Important reminders

Plan your tomorrow in the app by 11 a.m.

- Only add sessions if you plan to attend
- Rooms will be assigned the evening prior
- Win cool prizes!

Make room

- Avoid leaving empty seats
- Please move to the middle

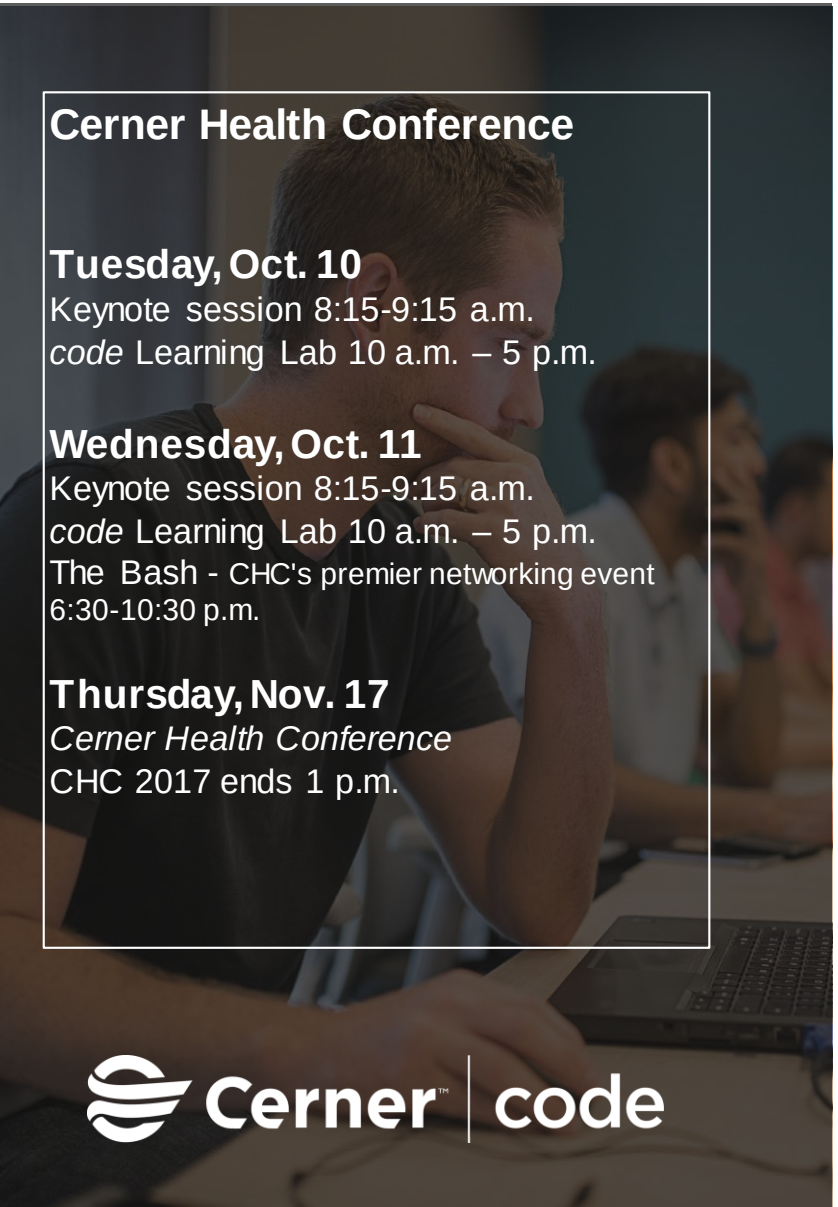
Share your feedback

- Complete each session’s in-app survey

CHC18
SMARTER CARE

CERNER HEALTH CONFERENCE 2018
SMARTER CARE
Cerner

TOMORROW TODAY



WELCOME to *code* Learning Lab 2018!

Oct 9-10 | Kansas City, Missouri
Cerner Health Conference

What's new this year?

- ☑ **Learn from industry experts**
- ☑ **More flexibility with your schedule** from an expanded format featuring 16 education sessions or open labs

  14 session - lectures and labs

  Breadth of topics

  - Basic and advanced
  - SMART on FHIR, HealtheIntent APIs, HealtheLife and code

  Open Labs with hands-on exercises for new skills or bring your own project
- ☑ **Get the full CHC experience!** Your package includes access to all the activities at CHC in addition to valuable education and training at *code* Learning Lab

Cerner Health Conference 2018
code Learning Lab agenda

Tuesday, Oct. 9		
10 a.m.	*code* Learning Lab kick-off	Max Reinig
10:30-11:30 a.m.	code Learning Lab Keynote: Interoperability, Apps and Beyond	Micky Tripathi
11:30 a.m.-1 p.m.	Break	
1-2:50 p.m.	Core concepts and best practices to make effective use of FHIR	Max Philips
	Trouble shooting with Cerner Ignite APIs for Millennium	Jennifer Hong
	Introduction to HealtheIntent APIs	Bonnie Bates and Patrick Elam
2:50-3:10 p.m.	Break	
3:10-5 p.m.	Building and integrating SMART on FHIR Applications	Kol Kheang
	Writing data with FHIR	Bradley Strecker
	Configuring the consumer portal	Mike Hemesath and Nick Smith
	Building personnel and organizations	Jessi Sullivan and Justin Knysz
	Open Lab	Cerner engineers and architects

© Cerner Corporation. All rights reserved.

