

# VHA's Interoperability / Standards Strategy

*API's, FHIR, and engaging the community*

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Boston, 19-21 June | @HL7 @FirelyTeam | #fhirdevdays18 | [www.fhirdevdays.com](http://www.fhirdevdays.com)

# Disclaimers, Disclosures, & Acknowledgements

- **Disclaimer:** *This presentation is from the view of VHA's Office of Knowledge-based Systems, focused on emergent and future interoperability priorities, based upon current work we are doing. While presented in good faith, this is not to be taken as official policy, definitional relative to acquisition posture, or the official position of the Department. These VHA requirements are part of discussions internal to VA about how best to support clinical needs within our new contract with Cerner Corporation as part of EHR Modernization.*
- **Disclosure:** *The speaker holds roles in Government, Academia (University of Utah), and several industry SDO's and Consortia (HL7, OMG, HSPC, etc.). No direct consultative or fiduciary conflicts of interest exist.*
- **Acknowledgements:** *Content in this presentation has been drawn from or adapted from multiple sources, including but not limited to standards work within Health Level Seven (HL7) and the Object Management Group (OMG)*

# Why are we here today?

- We are believers
- We are opportunists
- We need your innovation, your ideas, your energy, and your products to realize the best in Veteran care and wellness
- We want to share what we have done, and give you tools and access so you can do more
- We see tremendous potential in where FHIR can go, and want to help it get there

# Bottom Line Up Front: VA's API Developer Sandbox

VA's API Developer Sandbox is “open for business”

- **Takeaway 1:** We are strong on APIs, and advancing them as a principal interoperability channel internally and with partners
- **Takeaway 2:** API's alone, absent the ability to support advanced service orientation (orchestration, choreography), are of value, but limited value
- **Takeaway 3:** We seek to advance FHIR, particularly the behavior, to support #2
- **Takeaway 4:** We want to incentivize the ecosystem to work with us, to innovate, to add value, and to leverages assets and data VHA can/will make available

# Our Business Drivers

## Patient Drivers

- Patients want to control their health (and their health records)
- Patients expect data ubiquity
- The patient experience of “the health system” is their **extended** care team

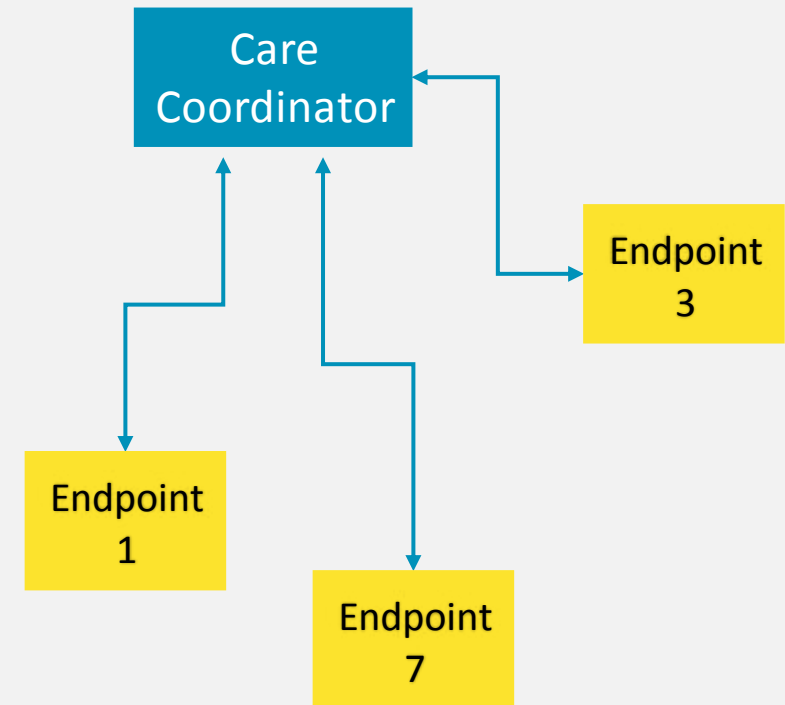
## Institutional Drivers

- IT needs to align with emergent business practices
- HIT is often seen as a drag on productivity, not a benefit
- With distributed care delivery, we have less and less visibility into what is happening, or how to maintain quality
- Medical encounters are too-often NOT based in best-practices

