transition from MU3 to Promoting Interop
- Shift from calendar to 90 day reporting period for 2019 for most health systems (MSPP and CPC+ full calendar year)
- Increases the relative importance of APIs – 40 out of 110 points related to patient access

## ONC

### U.S. Core Data for Interoperability

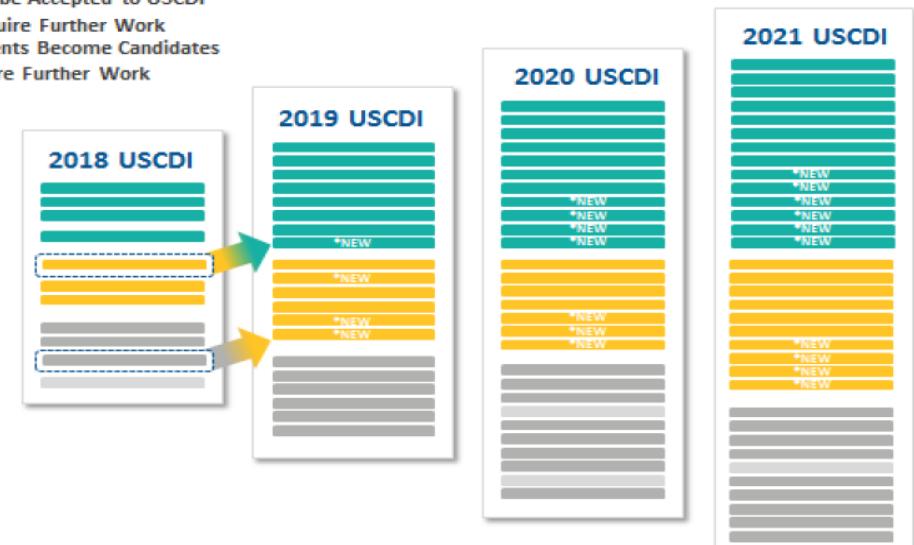
- ONC connects USCDI to the definition of Interoperability in being able to define “all electronic health information”
- USCDI begins with a CCDS base, but builds quickly to a larger set of data
- USCDI’s connection to interoperability likely connects it to information blocking

# USCDI Progression Example

- Data Classes move from Emerging status to Candidate Status to required (supported Data Elements in a USCDI version)
- Annual review of Candidate and Emerging Data Elements for movement into next Status
- Candidate status is considered formal ONC policy to prepare for inclusion

Graphic 1: USCDI Expansion Process

Some Candidates will be Accepted to USCDI  
Some Candidates Require Further Work  
Some Emerging Elements Become Candidates  
Some Emerging Require Further Work



## 2018 – 2021 Sample API Requirements

- Cognitive Status
- Discharge Instructions
- Functional Status
- Individual Goals
- Provider Goals
- Care Team Relationship
- Provenance
- Diagnostic Image Reports

# USCDI Candidate Data Classes

Data Class	2019 (v2)	2020 (v3)	2021 (v4)
Admission and Discharge Dates and Locations	X		
Cognitive Status	X		
Encounter	X		
Discharge Instructions	X		
Family Health History	X		
Functional Status	X		
Gender Identity	X		
Pediatric Vital Signs	X		
Pregnancy Status	X		
Reason for Hospitalization	X		
Care Provider Demographics		X	
Care Team Members Contact Information		X	
Care Team Member Roles/Relationships		X	
Diagnostic Image Reports (DIR)		X	
Individual Goals and Priorities			X
Practitioner Responsible for Care			X
Provider Goals and Priorities			X
Reason for Referral			X
Referring/Transition Provider's Name and Contact Information			X

# Info Blocking Definition - § 4004

A practice that is likely to interfere with, prevent, or materially discourage access, exchange, or use of electronic health information (unless required by law or specified by the Secretary pursuant to rulemaking) and;

If conducted by a HIT developer, exchange, or network, such developer, exchange, or network knows or should have known, that such practice is likely to interfere with, prevent, or materially discourage the access, exchange, or use of health information; or

If conducted by a health care provider, such provider knows that such practice is unreasonable and is likely to interfere with, prevent, or materially the access, exchange, or use of health information

# Cerner's SMART on FHIR “*Ignite*” API Platform



- Cloud Based ✓
- Scalable ✓
- Repeatable ✓
- Standards Based ✓
- Multi-dimensional ✓
- Agile ✓

# Defining the *code* open ecosystem



Ignite change.