Cerner Health Conference 2018
code Learning Lab agenda

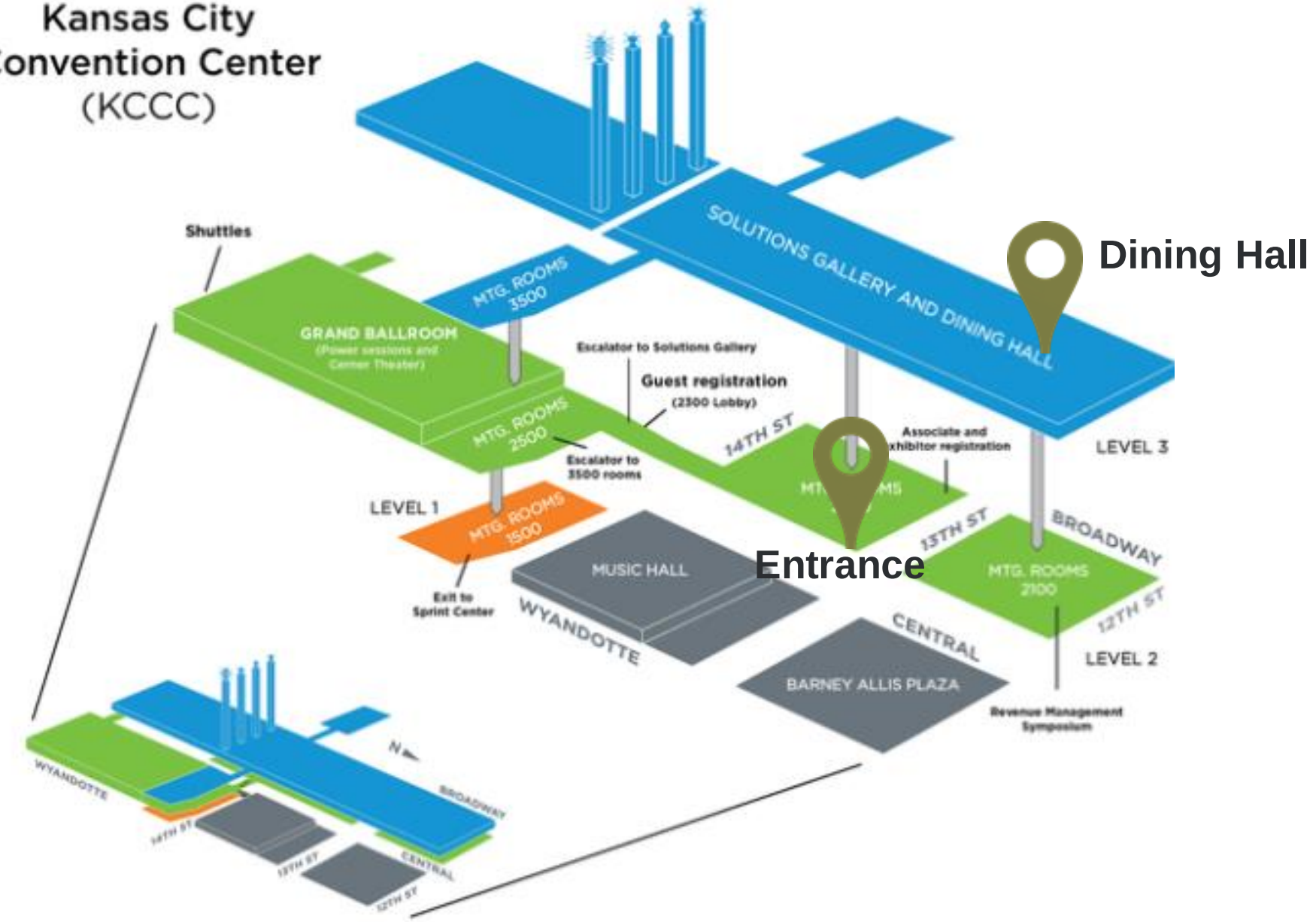
Wednesday, Oct. 10		
10 a.m.	code App Challenge Winner and Q&A	Yegor Hanov
10:30-11:30 p.m.	code Learning Lab Keynote: Open APIs and a platform approach at Oxford: Supporting developer innovation at a global scale	Nick de Pennington, MD, FRCS, and Glenn Wells PhD
11:30 a.m.-1 p.m.	Break	
1-2:50 p.m.	Calling secured FHIR services using SMART	Matt Randall
	Remote Decision Support with CDS Hooks	Drew Torres
	Collaboration through Cerner Open Developer Experience	Matt Obenhaus and Adam White
	Building a pagelet for the consumer portal	Mike Hemesath and Nick Smith
	Open Lab	Cerner engineers and architects
2:50-3:10 p.m.	Break	
3:40-5:30 p.m.	Patient-oriented APIs and using HealtheIntent data syndication for bulk extraction and delivery	Michelle Miller, Daniel Holder, Matt McKenna, and Jacob Williams
	Putting it all together	Yegor Hanov
	Open Lab	Cerner engineers and architects

© Cerner Corporation. All rights reserved.