*Patient-centric care needs are not achieved intra-institutionally, they are addressed **INTER-institutionally, and that means INTEROPERABILITY***

# Key VHA Need #1: Orchestration

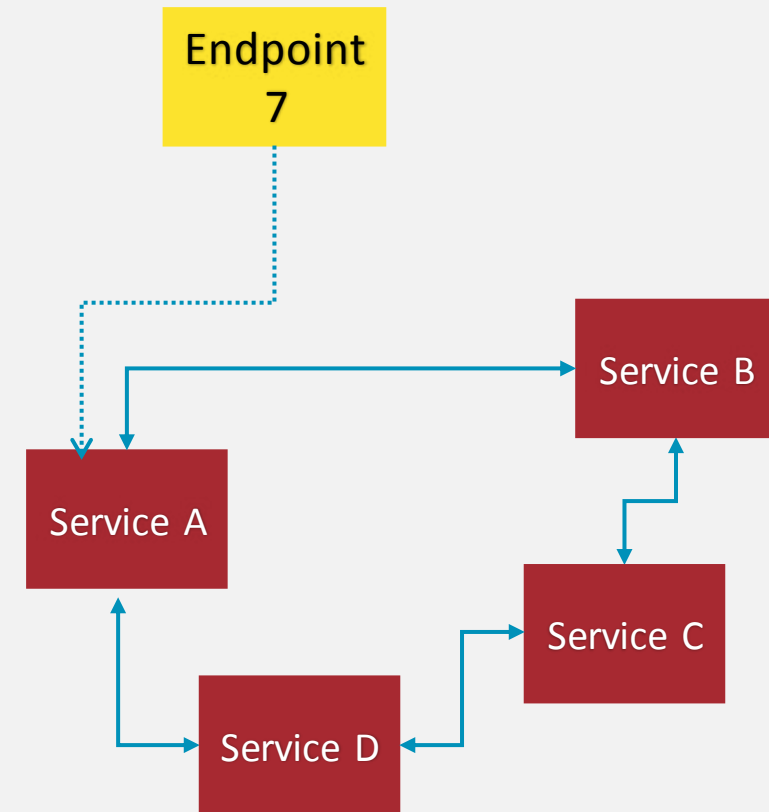
- We have several use cases which necessitate complex coordination of processes
- These process can and will span care locations and institutions
- End-to-end management, particularly when something fails, is critically important
- We will not (and cannot) control which FHIR servers are used, or how they will behave
- Behavior is based around a “centralized” orchestrator...





## Key VHA Need #2: Choreography

- Intra- and inter-institutionally, we have needs to “delegate” to services that can/will self organize
- This provides support for distributed processes
- Within a designated “endpoint” whatever happens beyond that would be opaque to the caller
- We anticipate self-organizing systems with increasing complexity and intelligence over time

