Collaboration through Cerner Open Developer Experience

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Collaboration

Access

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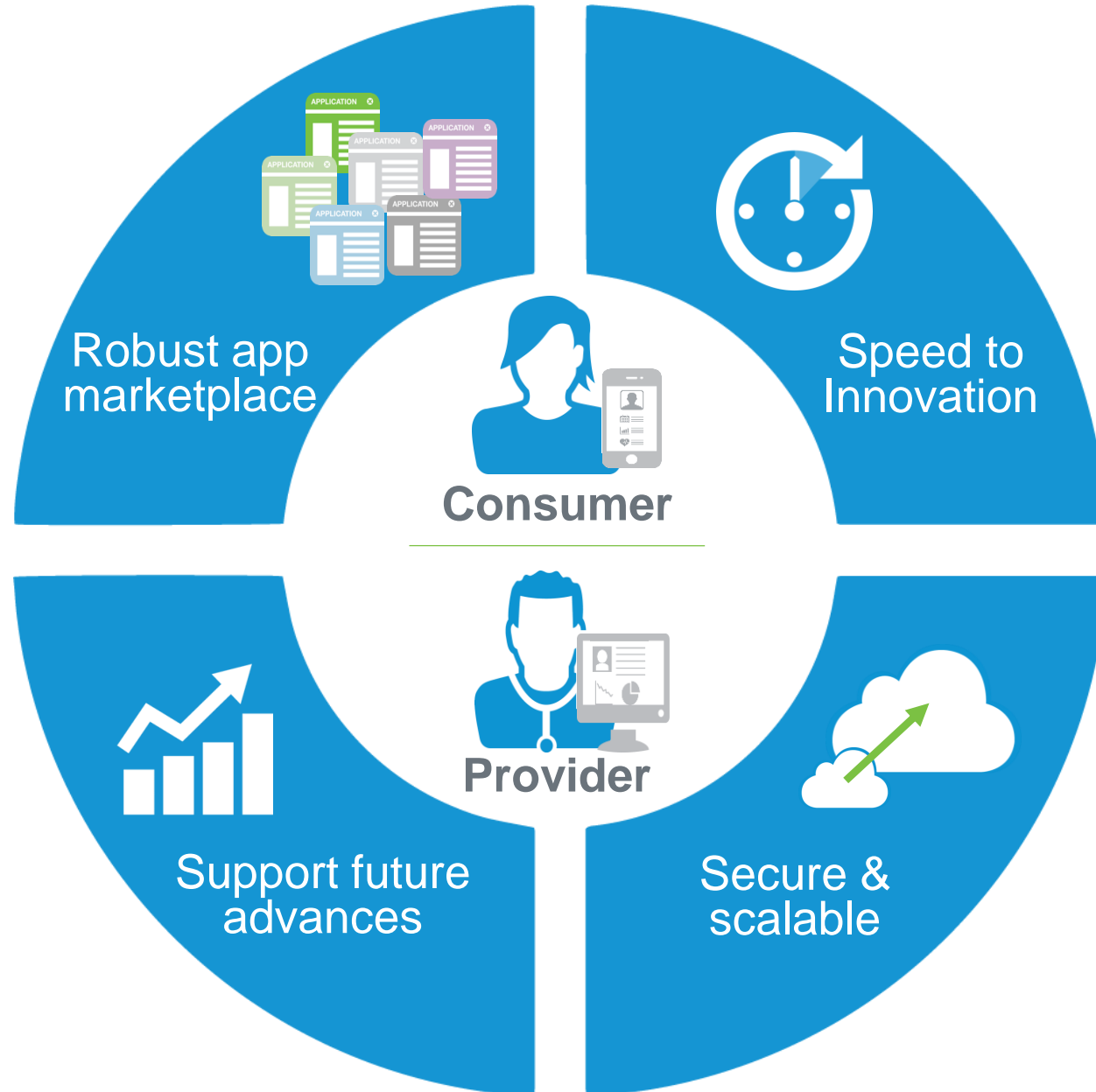
Trust

Opportunity

Enabling innovation – wherever it comes from

Collaboration

Enable

code

Consumer/provider
needs met

Robust market place

Ignite change.

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code ecosystem value

Cerner's ecosystem enable apps for providers and consumers

Provider-facing apps

- Fill workflow gaps
- Deliver intelligence directly into the clinical workflow
- Speed to innovation in a fraction of the time required for regular implementations

Consumer-directed access apps

- Place the consumer in the center of their care by empowering them to access and manage their own health information
- Enable truly portable health data
- Encourage consumer engagement

APIs enable apps for providers and consumers

Provider-facing apps can be developed that leverage the Millennium Platform using APIs

Government regulation requires more choices for consumer-facing apps via APIs

Plan to attest for Meaningful Use Stage 3?
The Ignite API for Millennium addresses _Objective 5, Measure 1_

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Emerging standards are making "apps" a reality

HL7® FHIR®

SMART®

- 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

- 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

Why implement Cerner Ignite APIs?

Meaningful Use Stage 3
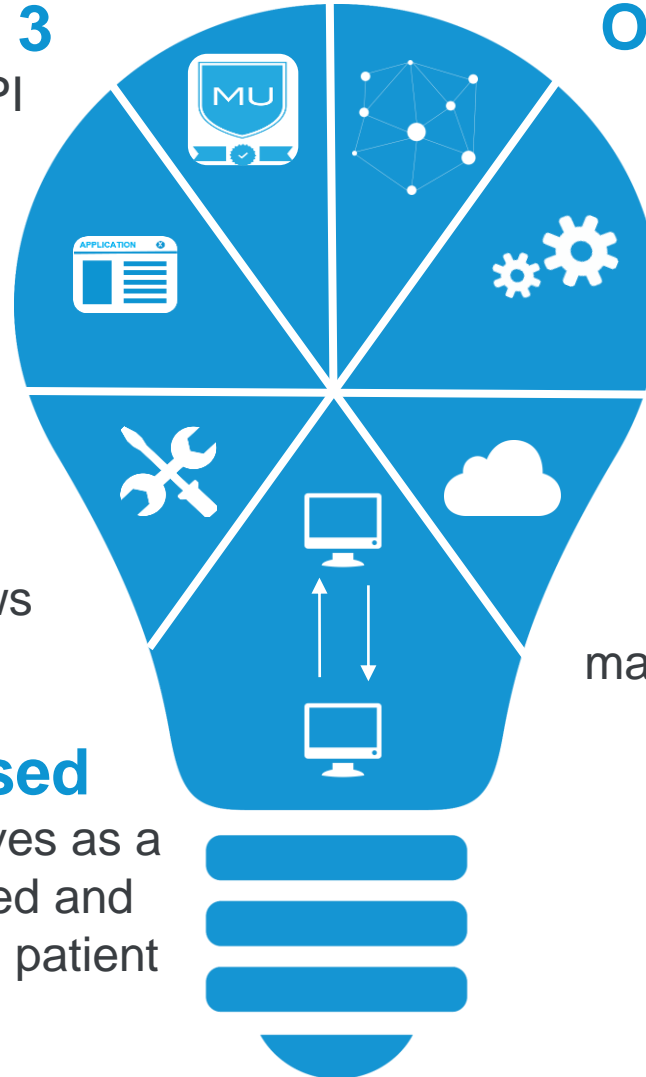requirements for consumer API access

App Ecosystem
Take advantage of the growing app ecosystem

Build Apps
Fill niche workflows

Standards-Based
Cross-vendor utility serves as a foundation for integrated and repeatable provider and patient workflows.

Open & Trusted Network
No barriers for access.

EHR Infrastructure
Ensure your EHR infrastructure is able to support future advancements that open standards will enable

Cloud-Based
Secure and scalable environment managed as a service and kept up to date

Cerner's Ignite API (MU3, Client and Developer Build)

Why a cloud-based API?