Muehlbach Tower – Main Level

© Cerner Corporation. All rights reserved.

Kansas City Convention Center (KCCC)



Dining Hall

Entrance

© Cerner Corporation. All rights reserved.

Max Reinig
Senior Vice President, IP Development
Cerner

© Cerner Corporation. All rights reserved.

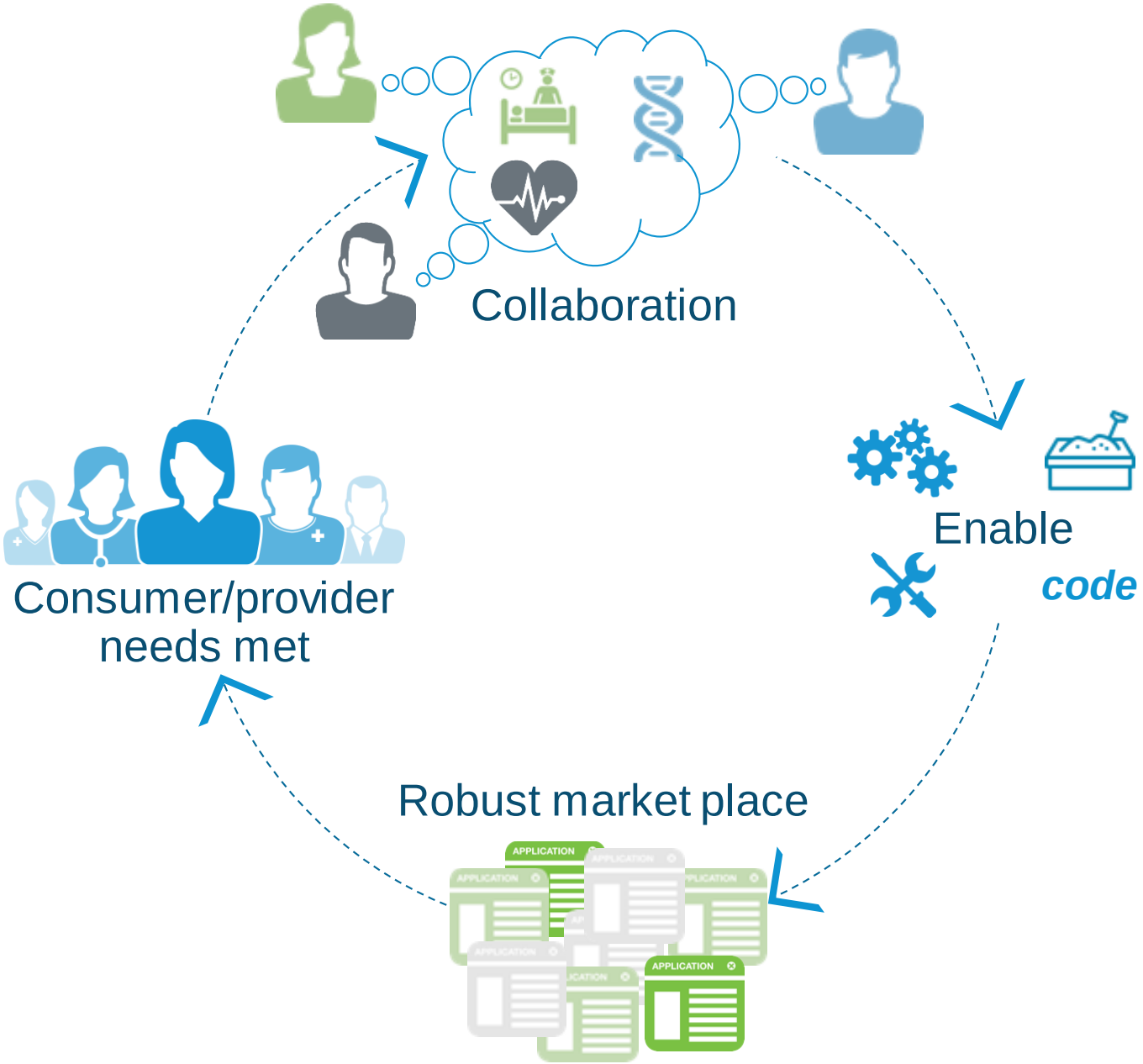
Welcome to *code* Learning Lab
CHC 2018

Oct. 9, 2018

Max Reinig, Senior VP of IP Development, Cerner

CHC18
SMARTER CARE

Enabling innovation – wherever it comes from



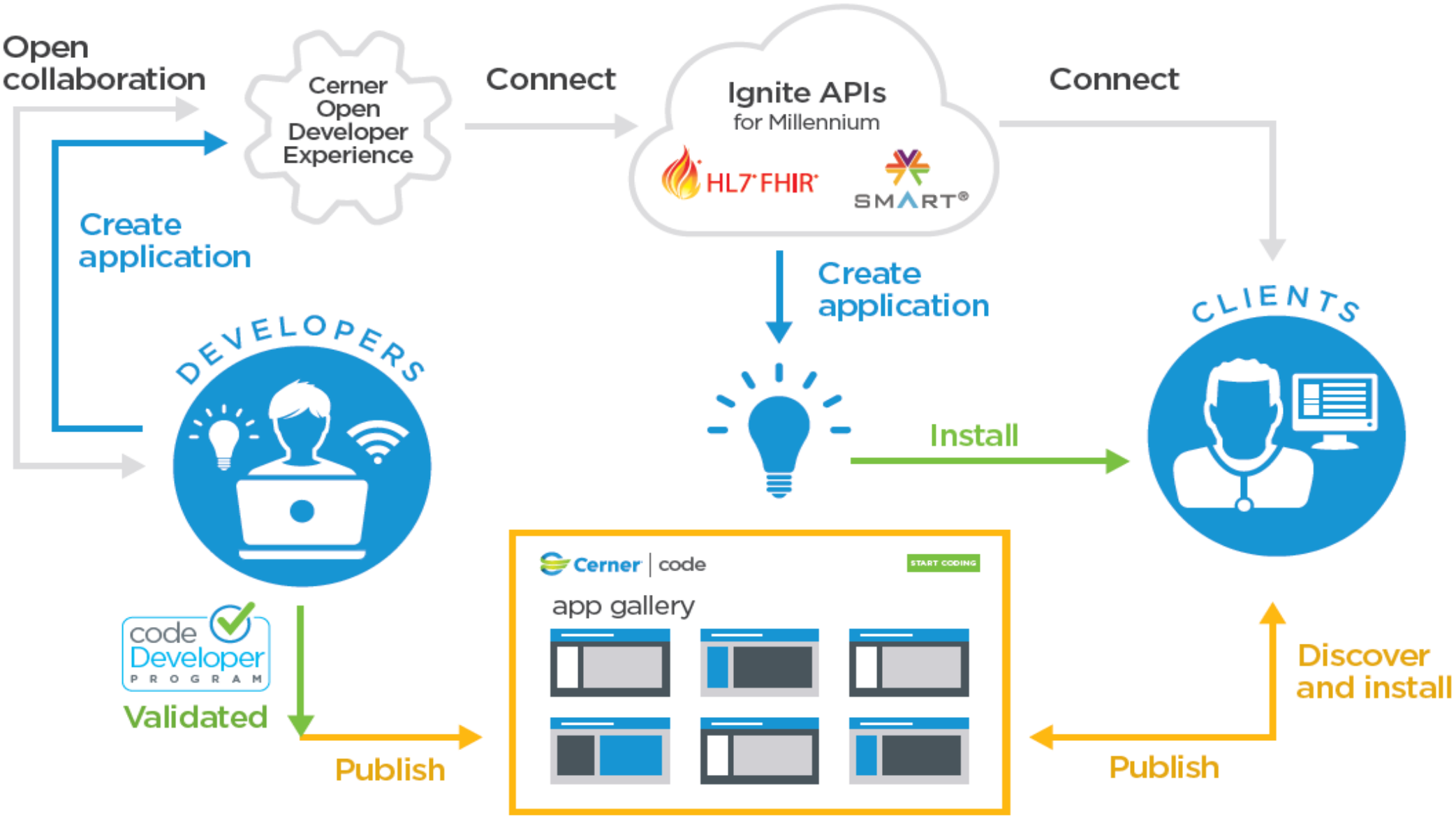
Ignite change.

Cerner code

© Cerner Corporation. All rights reserved.