Cerner *code*

# Pillars of Ignite API innovation

## Commercial Provider

Broad usage across Cerner clients via the code App Gallery.



Provider

## Health System Built Innovation

Health system innovation - building new apps to fill niche workflows.



Consumer



Provider



## Consumer Apps

Engaging the patient and consumer through the use of Apps



Direct to  
Consumer



Enterprise

# Cerner Open Developer Experience (code\_): <http://code.cerner.com>

The image shows a wooden desk with various devices displaying software interfaces. A laptop screen shows a 'PowerChart' interface with multiple data series. A tablet in the foreground displays a wireframe of a mobile application layout. A smartphone is visible in the background. A green button labeled 'START CODING' is positioned in the top right corner. The overall theme is innovation and collaboration in software development.

Cerner code\_

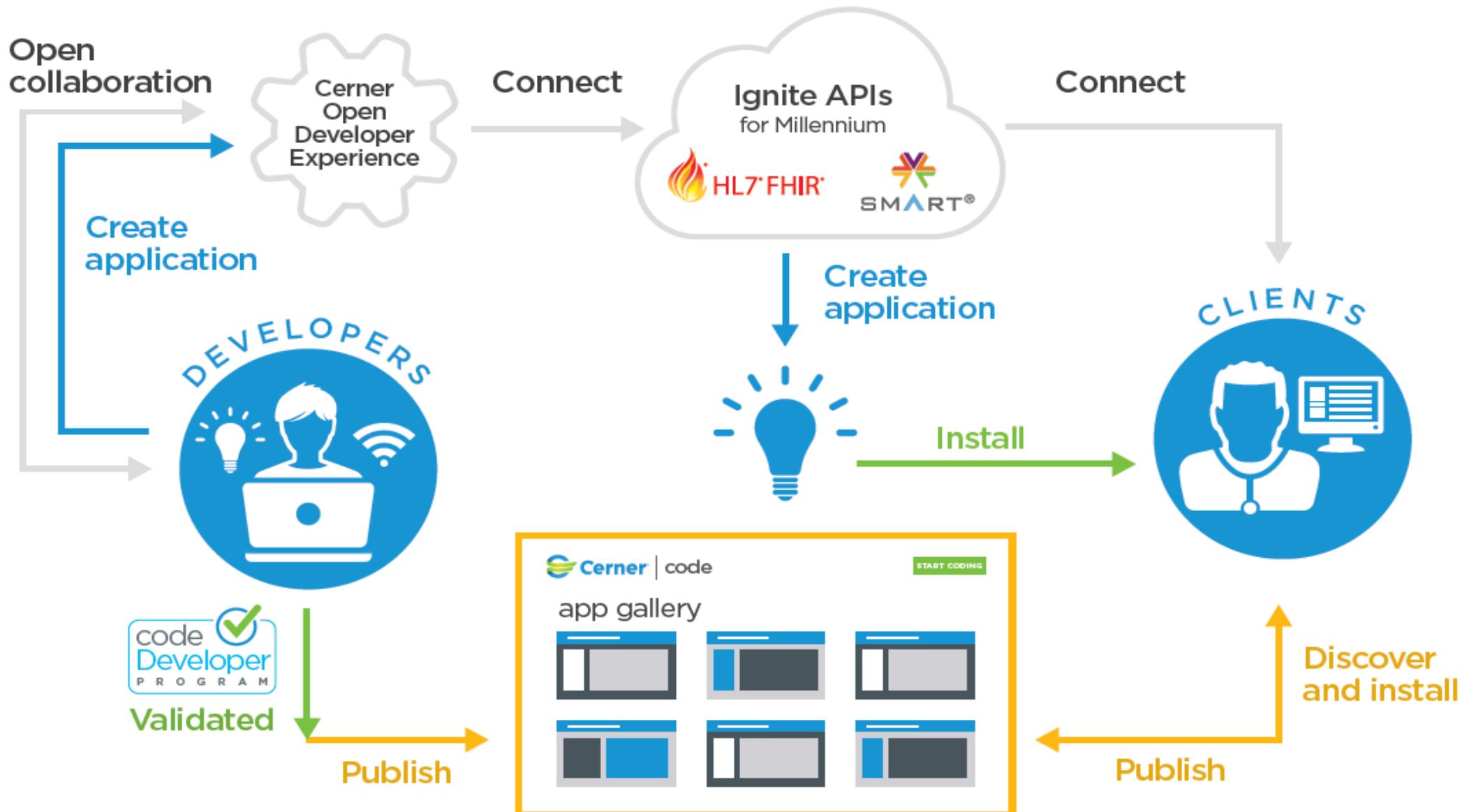
accelerating an open community of innovation