- Industry compliant security architecture for internet facing applications
  - Centrally Managed Security (connection to internet, authentication and authorization)
  - Data management
- Agile deployment of updates and enhancements of FHIR standard
- Centralized ontology mapping
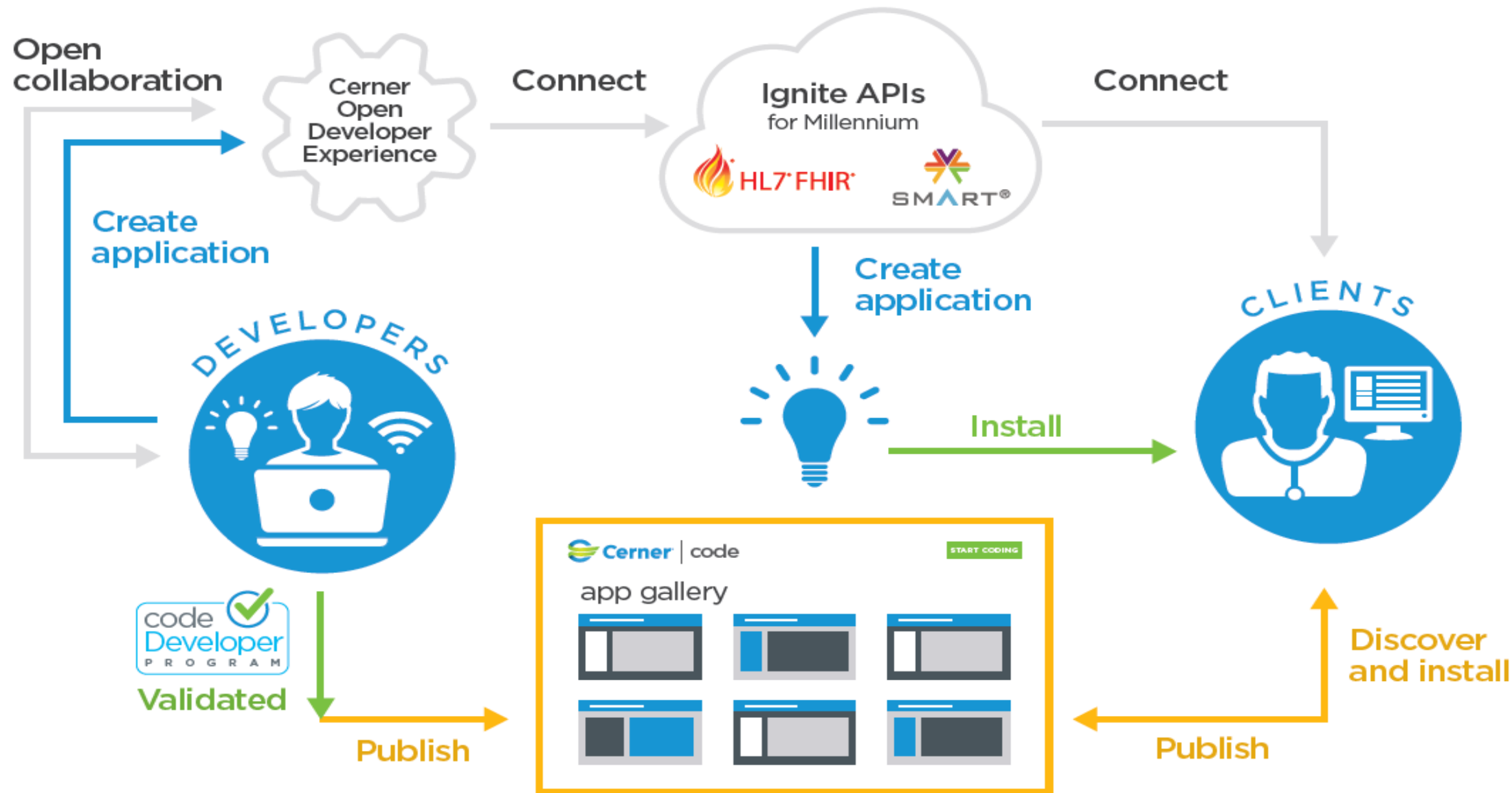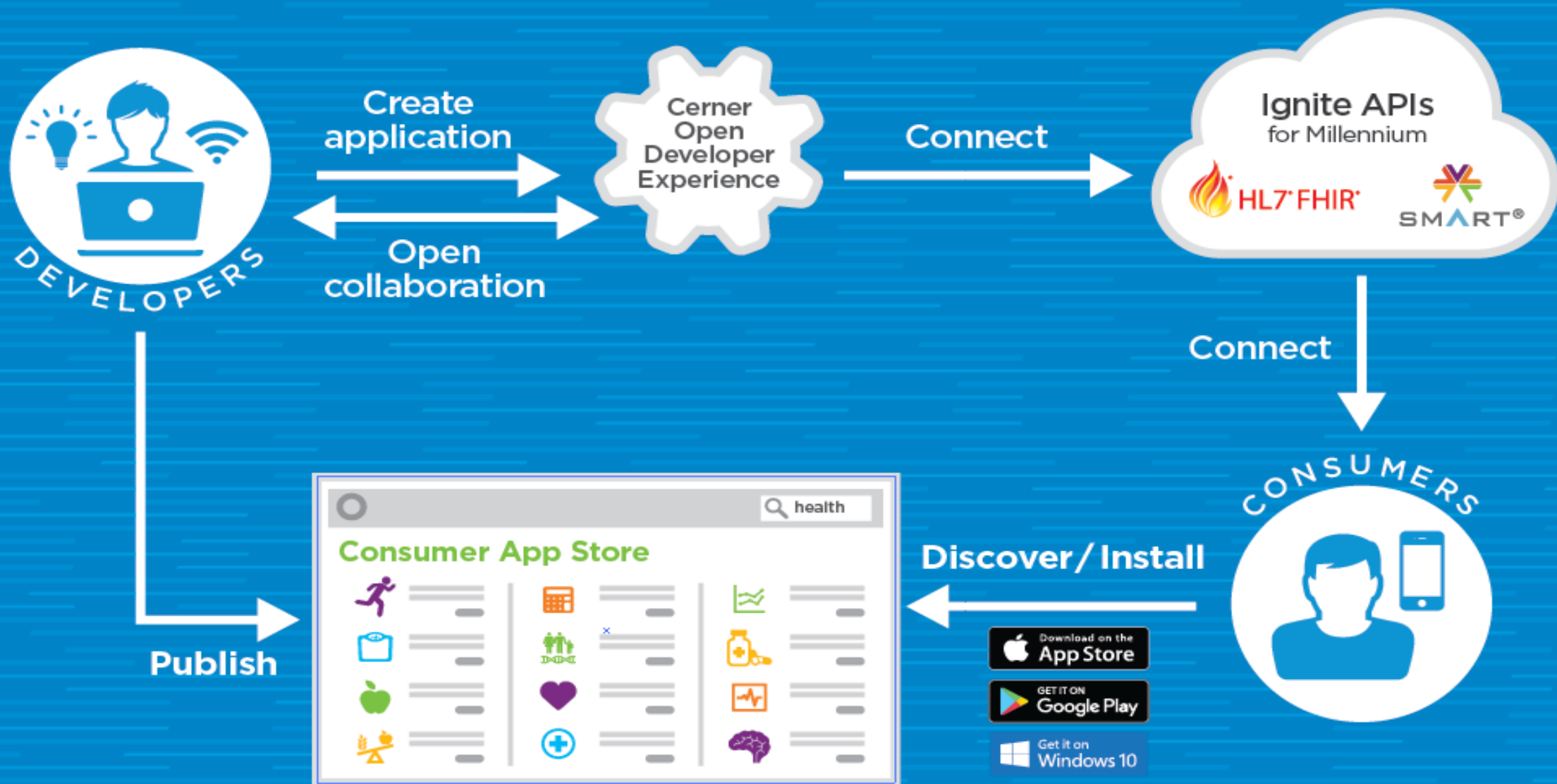- Flexibility – scale capacity to meet application demand (predictable costs)

Why FHIR?