Developer ecosystem

Cerner | code



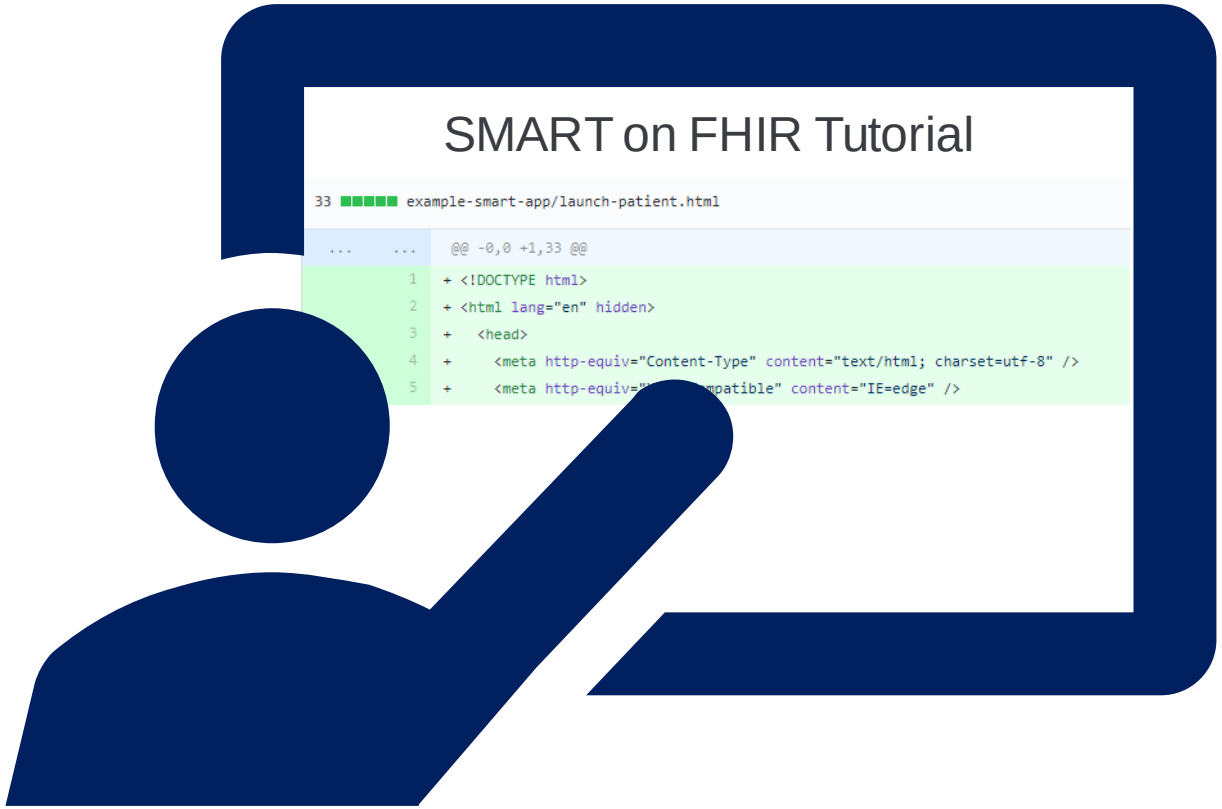
Argonauts

- Deliverables
  - Standard set of “core” FHIR resources and profiles
  - Ensure broad industry support (vendors, providers, and innovators)
- Argonaut App use-cases
  - **Provider apps – EHR workflow**
  - **Patient apps – portal + phones**
- Authentication and Authorization
  - OAuth2 profile for healthcare

© Cerner Corporation. All rights reserved.

Driving adoption of standards

- Hands-on tutorial
- Developers learn to create a SMART on FHIR App
- Runs against code console and FHIR Standbox
- 700+ developers have completed



© Cerner Corporation. All rights reserved.

Contributions to open source JavaScript library

Update FHIR.js

Browse files

master v0.1.12 ... v0.1.10

nschwertner committed on May 6, 2016 — 1 parent 08ac36b — commit 525fe9fae4a63dc57f86696e288f4316ef6a3109

Showing 4 changed files with 59 additions and 21 deletions.

