



Cerner
**code Learning
Lab** 2019

Building Consumer Access Apps

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Consumer Apps?

- Accessed by patients or their authorized representatives
 - Not clinicians
- Off hospital network

Authorization

Authorization

- Workflow from an *app* perspective is the same
 - The FHIR server root URL is different
 - <https://fhir.cerner.com/millennium/dstu2/#service-root-url>

Open Sandbox

The open sandbox instance allows developers to experiment with the service without requiring authentication. We recommend using this endpoint for initial proof of concepts and integration. The service root URL for this instance is:

```
https://fhir-open.sandboxcerner.com/dstu2/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/:resource[?:parameters]
```

Note: The open endpoint exposes read-only resources. No writes are available in sandbox without using authentication.

Secure Sandbox

The secure sandbox instance can be used for testing an application with [authorization](#). The service root URL for this instance is different if the patient or a patient's proxy is logging in.

Non-Patient:

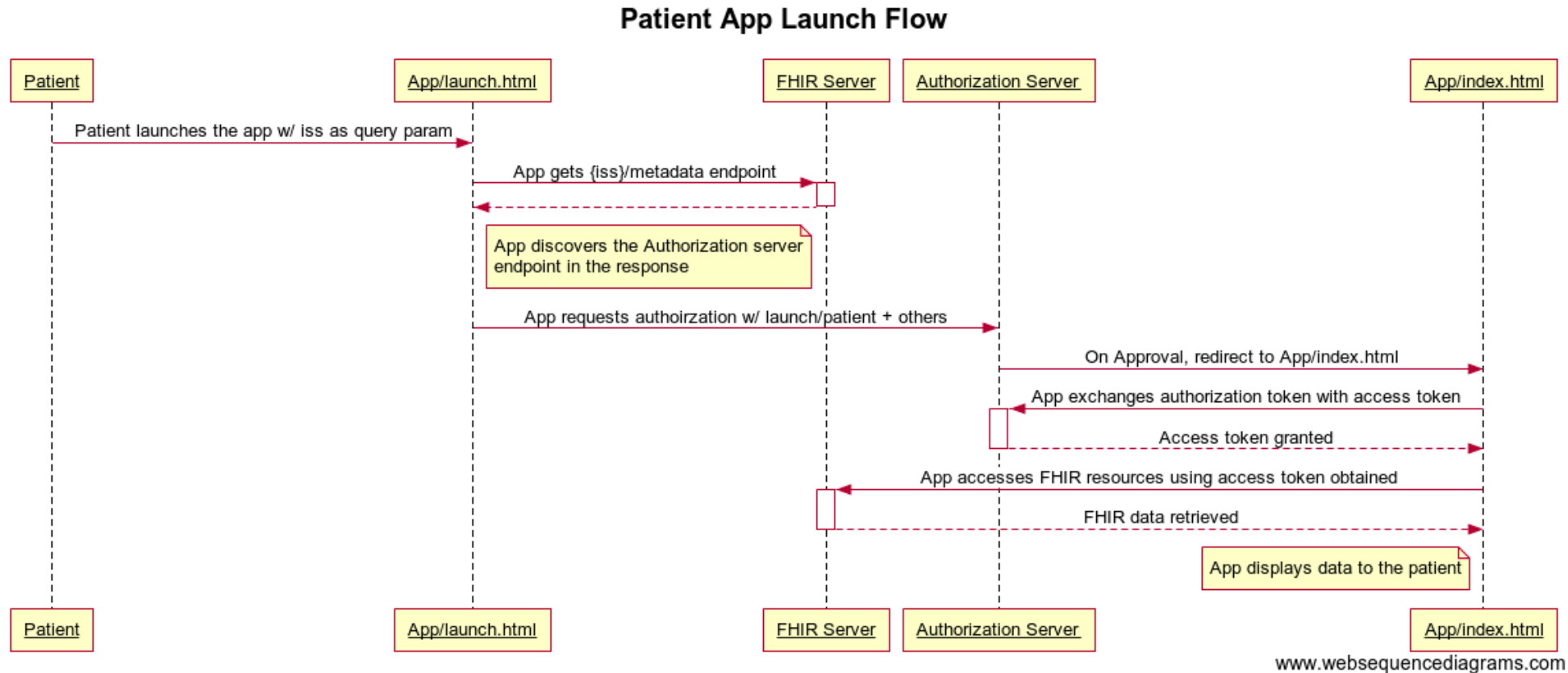
```
https://fhir-ehr.sandboxcerner.com/dstu2/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/:resource[?:parameters]
```

Patient Access:

```
https://fhir-myrecord.sandboxcerner.com/dstu2/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/:resource[?:parameters]
```

Authorization Workflow

- “Introduction to SMART on FHIR” Thursday at 9:00
- [Launch Demo](#)



Authorization

- SMART scopes:
 - launch (launch from Portal)
 - launch/patient (not supported currently for practitioners)
 - User will get prompted to choose a patient
 - MUST for standalone apps that use the SMART “patient” scopes
 - EG: patient/AllergyIntolerance.read
 - online_access
 - offline_access (not supported currently for practitioners)
 - Requires confidential client

Authorization: Who?