- Standards-based API accelerates development community adoption
  - Common, web-based technology (REST, JSON, XML, OAuth)
  - Standardized data models (common, human readable set of data elements, "resources")
  - Built in authentication and authorization model
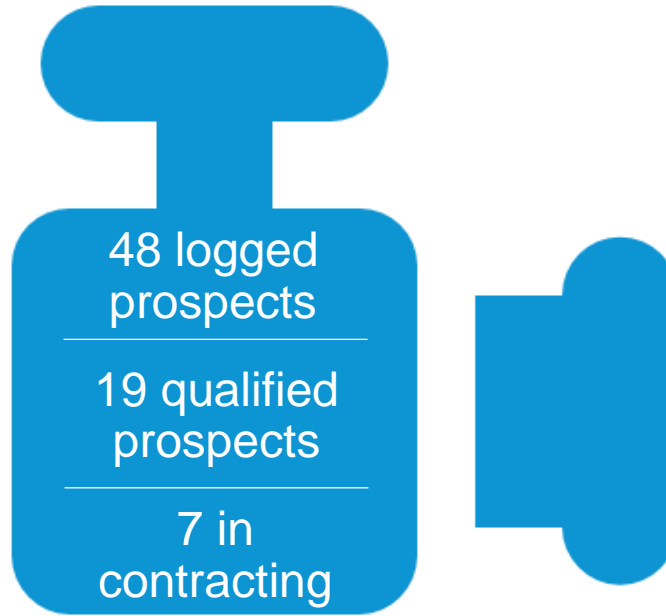 - ONC has suggested that FHIR may eventually be required

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Developer ecosystem

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Open collaboration

Cerner Open Developer Experience

Connect

Ignite APIs for Millennium

HL7 FHIR   SMART®

Connect

Create application

Create application

DEVELOPERS

Install

CLIENTS

code Developer PROGRAM

Validated

Cerner | code   START CODING

app gallery

Discover and install

Publish

Publish

Create application

Open collaboration

DEVELOPERS

Cerner Open Developer Experience

Connect

Ignite APIs for Millennium

HL7® FHIR®

SMART®

Connect

CONSUMERS

Discover/Install

Publish

Consumer App Store

health

Download on the App Store

GET IT ON Google Play

Get it on Windows 10

Google Play and the Google Play logo are trademarks of Google Inc.

Growing the innovation pipeline

12,500
unique app users

1,200 apps
registered in sandbox

48 logged prospects

19 qualified prospects

7 in contracting

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.

Cerner
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 for every health decision
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
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 ›

juxly
Juxly Vault
The intuitive interface guides physicians as they identify codes appropriate for their patients. From there, providers can fully document conditions to meet CMS standards quickly and accurately with just a few mouse clicks. Supporting data such as social history, vitals, and lab results are readily accessible, giving providers
View App ›

KRAMES ON FHIR
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, enabling them to provide recommended, trusted
View App ›

fdb First Databank
Meducation
Meducation® 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 ›

Boston Children's Hospital **SMART**
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. Ambulatory and NICU uses are
View App ›

RxCheck
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 ›

ePreop
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 ›

Ignite innovation

Open source collaboration

Collaborated to improve a cardiovascular disease risk app

Speed to innovation

Deployed a surgical support app in 1/3 the time of traditional methods
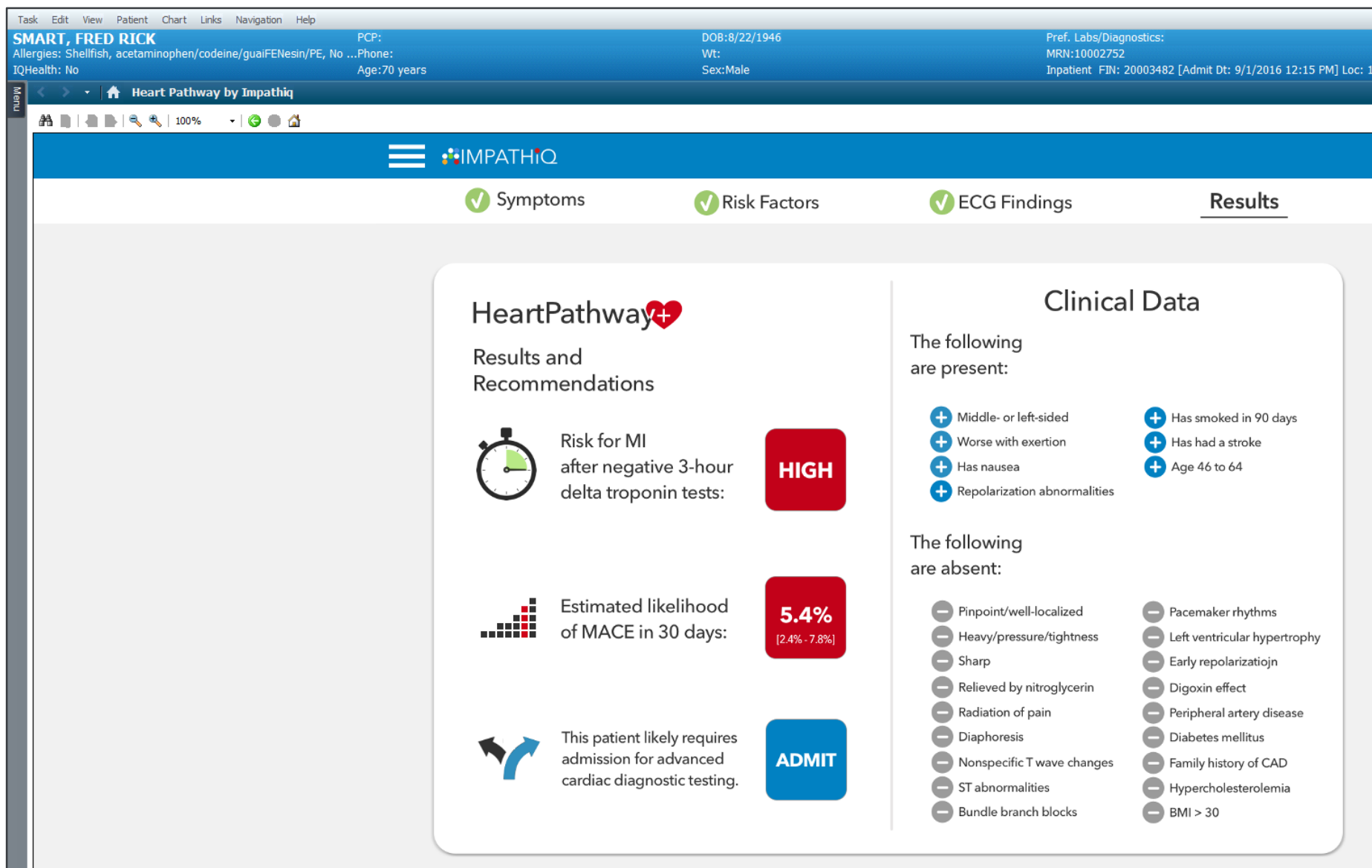
Supporting clinical workflows

Partnered to integrate mobile technology to measure and chart wounds

Consume innovation

Enhanced specialized workflows through the marketplace

Duke UNIVERSITY

Dignity Health.