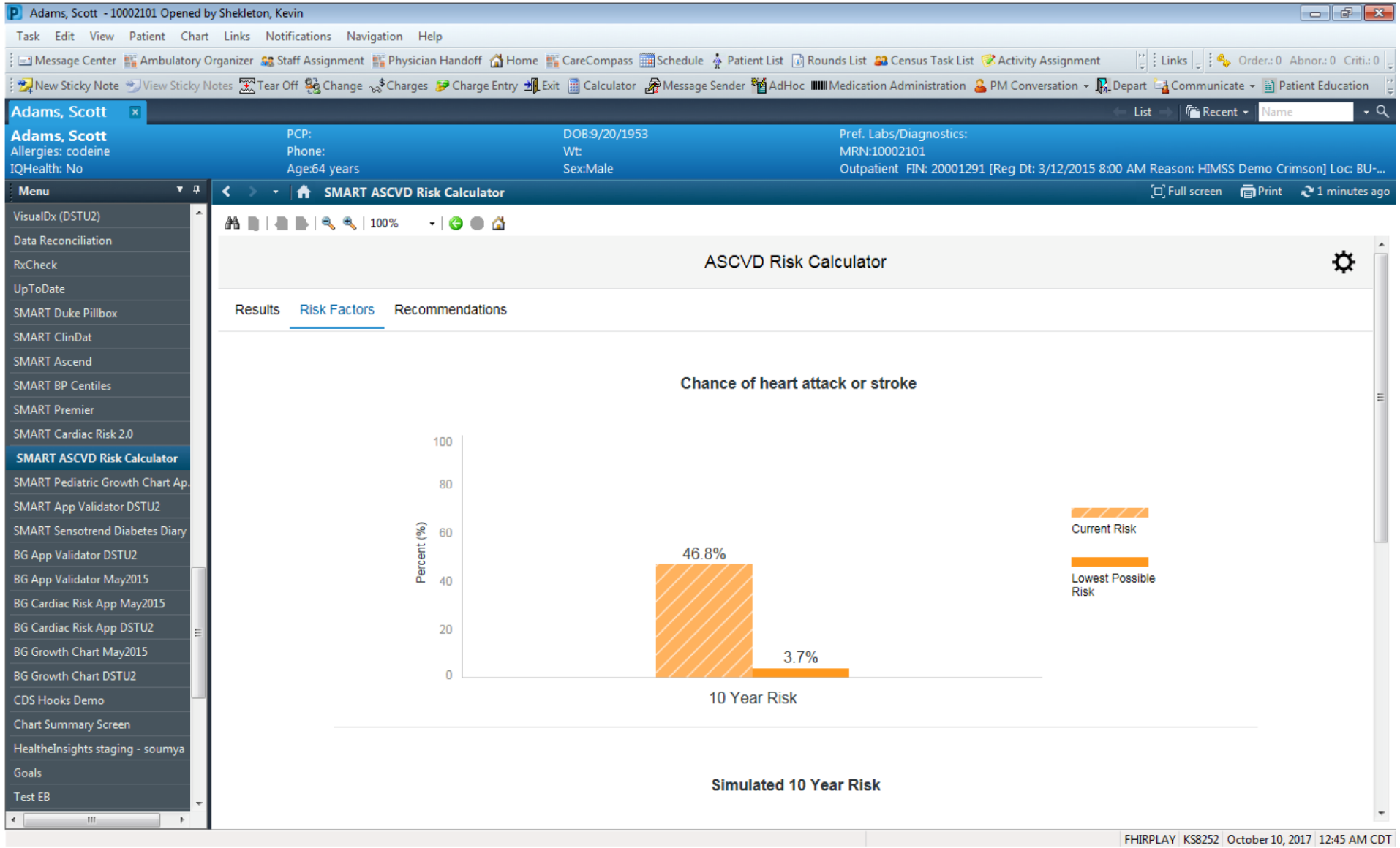
Unified | Split

33 dist/fhir-client.js — View

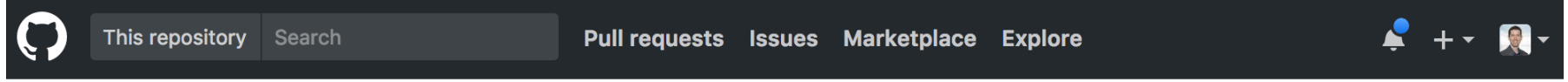
```
@@ -57,7 +57,7 @@ return /******/ (function(modules) { // webpackBootstrap
57 57
58 58          (function() {
59 59              var mkFhir = __webpack_require__(1);
60    -             var jquery = _jQuery || jQuery;
   60 +             var jquery = window['_jQuery'] || window['jQuery'];
61 61
62 62              var defer = function(){
63 63                  pr = jquery.Deferred();
@@ -74,7 +74,8 @@ return /******/ (function(modules) { // webpackBootstrap
74 74                          headers: args.headers,