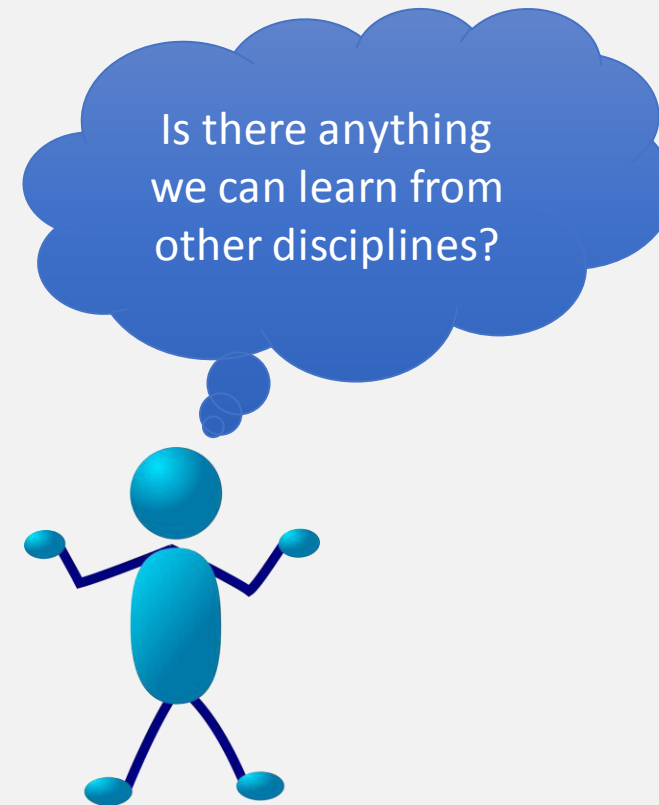


# Version Management

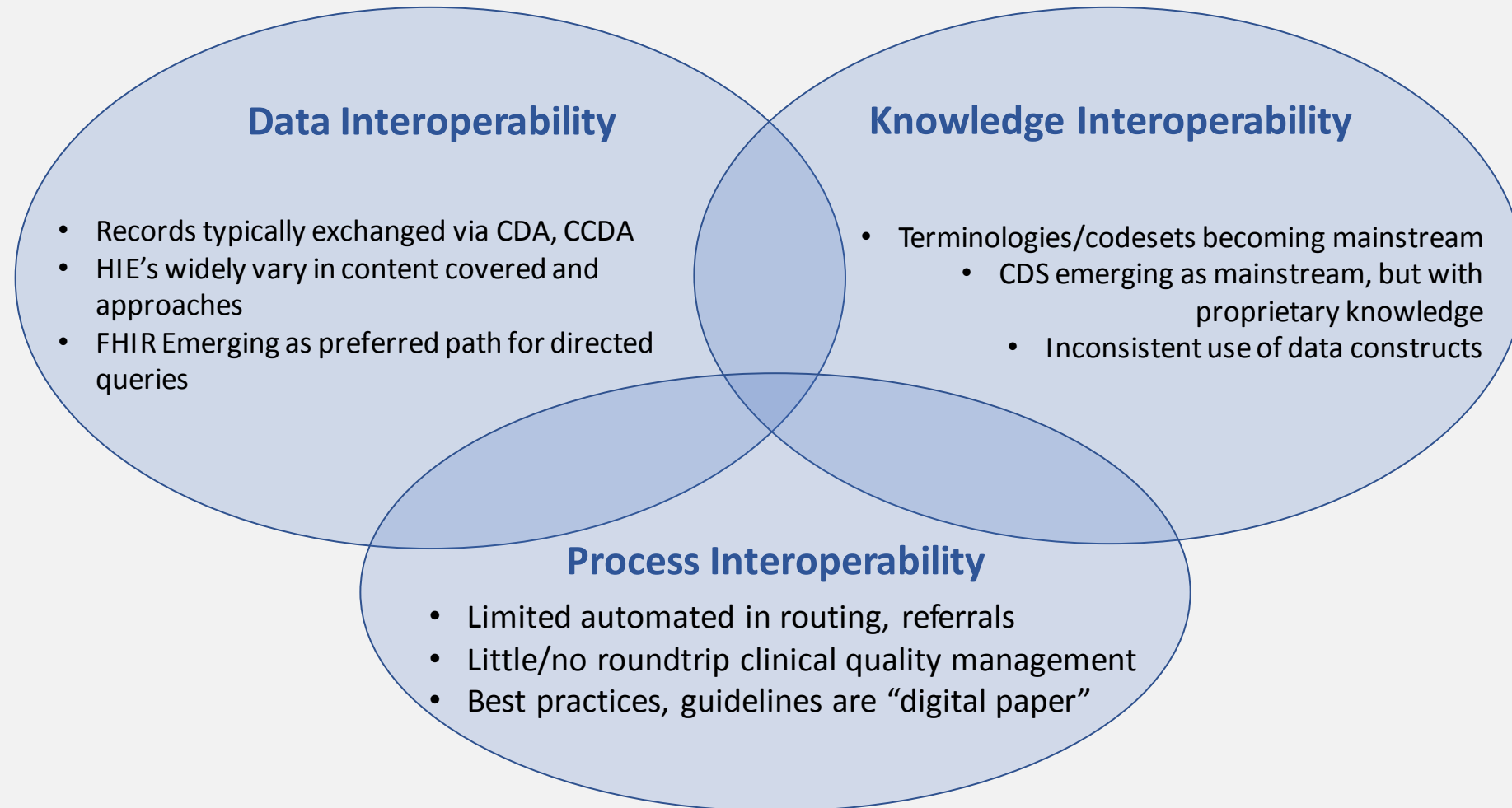
- FHIR version management has been a challenge
  - The pace of change of the pre-standard has been significant
  - Backward compatibility to date has not been a priority
  - As FHIR becomes normative, expectations around versions will continue to increase, as will demands for compatibility
- This will be an ongoing pain point for us...
  - We will ALWAYS want data from any provider seeing our Veterans
  - We do not have control (or sometimes even influence) on those partners
  - As such, we will never have a “standard” version of FHIR within VA
  - There will always be newer standards we want to take advantage of, and we will always be supporting different versions concurrently