Intermountain Healthcare

COXHEALTH

HEART Pathway CDS for Chest Pain

- Streamlined chest pain management

- Powered by Cerner Ignite API

- Triggers intelligently inside Millennium

- Utilizes patient history in CDS:
  Symptoms
  Risk Factors
  ECG Findings

- Standardizes care, reduces risk and improves outcomes

Visual Clinical Decision Support App

visualDx.

- Developed by VisualDx

- Provides image-driven differential diagnosis

- Uses SMART for launching within PowerChart

- Uses FHIR to curate a tailored sub-set of images based on patient age, sex, and medication Rx.

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Krames on FHIR – Patient Education App

- Using SMART and launching in PowerChart
- EHR data broken out by category – Diagnosis, Meds, Procedures
- Documents can be printed or sent electronically
- Favorites and folders features
- Free text search available
- Advanced filtering
- Article preview
- Documentation of handouts recorded back in EHR

An introduction to Cerner Open Developer Experience – how to get started

- If you're not familiar with the FHIR or SMART specifications, start by accessing the documentation for SMART at http://docs.smarthealthit.org. The Tutorials section provides an overview of the basics

- Visit HL7 FHIR documentation site at https://www.hl7.org/fhir/dstu2/. The executive, developer, and clinical introductions are recommended.
  - Note that this page indicates that a newer version of the spec is available, however Cerner has not done the uplift just yet, so for the time being DSTU2 is the relevant section

- Browse the documentation about our implementation @ http://fhir.cerner.com/millennium/dstu2/. We have recently added specific documentation for our SMART service implementation at http://fhir.cerner.com/smart/.

- New tools, documentation and resources are added regularly, so also sign up for updates on our mailing list on http://code.cerner.com.

- You can access our sandbox without authentication. You can learn more about accessing the open end point here: http://fhir.cerner.com/millennium/dstu2/.

- You can ask questions to our Cerner FHIR development team on our Google Group: https://groups.google.com/forum/#!forum/cerner-fhir-developers

- Once you are ready to test your app against our authenticated endpoint, review documentation on the Authorization page http://fhir.cerner.com/authorization/, then use the *code* console to register and test your app at https://code.cerner.com/developer/smart-on-fhir/.

- You can also access our tutorial page for SMART apps built with Cerner Ignite APIs here - http://engineering.cerner.com/smart-on-fhir-tutorial/

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Cerner Open Developer Experience (*code_*): http://code.cerner.com

What do you want your App to be when it grows up?

- Determine – is this an app purely for internal use or do you intend to commercialize it and make it available to all Cerner clients?
    - If internal – follow step by step overview @ https://connect.ucern.com/docs/DOC-662825
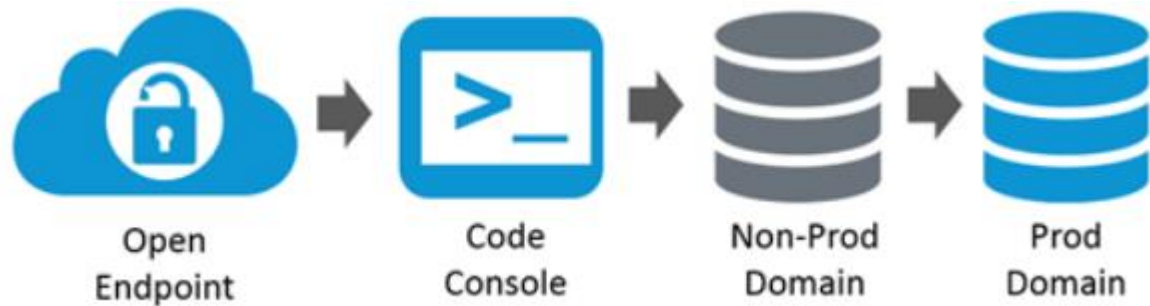
- Resources to consider:
    - SMART on FHIR Coaching Services to help development teams get started
    - App Validation Services that mirror the validation services that we offer to third party developers
    - Integration Services to get your built or bought application live in Production

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App Validation Process

- The App Validation Process is required for Apps showcased in the App Gallery and Optional for Client developed internal apps
- The Validation Step of Cerner's App Developer Program ensures that:
  - Apps are production ready
  - Apps integrate well with the data set provided by the API
  - Apps fit within the EMR workflow
  - Apps are documented for support and implementation
- As developers complete the steps of the program, the goal is to ensure that the app can be integrated quickly and easily into client domains and works consistently

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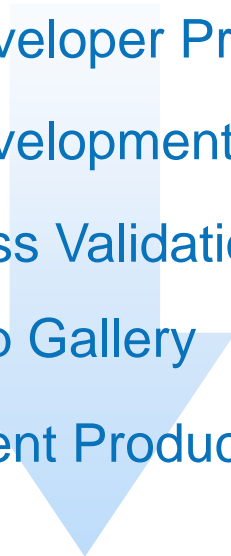
Validation Components
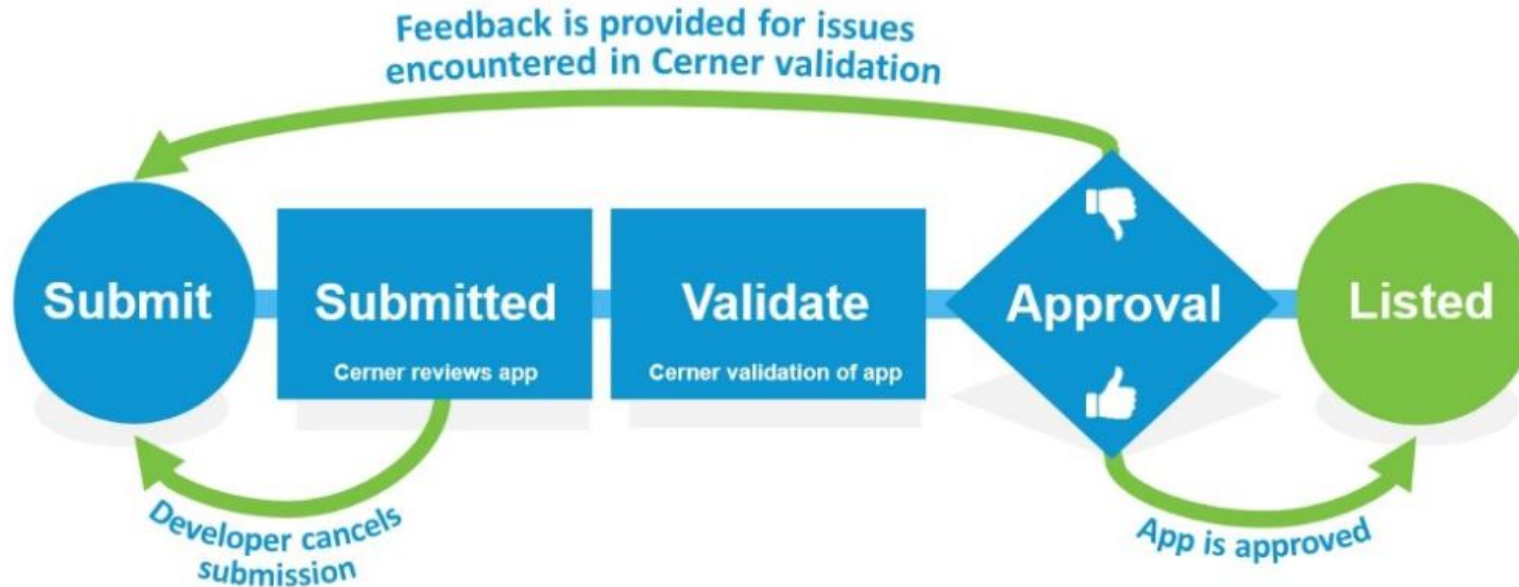
- Security Review
- Technical Review
- Functional Review
- Operational Review
- User Experience Review
- Concept Mappings Review

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Broad enablement of your application?