75 75                          dataType: "json",
76 76                          contentType: "application/json",
77    -                         data: args.data || args.params
```


© Cerner Corporation. All rights reserved.

SMART ASCVD Risk Calculator in PowerChart



© Cerner Corporation. All rights reserved.



cerner / ascvd-risk-calculator

Unwatch 15 | Star 5 | Fork 1

Code | Issues 1 | Pull requests 0 | Projects 0 | Wiki | Insights | Settings

SMART ASCVD Risk Calculator

Edit

ascvd smart fhir cardiac-risk healthcare-application Manage topics

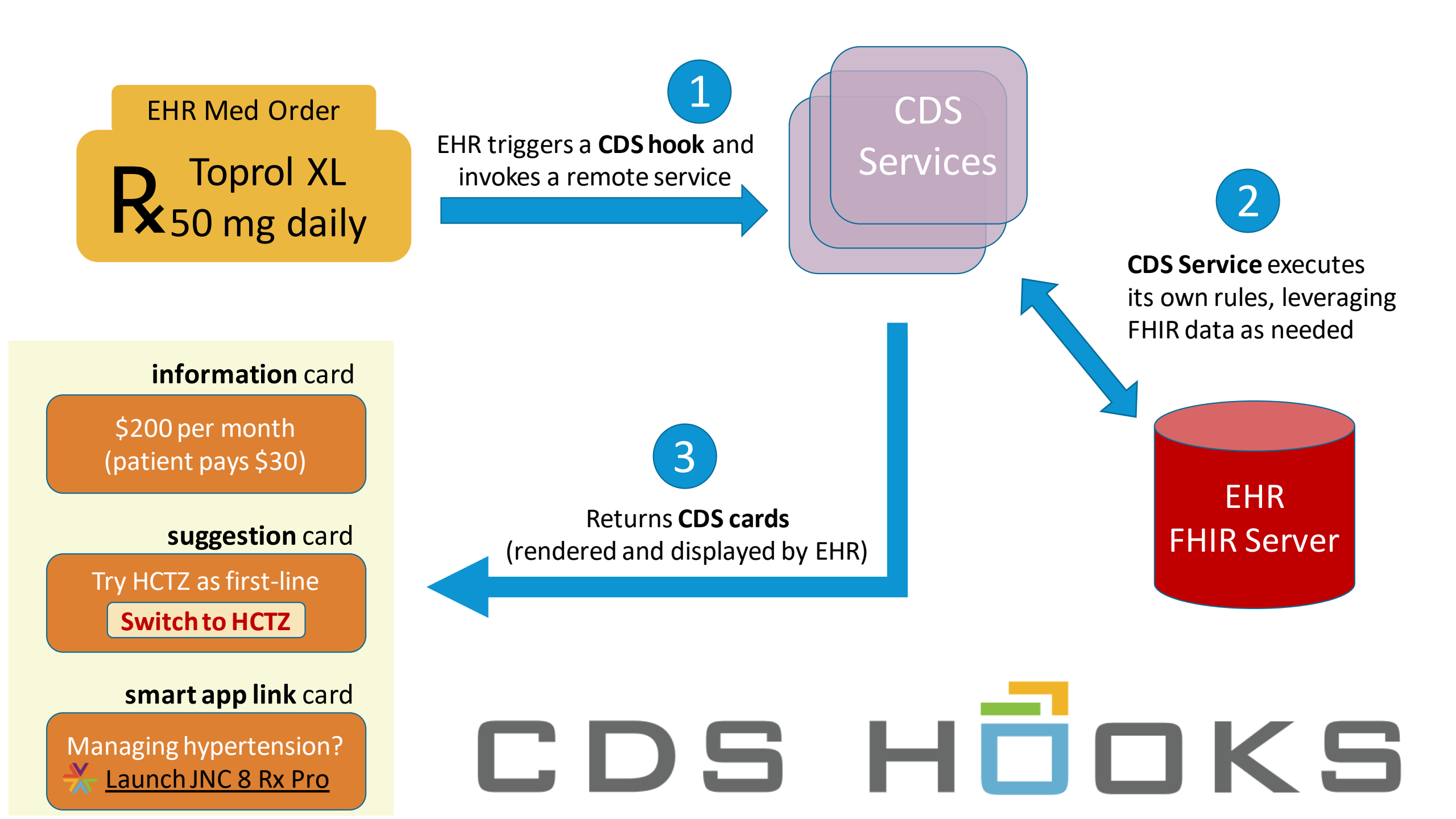
8 commits | 7 branches | 4 releases | 2 contributors | Apache-2.0