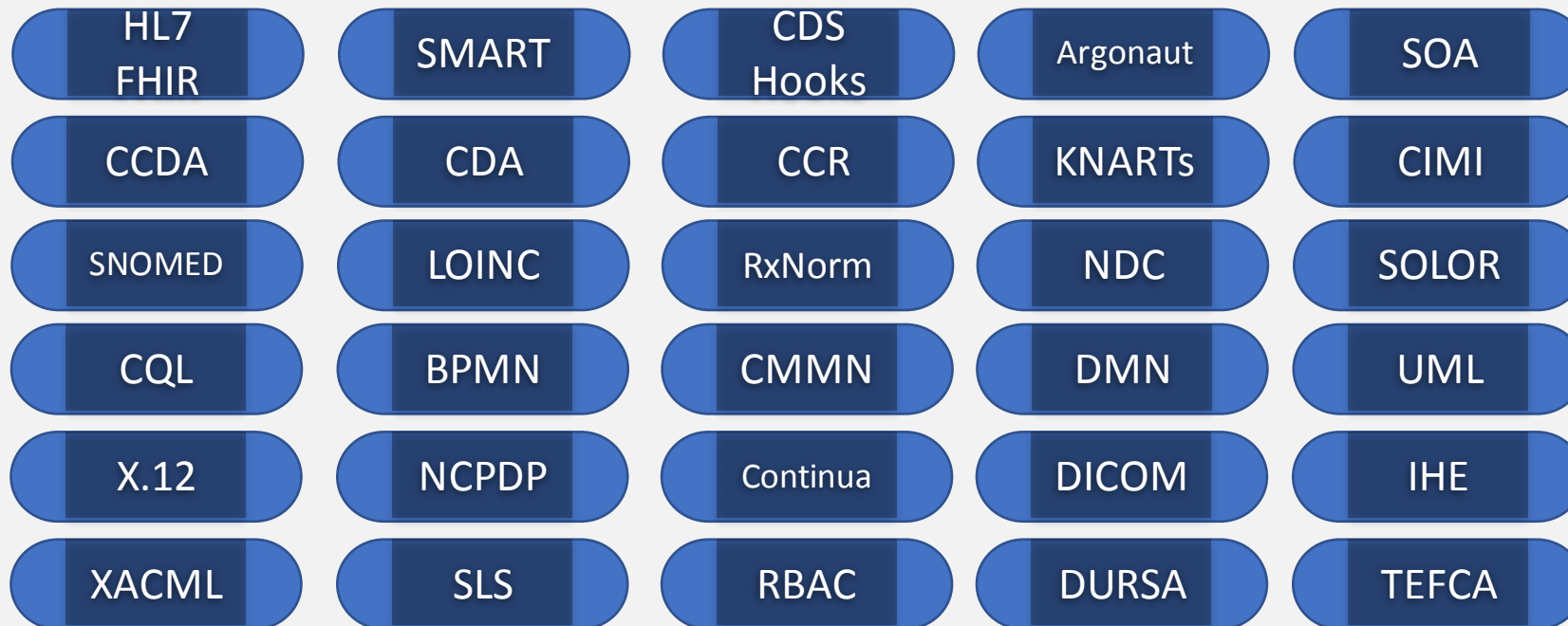
# Drawing Parallels...