- Is my organization's strategy to broadly commercialize this app as a core strategy?
- Before submitting an App:
  - Ensure that a robust gap analysis is performed against App goals and what's actually available
  - Review FAQs on code to fully understand the App development and submission process as well as security, technical, and validation requirements
  - Develop a working application demo, integrating directly with Cerner's Open Sandbox

1. Developer Program
2. Development
3. Pass Validation
4. App Gallery
5. Client Production

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Application Commercialization Considerations

- The core elements of sustainable application commercialization:
    - Pricing and Packaging
    - Contracting and Legal
    - Sales and Business Development
    - Hosting
    - Ongoing development and versioning/update strategy
    - Customer Service and Support
- Cerner won't be able to consume/license the vast majority of innovations
- Consider selling/licensing out IP to software developers

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The Regulatory Components of API enablement

- Objective 5 (Patient Electronic Access to Health Information) requires that for a percentage of all unique patients seen, the provider ensures that the patient's health information is available for the patient (or a patient-authorized representative) to access using any application of their choice that is configured to meet the technical specifications of the API in the provider's CEHRT

- Objective 6 (Coordination of Care through Patient Engagement) requires that patients (or patient-authorized representatives) actively engage with the electronic health record made accessible by the provider and access their health information through the use of an API that can be used by applications chosen by the patient and configured to the API in the provider's CEHRT (or other access methods)

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To implement an API, the provider would need to fully enable the API functionality such that any application **chosen by a patient** would enable the patient to gain access to their individual health information provided that the application is configured to meet the technical specifications of the API.

Providers may not prohibit patients from using any application, including third-party applications, which meet the technical specifications of the API, including the security requirements of the API.

Providers are expected to provide patients with detailed instructions on how to authenticate their access through the API and provide the patient with supplemental information on available applications that leverage the API.

From CMS Stage 3
Patient Access Spec Sheet
http://goo.gl/FsJiSg

Bottom Line on Recent Regulatory Updates

- Previously, health system clients had to be ready to have 2015 CEHRT in place by Jan 1 2018 (2015 CEHRT includes APIs)

- Recent regulatory guidance gives health systems a flex year in 2018 to leverage 2014 CEHRT

- Recent guidance on CPC+ clarified that this program also will not require 2015 CEHRT in 2018

- In essence, APIs are not required for regulatory programs until 2019

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A primer on 21ˢᵗ Century Cures Act