Branch: master | New pull request | Create new file | Upload files | Find file | Clone or download

zplata Update the CHANGELOG.md file to reflect 1.3.0 changes (#6) — Latest commit 58146e0 on Jul 27

app	Add a loading indicator to the application to show application activi...	4 months ago
build	Enhance UI for risk factors view for print layout (#5)	2 months ago
components	Enhance UI for risk factors view for print layout (#5)	2 months ago
lib	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago
screenshots	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago
tests	Enhance UI for risk factors view for print layout (#5)	2 months ago
views	Enhance UI for risk factors view for print layout (#5)	2 months ago
.babelrc	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago
.eslintrc	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago
.gitignore	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago
.nvmrc	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago
.travis.yml	Initialize project for first release of SMART ASCVD Risk Calculator	7 months ago

© Cerner Corporation. All rights reserve


EHR Med Order
Rx Toprol XL
50 mg daily
1
EHR triggers a **CDS hook** and invokes a remote service
CDS Services
2
CDS Service executes its own rules, leveraging FHIR data as needed
EHR FHIR Server
3
Returns **CDS cards** (rendered and displayed by EHR)
information card
$200 per month (patient pays $30)
suggestion card
Try HCTZ as first-line
Switch to HCTZ
smart app link card
Managing hypertension?
Launch JNC 8 Rx Pro
CDS HOOKS

Examples of current “hooks” (invoked by the EHR)

`patient-view`

Triggered when a patient’s chart is opened

`medication-prescribe`

Triggered when a medication is selected for prescription

`order-review`

Triggered when viewing pending orders for signing

© Cerner Corporation. All rights reserved.

Examples of Cards (returned from CDS Service to EHR)