Documentation >

code\_

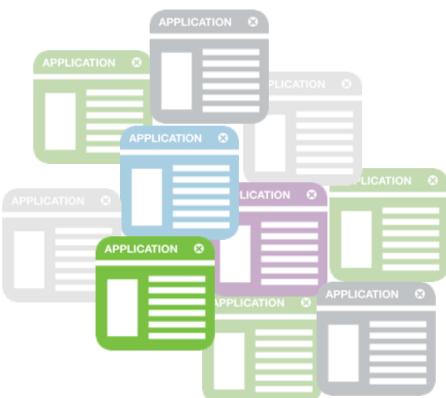
12 © Cerner Corporation. All rights reserved.

# Developer ecosystem



# Growing the innovation pipeline

**3,000+ apps**  
registered in sandbox



100 logged prospects  
17 Apps in Validation  
24 Program Member Apps

**80+ Apps in Production**



**29,000+**

unique app users

Cerner | code Start Coding About App Gallery Submit an App FAQs

## App gallery

Browse currently validated applications and connect with developers

Join Cerner and explore infinite possibilities innovate at the intersection of health care and information technology. Browse our currently validated applications below and connect with developers. All validated applications have been approved by Cerner Corporation for integration and distribution. Visit our [FAQs](#) page for more information about the validation process.



Cardiac Risk

Cardiac Risk presents relevant patient vitals and lab measurements and the calculated Reynolds Risk Score, along with a succinct, patient-friendly explanation for each result.

[View App](#)



Healthwise SMART on FHIR

The Healthwise SMART on FHIR app gives organizations a way to easily implement and seamlessly integrate patient education into their Cerner Millennium EMR.

[View App](#)



Juxly Timeline

Juxly Timeline integrates with PowerChart to display the right information in the right context to help you provide the best possible care. Display a patient's entire record on a single screen. Expand details, filter results, and easily find all of the data you need to easily make fully informed health care recommendations.

[View App](#)



Krames ON FHIR®

Krames on FHIR® is a flexible solution suite for physician offices, hospitals, and health systems for delivering patient education materials at the point of care. Using SMART on FHIR® technologies, Krames on FHIR seamlessly integrates directly into the clinician's workflow, allowing them to provide recommendations, trusted information, and resources.

[View App](#)



Medication

Medication makes understanding how to take medications intuitive and simple, to improve patient health outcomes, as well as healthcare providers' financial performance through enhanced patient experience (HCAHPS scores) and 30-day readmission rate reductions.

[View App](#)



Pediatric Growth Chart

Pediatric Growth Chart provides a concise, minimal-click, interactive view of a child's growth over time. The application includes traditional growth curve charts, data tables, and a novel parent-facing summary view. Many graphical features assist in communication with the patient and family, including a growth chart, percentile curves, and NICU cases are.

[View App](#)



RxCheck

RxCheck is the world's first Prescription Decision Support (PDS) platform. Integrated directly into the prescribing workflow, RxCheck surfaces patient-specific costs, adherence data, and P&T-approved medication protocols.