- The intent of the Act is ultimately to facilitate broad information exchange
- Particularly, much of the attention is focused on "information blocking"
  - Information blocking is defined in the law as, with respect to a health information technology developer, exchange, or network, business, technical, or organizational practices that, "except as required by law or specified by the Secretary, interferes with, prevents, or materially discourages access, exchange, or use of electronic health information; and the developer, exchange, or network knows, or should know, are likely to interfere with or prevent or materially discourage the access, exchange, or use of electronic health information."
  - And with respect to a healthcare provider, "such provider knows that such practice is unreasonable and is likely to interfere with, prevent or materially discourage access, exchange or use of electronic health information."
- Fines are $1M for actions that are deemed to fall with unreasonable information blocking
- ONC under Don Rucker is focused heavily on advanced API functionality to drive more open and transparent consumer access to APIs and patient mediated data to applications of their choice.
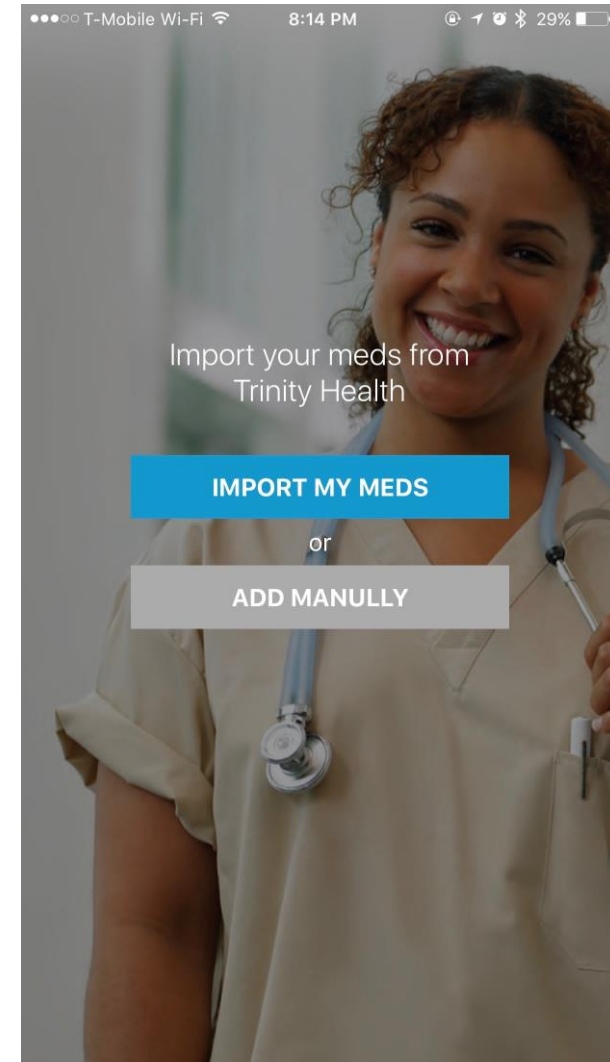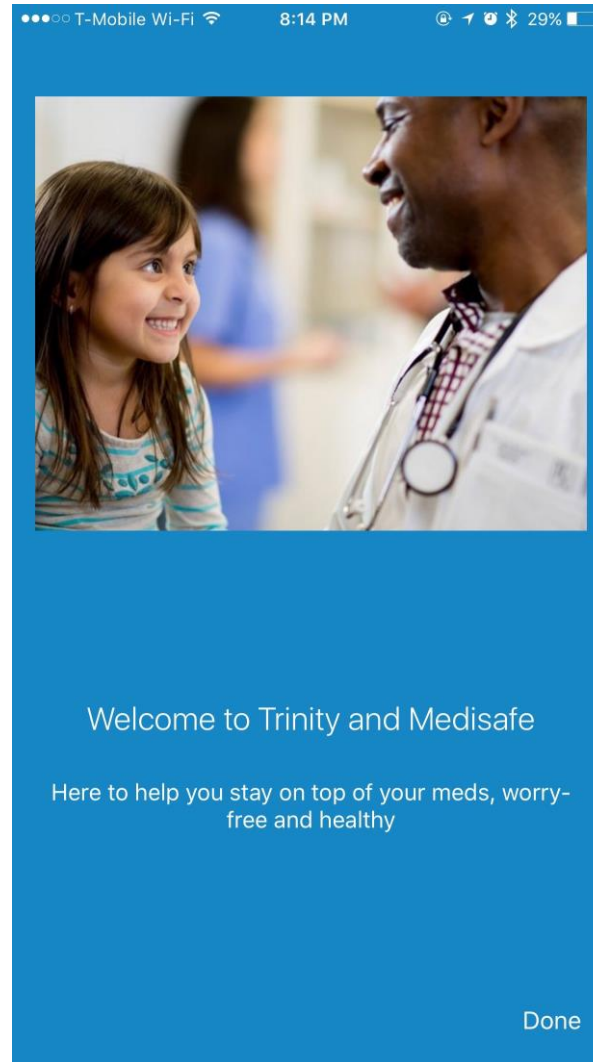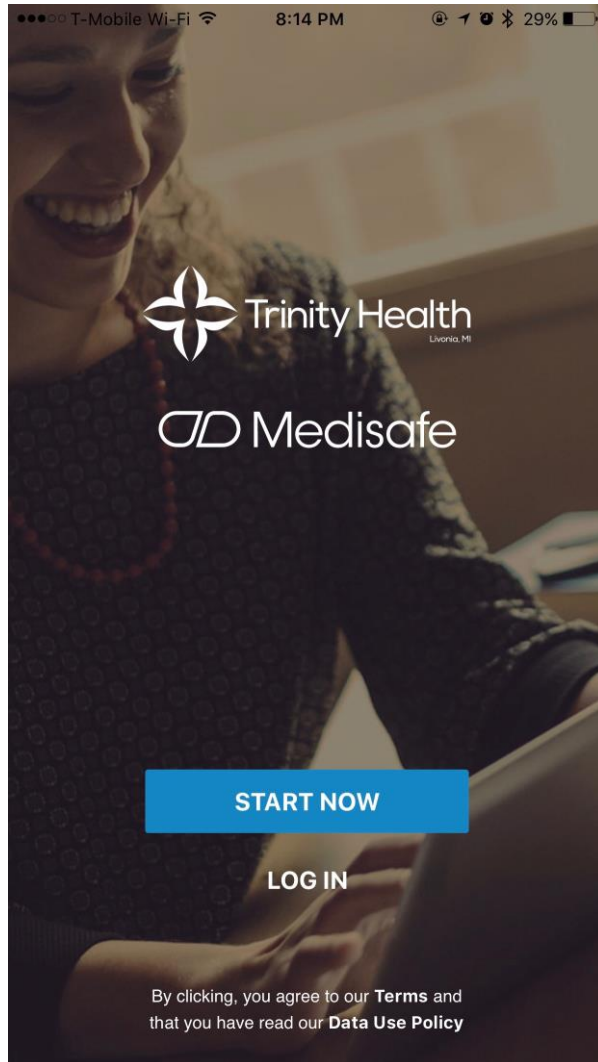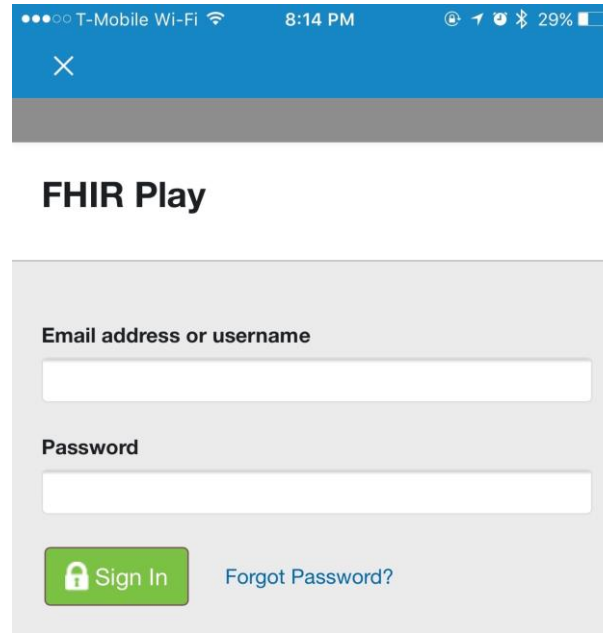
WHY NOW?
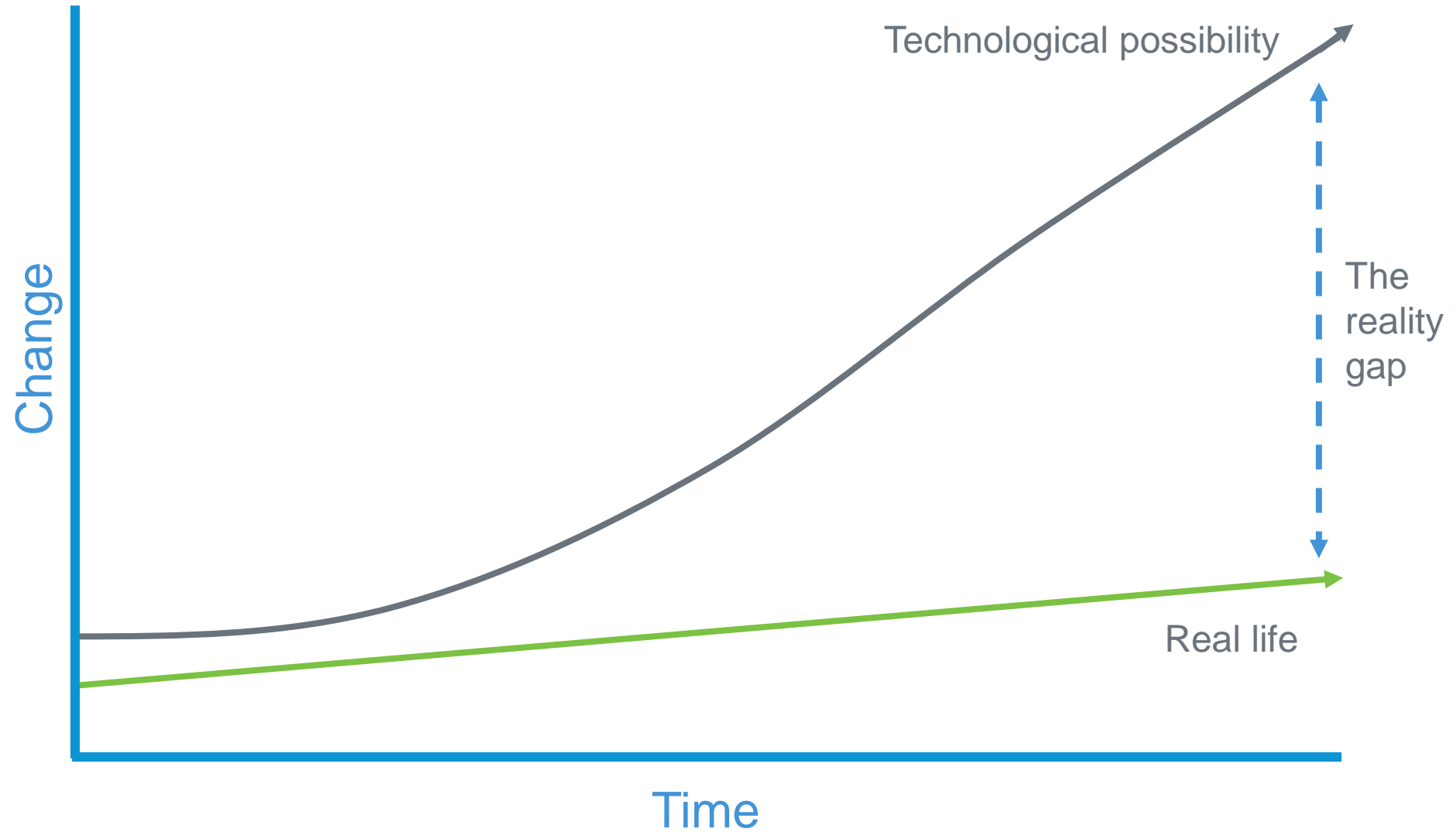
WHY NOW?