# A View of the Interoperability Landscape



# Interoperability isn't so hard, we just need to use...



# Addressing “Semantic Interoperability” as a multidimensional concern...

## Data Interoperability

- Drive toward “native use” of coded terms
- Use industry-accepted clinical models as “building blocks” comprising semantics and data structures
- **Encourage use of API-based protocols (e.g., FHIR)**

## Knowledge Interoperability

- Develop “knowledge artifacts” that can be consumed by CDS
- Foster industry-based “content ecosystems” to share best practices
- **Advocate for improved tooling to author, curate, and utilize clinical knowledge**

## Process Interoperability

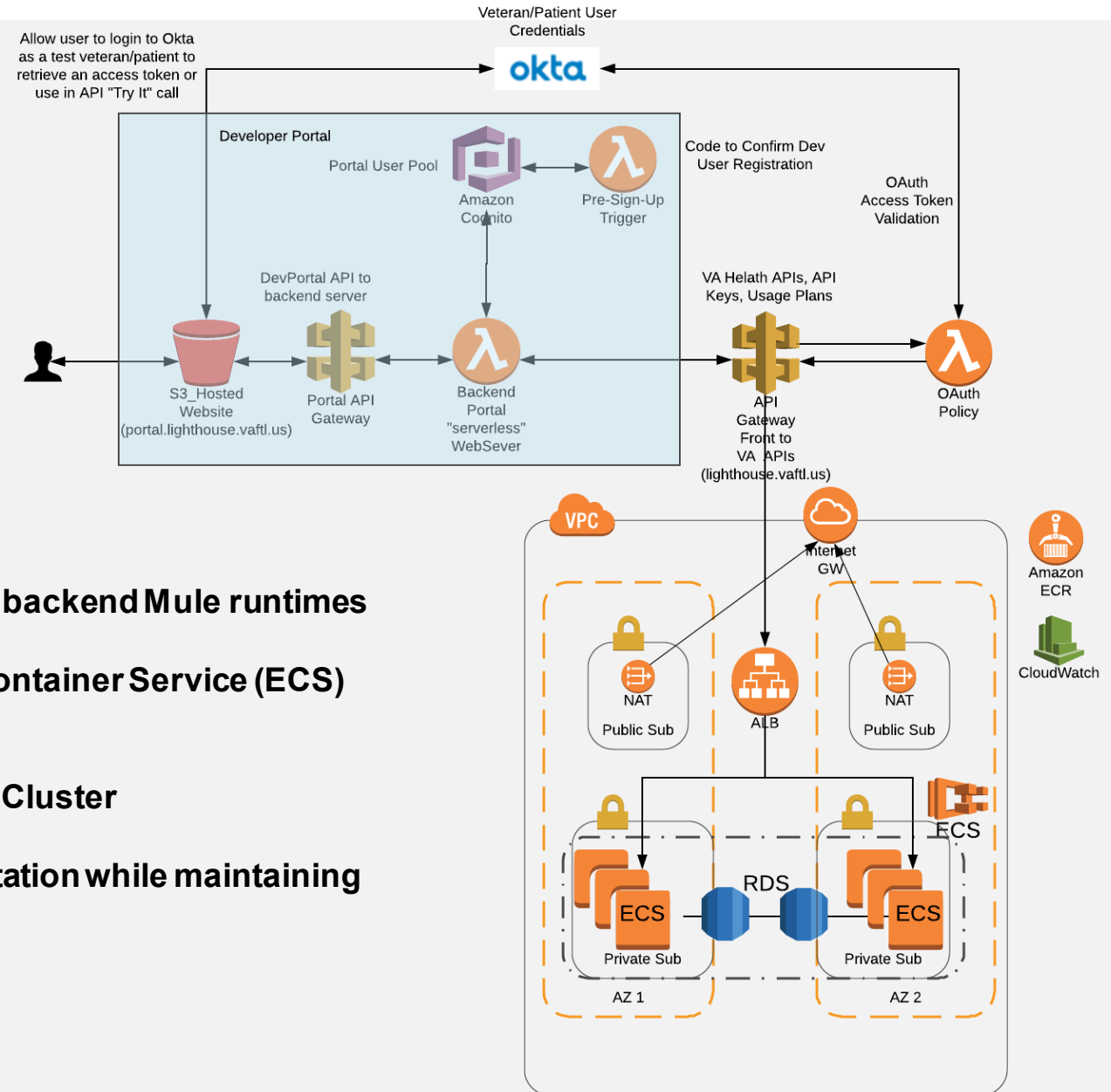
- Establish, anchor a community-of-practice sharing this vision
- Promote portability and sharing of workflows & processes
- **Foster solutions that consume, execute standardized processes (e.g., shared services: care coord, scheduling, ordering)**