- Patient/self
- Patient authorized representative
 - Spouse
 - Parent
 - Caretakers
 - Etc...
- Same authentication credentials as the Portal login

Offline access: special considerations

- Offline access is long term
 - App accesses while patient is no longer signed in
 - EG: step trackers
- There is a management URL in the authorization section of the Conformance/CapabilityStatement resource (/metadata)
 - This URL should be accessible from within your application

Manage URL

- <https://fhir.cerner.com/authorization/#user-experience>

Provide a Link to “Manage Authorized Applications”

If you
link
are
For
auth

```
"extension": [  
  {  
    "url": "token",  
    "valueUri": "https://authorization.sandboxcerner.com/tenants/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/protocols/oauth2/profiles/smart-v1/token"  
  },  
  {  
    "url": "authorize",  
    "valueUri": "https://authorization.sandboxcerner.com/tenants/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/protocols/oauth2/profiles/smart-v1/personas/patient/authorize"  
  },  
  {  
    "url": "manage",  
    "valueUri": "https://authorization.sandboxcerner.com/tenants/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/personas/patient/my-authorizations"  
  }  
]
```

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Data Access

Data Access

- Patient data access concerns
 - Similar to practitioners, there are privacy and security concerns
 - IE: Not all users have access to all data
 - This may vary user to user/site to site
 - This is enforced by the API
 - The app (and user) will not know when there may be data available that cannot be seen
- Laws
 - Adolescent proxy: both age range and what may be restricted to a parent may vary by site/state.

Delayed Release

- Some sites may require apps to delay release of data
 - Depends on site
 - Depends on app use case
 - EG: Some apps do not show data directly to patients (typically offline access) and use it for research or other purposes
- Work with the client

Masked Fields

- Some fields may be masked
- This can be true for all consumer users
 - EG: Comments that are often administrative
- This can be true for only some consumer users
 - EG: the Adolescent proxy use case
- This can be true for certain statuses

```

"meta": {
  "versionId": "7307747",
  "lastUpdated": "2019-02-04T13:54:50.000Z"
},
"text": {
  "status": "generated",
  "div": "<div><p><b>Allergy Intolerance</b></p><p><b>Patient</b>: I
    -diphenhydrAMINE topical</p><p><b>Status</b>: Active</p><p><b>
    Feb 4, 2019</p><p><b>Note</b>: Aug 3, 2018 4:19 P.M. UTC -
    Janet&#10;Feb 28, 2017 9:03 A.M. UTC - Note 1</p></div>"
},
"onset": "2019-02-04",
"recordedDate": "2019-02-03T18:00:00.000-06:00",
"recorder": {
  "reference": "Practitioner/4464007",
  "display": "Portal, Portal"
},
"patient": {
  "reference": "Patient/1316024",
  "display": "PETERS, TIMOTHY"
},
"substance": {
  "text": "calamine-diphenhydrAMINE topical"
},
"status": "active",
"type": "intolerance",
"category": "medication",
"note": {
  "text": "Aug 3, 2018 4:19 P.M. UTC - Philips, Max - FHIR Smoke
    UTC - Note 1"
}

```

```

"meta": {
  "versionId": "7307747",
  "lastUpdated": "2019-02-04T13:54:50.000Z"
},
"text": {
  "status": "generated",
  "div": "<div><p><b>Allergy Intolerance</b></p><p><b>Patient
    -diphenhydrAMINE topical</p><p><b>Status</b>: Active</p>
    4, 2019</p></div>"
},
"onset": "2019-02-04",
"recordedDate": "2019-02-03T18:00:00.000-06:00",
"recorder": {
  "reference": "Practitioner/4464007",
  "display": "Portal, Portal"
},
"patient": {
  "reference": "Patient/1316024",
  "display": "PETERS, TIMOTHY"
},
"substance": {
  "text": "calamine-diphenhydrAMINE topical"
},
"status": "active",
"type": "intolerance",
"category": "medication"
}

```

```

{
  "fullUrl": "https://fhir-myrecord.sandboxcerner.com/dstu2/0b8a0111-e8e6-4c26-a91c-5069cbc6b1ca/AllergyIntolerance/1190470",
  "resource": {
    "resourceType": "AllergyIntolerance",
    "id": "1190470",
    "text": {
      "status": "generated",
      "div": "<div><p><b>Allergy Intolerance</b></p><p><b>Allergy</b>: Entered In Error</p><p><b>Status</b>: Entered In Error</p></div>"
    },
    "patient": {
      "reference": "Patient/1316024"
    },
    "substance": {
      "text": "Entered In Error"
    },
    "status": "entered-in-error"
  }
},

```

Masked Resources

- Some content may have been deemed not available to consumers by site policy or state law
- May not be available to any consumer (self or proxy)
 - EG: Administrative tasks, HIV status
- May not be available to specific classes of consumers
 - EG: Pregnancy status not exposed to an adolescent's parent