[View App](#)



Surgical Valet

ePreop, Inc. offers a wide range of software and workflow tools dedicated to simplifying the surgical experience for patients, RNs, administrators, and physicians. SurgicalValet™ is a modular software suite that places clinicians at the center of the Perioperative Surgical Home (PSH) and drives patient engagement. Surgical

[View App](#)

# The code App Validation Approach



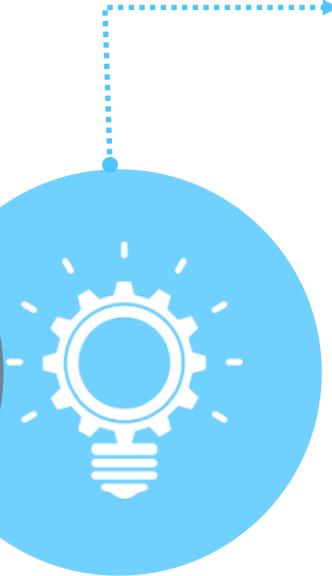
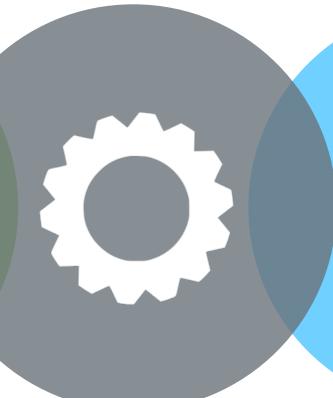
## Security

The Security Review provides an assessment of any potential security flaws in your app.



## UX

The UX Review ensures that the experience of the app meets Cerner's standards of being valuable, effective, trustworthy, safe, and clear.



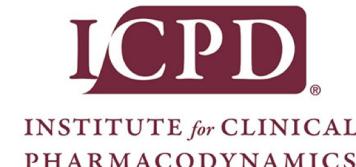
## Operational/Technical

The Technical Requirements Review documents the technical requirements of your app. The Operational Review ensures apps are operationally mature prior to implementation.

## Functional

The Functional Review focuses on the app interaction with the API to ensure optimal exchange of data sets as well as seamless integration into EMR workflow.

# Cerner Open Developer Program



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RIGHT DRUG • RIGHT DOSE • RIGHT NOW



FHIR Resources	Read	Create	Update	Search	Example
Allergy Intolerance	✓	✓	✓	✓	Penicillin Allergy
Appointment	✓	✓		✓	Office Visit
Binary	✓				CCD / Clinical Document / etc.
Care Plan	✓			✓	Treatment Plan
Condition	✓	✓	✓	✓	Problem
Contract	✓			✓	Consent
Device	✓			✓	Implant History
Diagnostic Report				✓	Results
Document Reference	✓	✓			CCD / Clinical Document
Encounter	✓			✓	Inpatient Visit
Goal	✓			✓	Walk 500 yards
Immunization	✓			✓	Influenza
Medication Administration	✓			✓	Record of Med or Vaccine
Medication Order	✓			✓	Fluticasone Order
Medication Statement	✓	✓	✓	✓	Documented Meds
Observation				✓	Vitals, Smoking Status
Patient	✓			✓	Demographics
Person	✓			✓	Demographics
Practitioner	✓			✓	Provider Info
Procedure	✓			✓	Hip Replacement
Procedure Request	✓			✓	Non-Med Order
Related Person	✓			✓	Demographics
Schedule	✓	✓	✓	✓	Time Period
Slot	✓			✓	Availability

## New API Updates

- Scheduling API - New patient self schedule
- Document Read
- HealthIntent APIs – Personnel; Organizations; Consumers (read/writes); Longitudinal Record (read); Network (i.e – Provider, specialty, Service) (read/write); Data Syndication

## What are we working on?

- Bill Pay APIs
- Consumer Framework launchpoints
- New APIs - Non-Med Order Reads, Encounter Writes, PDF Writes
- CDS Hooks
- STU3 Uplift
- 2019 – Broader writes (labs, vitals, diagnostic)

## Cerner Open Developer Experience

- Technical/Operational/Business Requirements
- Functional, Security, UX Validation
- 24 Validated Code Program Members
- 17 developers going through validation

## Code Learning Lab – Spring 2019

- Repeats content from CHC and adds third party access



## Define the Value

Clearly defining value objectives and identifying measurable KPIs are critical to the overall strategy and execution for App Developers



## Know your Target

Define your audience within the Health System (i.e. CNIO, CIO, COO, Innovation Directors)



## Evaluate & Use the open tools

Perform a GAP Analysis with your use case against the available APIs. Get started in building your App