# VA API Developer Sandbox – What We Have

- Sandbox deployed on VA's Future Technology Laboratory AWS assets
- Provides a portal to learn about and “try” VA health APIs
- Ten (10) Argonaut resources available meeting specs of first production consumer
  - Patient\*, Allergy Intolerance\*, Condition\*, Immunization\*, Medication\*, Diagnostic Report, Medication Order\*, Medication Statement\*, Observation, Procedure
  - READ, SEARCH by patient (as applicable)
  - MITRE populating sandbox database with synthetic veteran data
    - Resources with asterisk (\*) have data populated at this time
    - Adding additional data, resources, and advanced searching for full Argonaut soon
- Register as a Developer with Okta and request OAuth tokens for specified scopes
- “Try It” function produces API calls using provided OAuth token to backend APIs
  - Curl commands provided allowing API calls outside the portal
- Detailed API documentation (models/examples) provided

# VA API Developer Sandbox

- Portal based on swagger-ui with AWS SDK integration
- Portal uses static AWS S3 front end and serverless (lambda) backend along with API Gateway, Cognito User Pool, and Dynamo DB (API Key to user mapping)
- AWS API Gateway used as a front-door to backend Mule runtimes
- Backend APIs deployed as AWS Elastic Container Service (ECS) instances (with Fargate)
- Backend databases running on AWS RDS Cluster
- Sandbox allows for tech stack experimentation while maintaining equivalent production API functionality



# VA API Developer Sandbox – How Do I Play?

- Sandbox URL: <http://portal.lighthouse.vaftl.us>
- Getting Started: <http://portal.lighthouse.vaftl.us/getting-started>
- Register and then Sign-in to the portal
  - This creates API Key for the developer (not used for SMART on FHIR API version)
- Subscribe to the API(s)
- Selecting the API allows the user to view the API resources and associated documentation (models/examples)
- To “try” the APIs, need to provide applicable authorization (click red exclamation circle)
  - Authorization via OAuth (SMART on FHIR) or API Key (separate APIs)
  - “Okta Authentication” button allows selection of scopes and entering of Okta credentials to retrieve appropriate access token for cut/paste
    - Link to create Trusted Developer Okta account also provided
  - “Show API Key” button allows cut/paste of API Key into authorization field (as needed)
- Detailed information on test/synthetic patients IDs and/or other resource IDs provided on “Getting Started” page



# VA API Developer Sandbox – Demo

## Our commitment...

- To HL7
- To Open Standards and Platforms
- To open ecosystems
- To an internal VA roadmap aligned with Industry
- We committed to the Open API Pledge: <https://www.oit.va.gov/developer/pledge.cfm>

Questions?