Masked Resources

- The big takeaway: Absence of data doesn't mean "negation"
 - IE: Absence of pregnancy or HIV results doesn't mean there wasn't one
 - If the app needs this data to work safely, it may need to confirm with the user

Other API Differences

Writes

- Writes currently aren't available
 - Future investigation
 - Argonaut/HL7 also thinking through these workflows
- For scheduling: Currently use a B2B/System account
 - Chicken/Egg of patient self-registering vs. having portal login
 - Allows addition of basic patient demographics and appointment
 - This is specific to scheduling workflows, B2B isn't a "workaround"

Source of Truth

- All of these action level/Resource level differences are available in conformance/CapabilityStatement and documentation
- Documentation: Authorization Types section
 - <https://fhir.cerner.com/millennium/dstu2/scheduling/appointment/#create> (available for practitioner, system)
 - <https://fhir.cerner.com/millennium/dstu2/scheduling/appointment/#search> (available for patients)

CapabilityStatement/Conformance

```
"resource": [
  {
    "type": "Conformance",
    "interaction": [
      {
        "code": "read"
      }
    ]
  },
  {
    "type": "AllergyIntolerance",
    "interaction": [
      {
        "code": "read"
      },
      {
        "code": "search-type"
      }
    ],
    "searchParam": [
      {
        "name": "_id",
        "type": "token",
        "documentation": "A single or comma separated list of
AllergyIntolerance ids. It is a required field if the patient field is not given"
      },
      {
        "name": "patient",
```

```
"resource": [
  {
    "type": "Conformance",
    "interaction": [
      {
        "code": "read"
      }
    ]
  },
  {
    "type": "AllergyIntolerance",
    "interaction": [
      {
        "code": "create"
      },
      {
        "code": "read"
      },
      {
        "code": "update"
      },
      {
        "code": "search-type"
      }
    ],
    "updateCreate": false,
    "searchParam": [
```

Other Considerations

Privacy Concerns

- The patient is handing over their health information
- App should provide easy access to:
 - Who to contact for support/how to get support
 - What data the app uses, how it uses this data
 - Where the data is stored, sent, or shared
 - EG: is this going to stay on your own servers for research?
 - Who will have access to the data?
 - Will the data be de-identified?

Privacy Concerns Cont...

- Privacy policy URL can be provided and included on authorization page
- Terms of Service
 - Again, URL can be provided and included on authorization page
- Breach notifications?

Authorization Needed

I, PETERS, TIMOTHY, (Not you? [Sign out](#)) request that FHIR Play Millennium share the following health information with FHIR Local Test Client.

FHIR Play Millennium will share this information for 10 minutes:

- personal information
- observations
- medications



View [full list of information](#).

The information you share may be subject to re-disclosure. Consult FHIR Local Test Client's [terms of service](#) and [privacy policy](#).

I, as the authorized representative, am allowing access to the records of:

- ☒ PETERS, TIMOTHY (Self, 58)
- ☐ PETERS, JENNIFER (47)

[Expecting different people?](#)

☐ Please email me a copy of this authorization.

Clicking **Deny** will not impact treatment, payments for treatment, enrollment, or eligibility for benefits at FHIR Play Millennium.

Authorize

Deny

Code Program and Onboarding

Code Program?

- Membership is *not* required if the app uses only the common clinical data set read/searches:
 - AllergyIntolerance
 - CarePlan (team and plan)
 - Condition
 - Device
 - DocumentReference: CCD
 - Goal
 - Immunization
 - MedicationOrder
 - MedicationStatement
 - Patient
 - Procedure
 - Observation
 - Labs
 - Vitals
 - Social History/Smoking

Taking it to Prod

- Basic Company details:
 - Company Details
 - Business Contacts
 - Support Contacts
- TOS and Privacy URLs
- Normal app registration details (redirect/launch, scopes, etc)
- Helps clients find help
- Helps us contact you in case of issues

Taking it to Prod Cont...

- CCDS Apps are not listed in our App Gallery
- Registered CCDS apps are listed on a client accessible page as options to whitelist
- Once registered and ready, you contact clients
- Clients log a simple service request to whitelist your app in their environment

Validation?

- Part of the code program, but not required for CCDS access
- Can pay a validation fee to get validated and listed in our app gallery
 - Validation improves quality!

[Learn More](#)

Tutorial

- Tutorial “demo”
 - <https://engineering.cerner.com/smart-on-fhir-tutorial/#introduction>
 - <https://engineering.cerner.com/smart-on-fhir-tutorial/#patient-app>
 - <https://engineering.cerner.com/smart-on-fhir-tutorial/#standalone-app-launch-for-patient-access-workflow>

Learn More

- Introduction to SMART on FHIR: Thursday 9:00
- Building a Scheduling App: Thursday 9:00
- Basic OAuth2: Thursday 10:00
- Best Practices for App Integration: Thursday 10:00
- Open Labs

Questions?