## Due Diligence

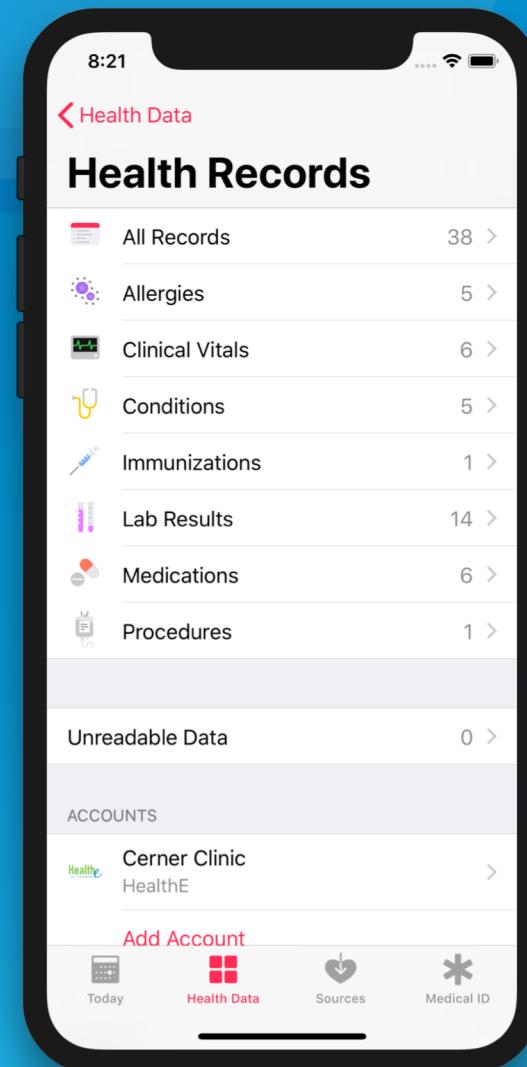
Cover the necessary areas for scale: Security, Hosting, Functional, Integrated workflow, UX



## Commercial Execution

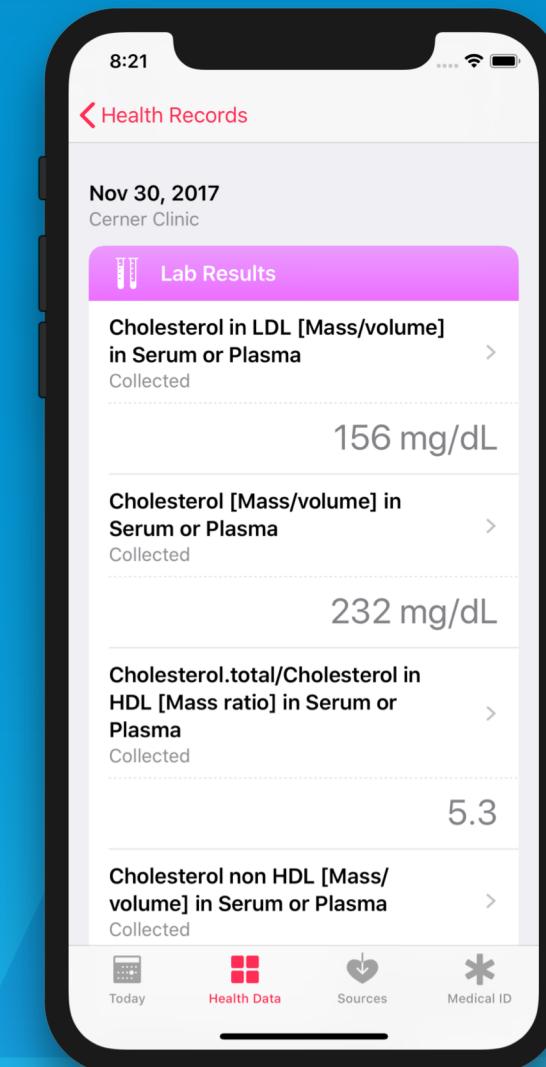
Define Sales/Marketing strategies/channels along with aligning with Health System needs

# Aggregates health record information



iPhone X - 11.3

# Enables Consumer Access and Engagement



iPhone X - 11.3

# Consumer Engagement – Health System Reaction

## TAMPA BAY BUSINESS JOURNAL

Health Care

### How Apple's latest iPhone update will improve health care for BayCare, Florida Hospital patients

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By [Margie Manning](#) – Finance Editor, Tampa Bay Business Journal  
Mar 30, 2018, 7:24am EDT Updated Mar 30, 2018, 11:08am

[BayCare Health System](#) and Adventist Health System, the parent company of Florida Hospital, are among the 39 health systems nationwide that are collaborating with Apple on a new way to access medical records.