Example App – Consumer Engagement
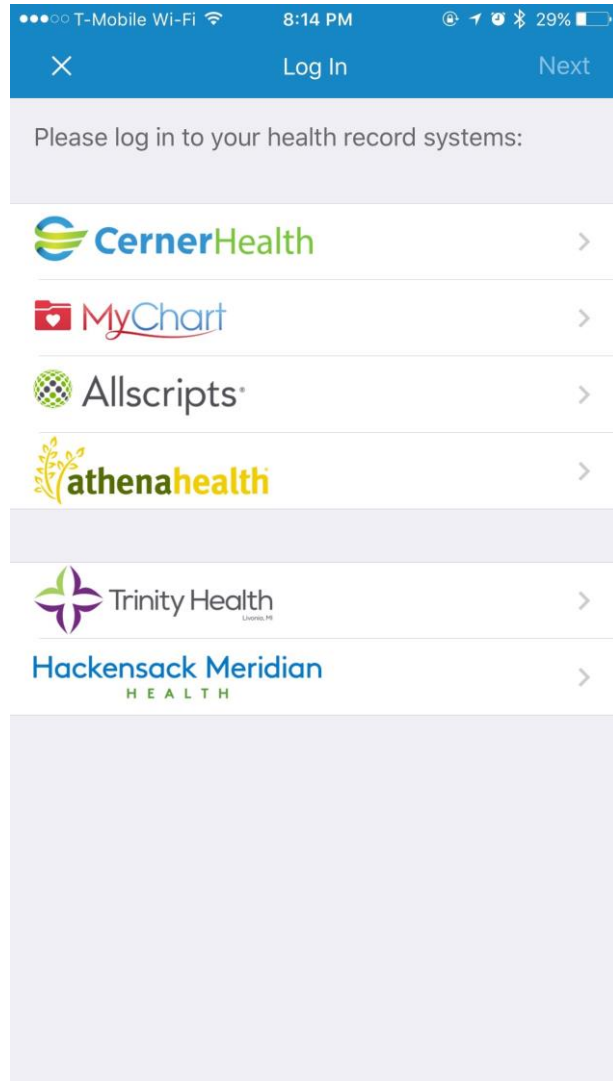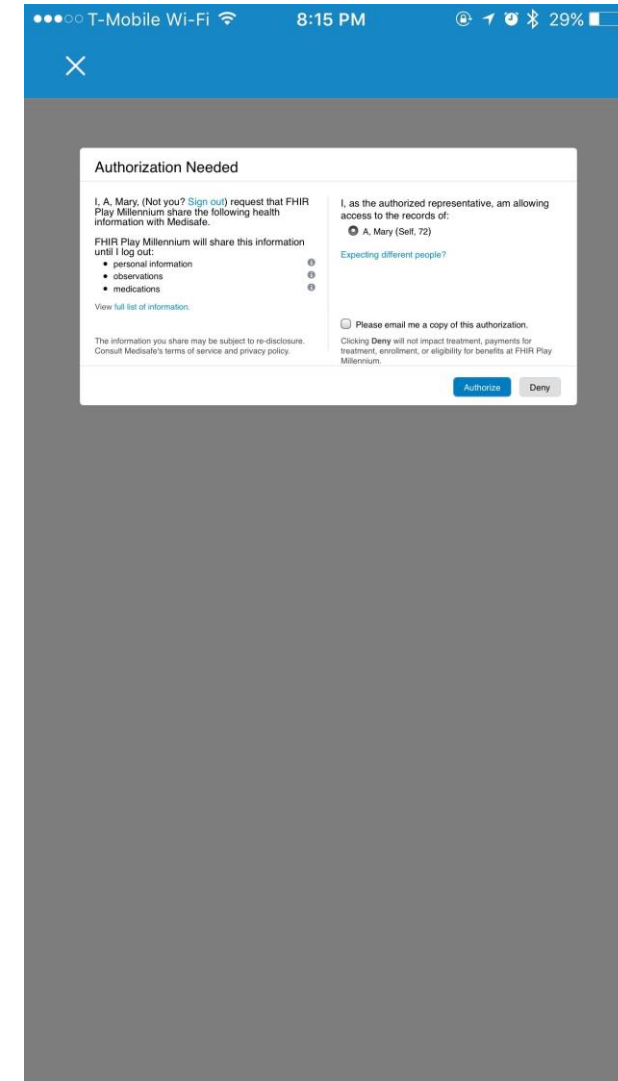
Example App – Consumer Engagement

Example App – Consumer Engagement

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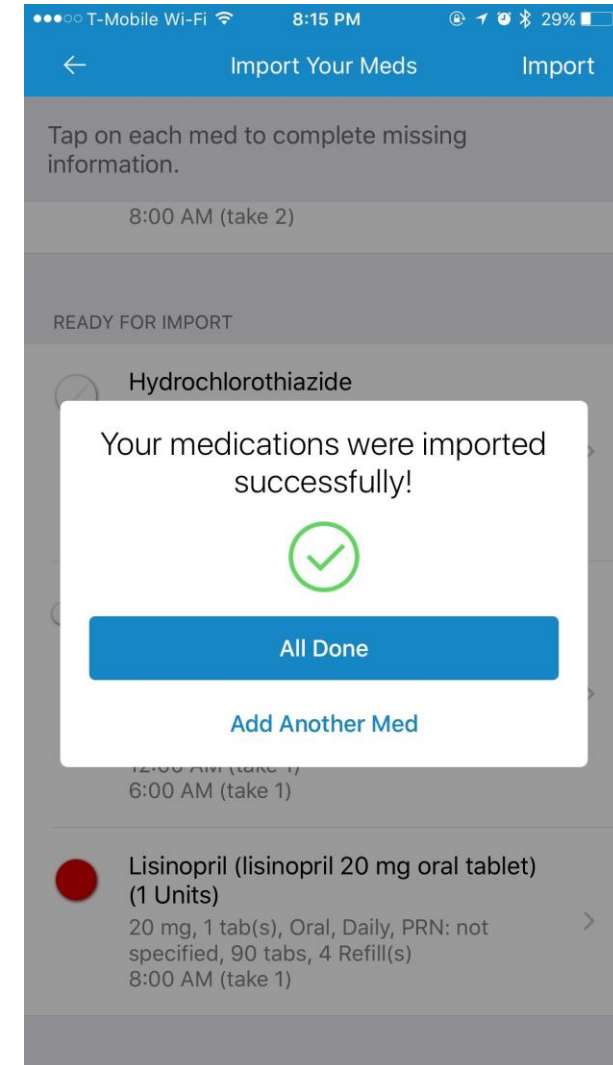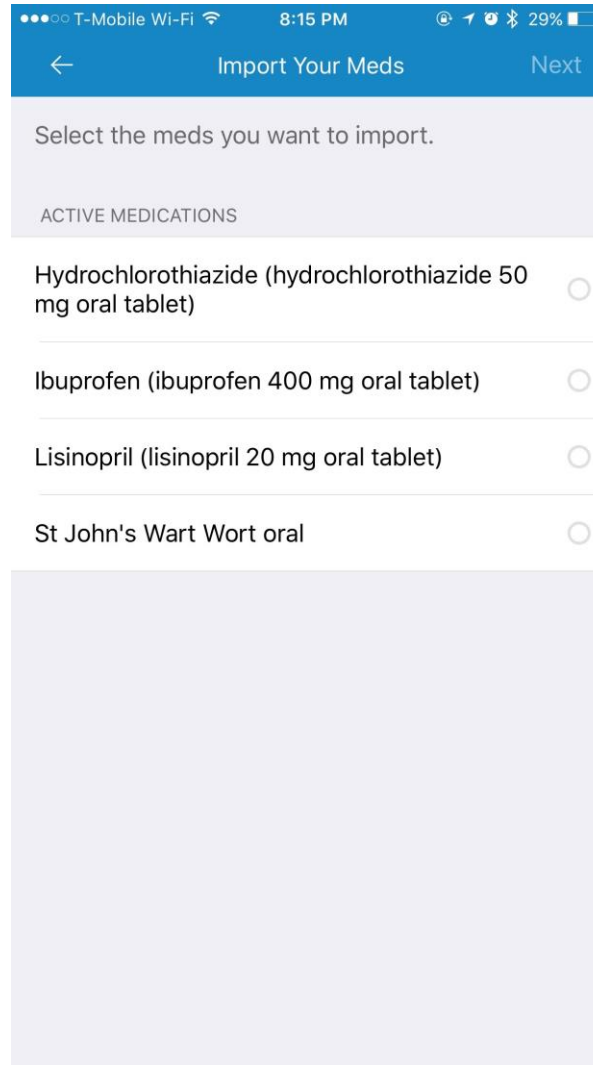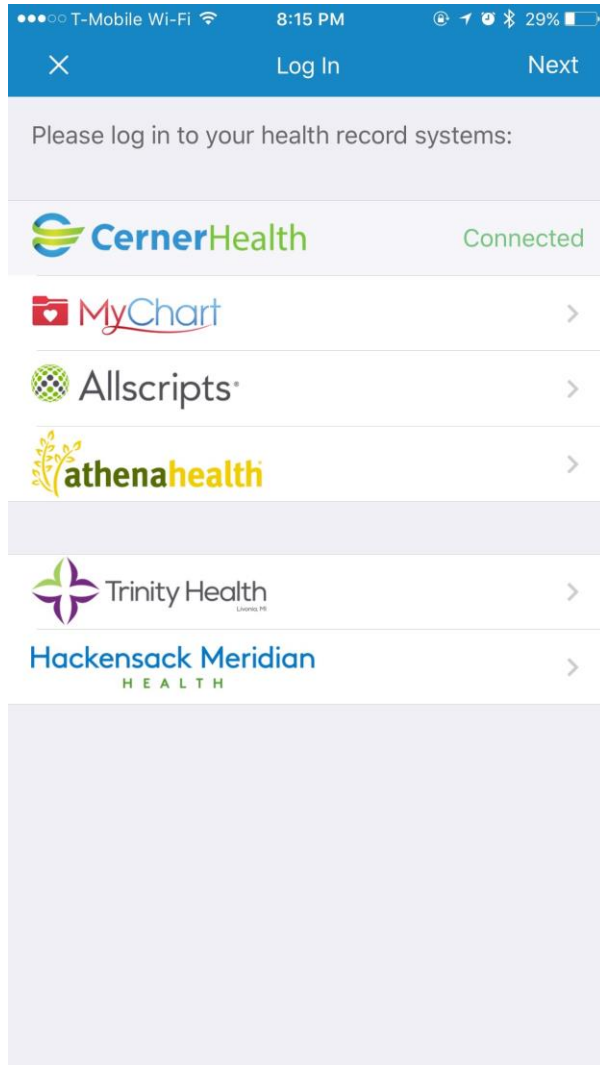
Key Considerations for MU3 Patient Access