Information Card

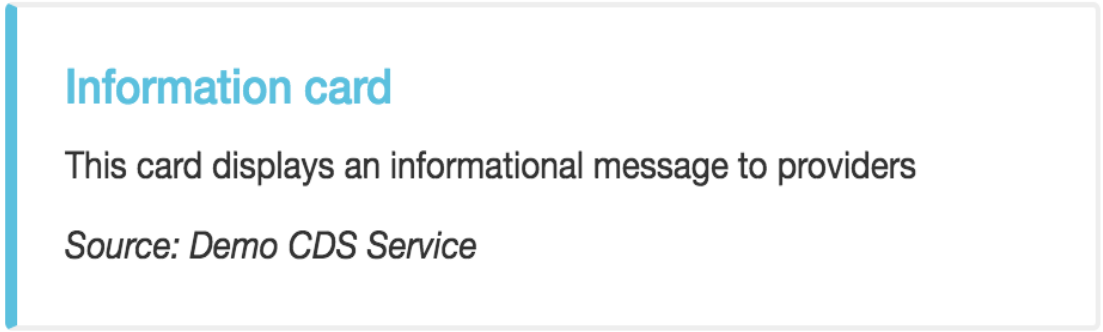
Textual information for the provider

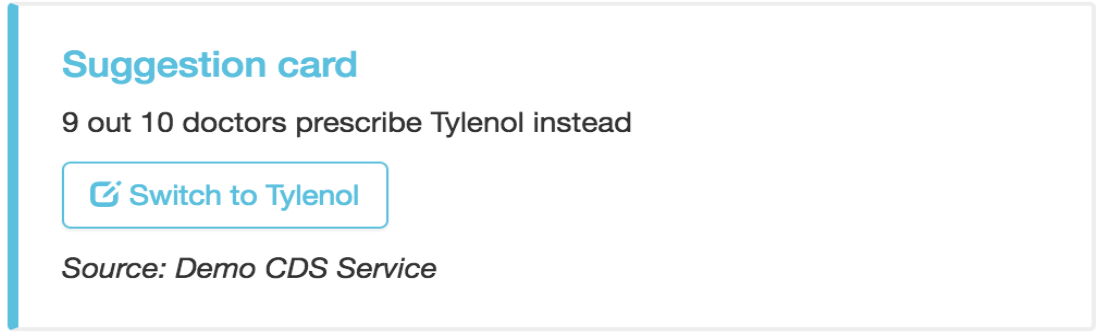
Suggestion Card

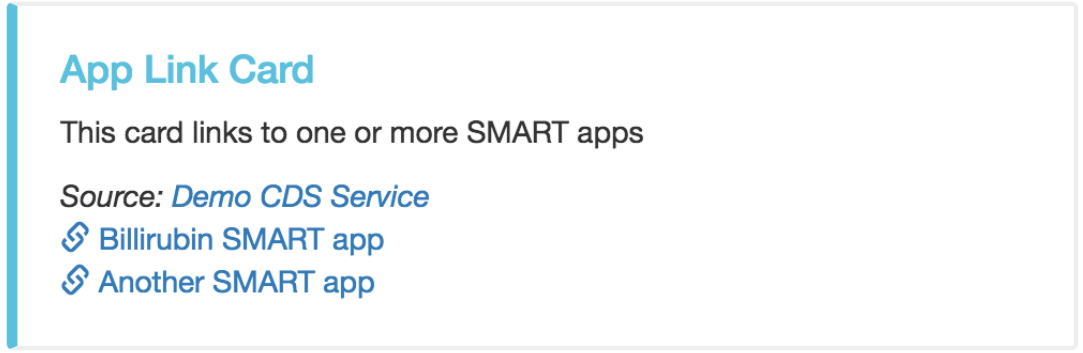
Proposed actions encoded as FHIR resources

App Link Card

Proposed SMART app that should be used







© Cerner Corporation. All rights reserved.

Bunsen: FHIR and Big Data

- Open-sourced our Bunsen library
- Simplifies analyzing FHIR data with Apache Spark
- Encodes FHIR resources directly into Apache Spark's native data structures
- Leverage well-defined FHIR data models directly with Spark SQL

```
1  spark.sql("""
2  select subject.reference person_id,
3         effectiveDateTime date_time,
4         valueQuantity.value value
5  from observations
6  where in_valueset(code, 'heart_rate')
7   """).show()
```

Simple query against a table of FHIR observation that produces a table of heart rate values.

person_id	date_time	value
Patient/123	2016-12-27	54.0000
Patient/123	2017-04-18	60.0000

Prints a table like this.

© Cerner Corporation. All rights reserved.

Millennium APIs – Current

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

BRNDEXT-3.0 © Cerner Corporation. All rights reserved.
This document contains Cerner confidential and/or proprietary information belonging to Cerner Corporation and/or its related affiliates which may not be reproduced or transmitted in any form or by any means without the express written consent of Cerner.

HealtheIntent APIs – Current

- Allergy
- Condition
- Consumer
- Consumer Notifications
- Data Syndication
- Data Source
- Health Concern
- Healthcare Service
- Immunization
- Longitudinal Plan
- Medication
- Network
- Observation
- Ontology
- Organization
- Patient
- Personnel
- Procedure
- Referral Request
- Risk Assessment
- Specialty
- Tenant
- Universal Data Ingestion

BRNDEXP 3.0 © Cerner Corporation. All rights reserved.
This document contains Cerner confidential and/or proprietary information belonging to Cerner Corporation and/or its related affiliates which may not be reproduced or transmitted in any form or by any means without the express written consent of Cerner.

code - 30,000 foot view

New API Updates

- Scheduling APIs: New patient self schedule
- Document Read: DocumentReference
- HealtheIntent APIs
  - Personnel (read/write)
  - Personnel Groups (read/write)
  - Organizations (read/write)
  - Consumers (read/write)
  - Longitudinal Record APIs (read)
  - Provider, Specialty, Healthcare Service, and other Network-related APIs (read/write)
  - New Data Syndication API for bulk acquisition of HealtheIntent data sets (read)

What are we working on?

- Additional API plan – 2019 (subject to change based upon regulatory and client requirements):
  - Non-Med Order reads
  - Encounter Writes
  - Image writes
  - Organization Reads/Writes
  - PDF Writes
  - Practitioner Writes
  - Procedure Writes
  - Diagnostic Reports (PDF) Writes - (i.e. Cardiology, Microbiology, Pathology, Radiology)
  - Discrete labs and vitals writes
  - Assessment Reads/Writes
  - CDSHooks
  - Bill Pay APIs
  - HealtheIntent - Longitudinal Plan (read/write)
  - HealtheIntent - Master Person Management (read/write)
  - HealtheIntent - New version of HCC API

BRNDEXP 3.0 © Cerner Corporation. All rights reserved.
This document contains Cerner confidential and/or proprietary information belonging to Cerner Corporation and/or its related affiliates which may not be reproduced or transmitted in any form or by any means without the express written consent of Cerner.

Micky Tripathi
President and CEO
Massachusetts eHealth Collaborative

© Cerner Corporation. All rights reserved.