Test results and other personal health data can be tracked in an updated health records section that is included in the health app on the latest operating system from Apple (NASDAQ: AAPL), iOS 11.3, which was released Thursday.

The tool is important, because patients who have access to their medical data are more involved in their own care, said [Tim Thompson](#), senior vice president of information services for BayCare.

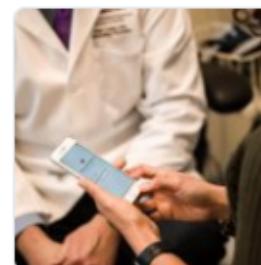
#### HEALTH RECORDS ON IPHONE NOW AVAILABLE TO METHODIST LE BONHEUR HEALTHCARE PATIENTS

"While we are celebrating a century of innovation, we continue to focus on seeking out opportunities to advance patient care. Integrating our records with Health Records on iPhone is truly a ground breaking step we have taken to improve our patients' lives," said Michael Ugwueke, president and CEO for Methodist Le Bonheur Healthcare.



**Shez Partovi MD** @spartoviMD · Mar 30

Apple Health Records: a "digital Fedex" moving data from health systems to your phone. [fiercehealthcare.com/tech/apple-hea...](#) @FierceHealthIT @DB\_Sweeney



#### 27 more health systems join Apple Health Records ...

More than two dozen organizations have put patient records on the iPhone as part of an effort that is expected to expand.

[fiercehealthcare.com](#)

#### Methodist teams with Apple to offer patients their medical records on the go

By Julie Anderson / World-Herald staff writer Apr 23, 2018 0

Currently, Methodist is the only health system in Nebraska and Iowa to offer the capability. But Dr. Greg Huttger, the health system's chief medical information officer, said he envisions that other health systems eventually will join, giving patients the ability to tap into information from other hospitals and clinics.

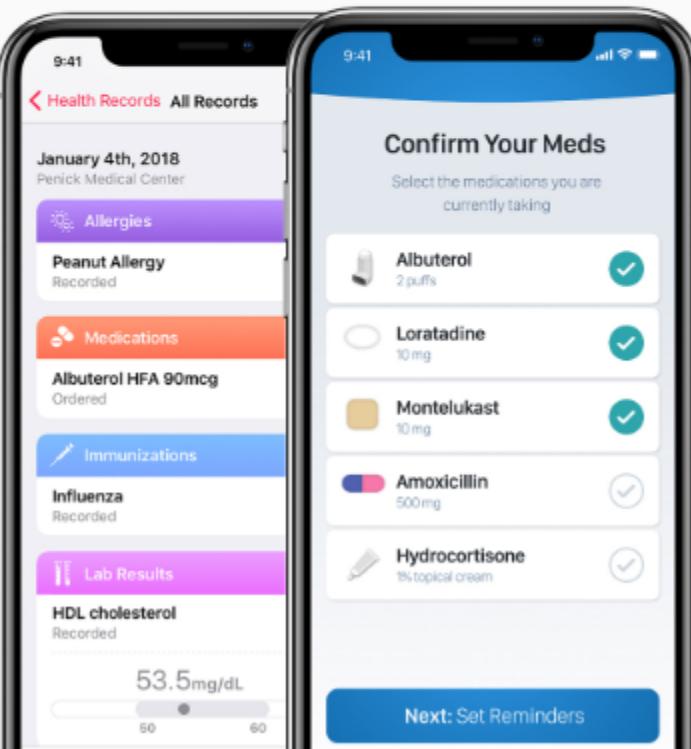
"This is something I think can be a game-changer," Huttger said. "Nobody will not have their health data on their phones."

Beta

# Health Records

The new Health Records API lets users share their health record data, including allergies, conditions, labs, medications, vitals, and more, with your app.

[Learn about the API >](#)



As a developer, as a health institution, as a student, as EHR providers, as a clinician, as a patient..... as an *industry*, let's Ignite Innovation *together!*