Cerner will not require validation for Direct to Consumer (Patient Access Applications)

Client should maintain list of connected Applications

Client will need to provide education to patients regarding access to their health data via the use of an App

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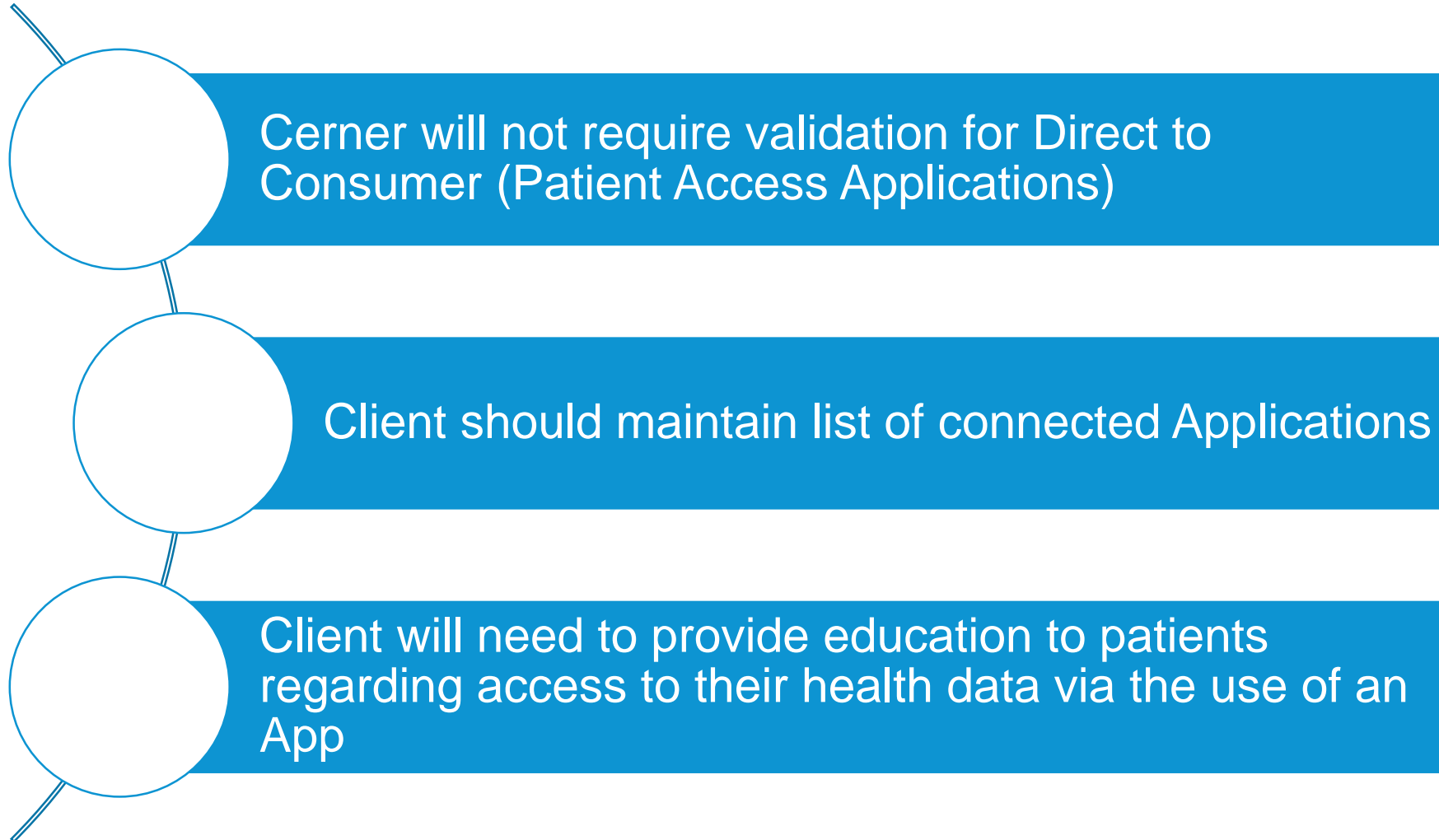
Summary of Call to Action

- Continue to move forward with Ignite contracts and implementations (including prerequisite 2015.19 upgrades)

- Engage and collaborate: implement, buy, build, and promote

- Take the gift of time and use it wisely:
  - Develop SMART on FHIR development experience while the technology is still relatively young and manageable (plant a tree!)
  - Establish a consumer engagement strategy
  - Establish an Application Governance Structure to define people, process, technology approaches to application build, selection, and management
  - Regulatory guidance provides some flexibility, but the fact remains, that work still needs to be done

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FHIR Governance Considerations
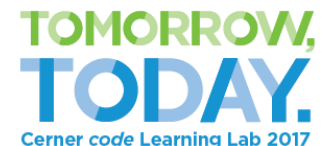
MU3 – Patient Access

- Process for accommodating patient requests
- Process for interfacing with Cerner
- Security monitoring and performance

Enterprise App Build

- Process for evaluation/escalation of ideas
- Workflow assessments
- Build team engagement
- Commercial scaling?

Commercial App Procurement

- Evaluation of available apps
- Non-FHIR app migration to FHIR
- Developer engagement with client

FHIR ®©

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Client Governance - Open Application Ecosystem

Innovate

Collaborate

Execute

Evaluate

Executive Sponsor

Program Coordinator

Clinical Informatics

Value Specialist

Consumer Engagement

Engineering Lead

Physician Sponsor

IT/Security Lead

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