



# A FHIR-Native Mobile COVID-19 Symptom Tracker and Public Health Reporting Tool

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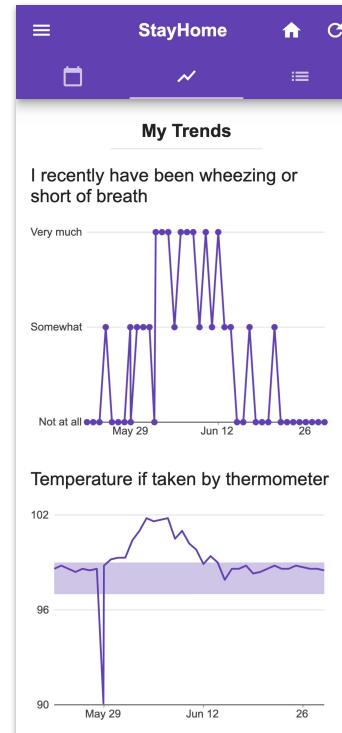
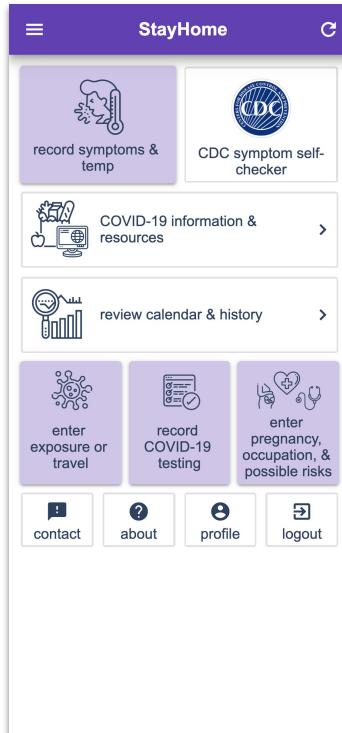


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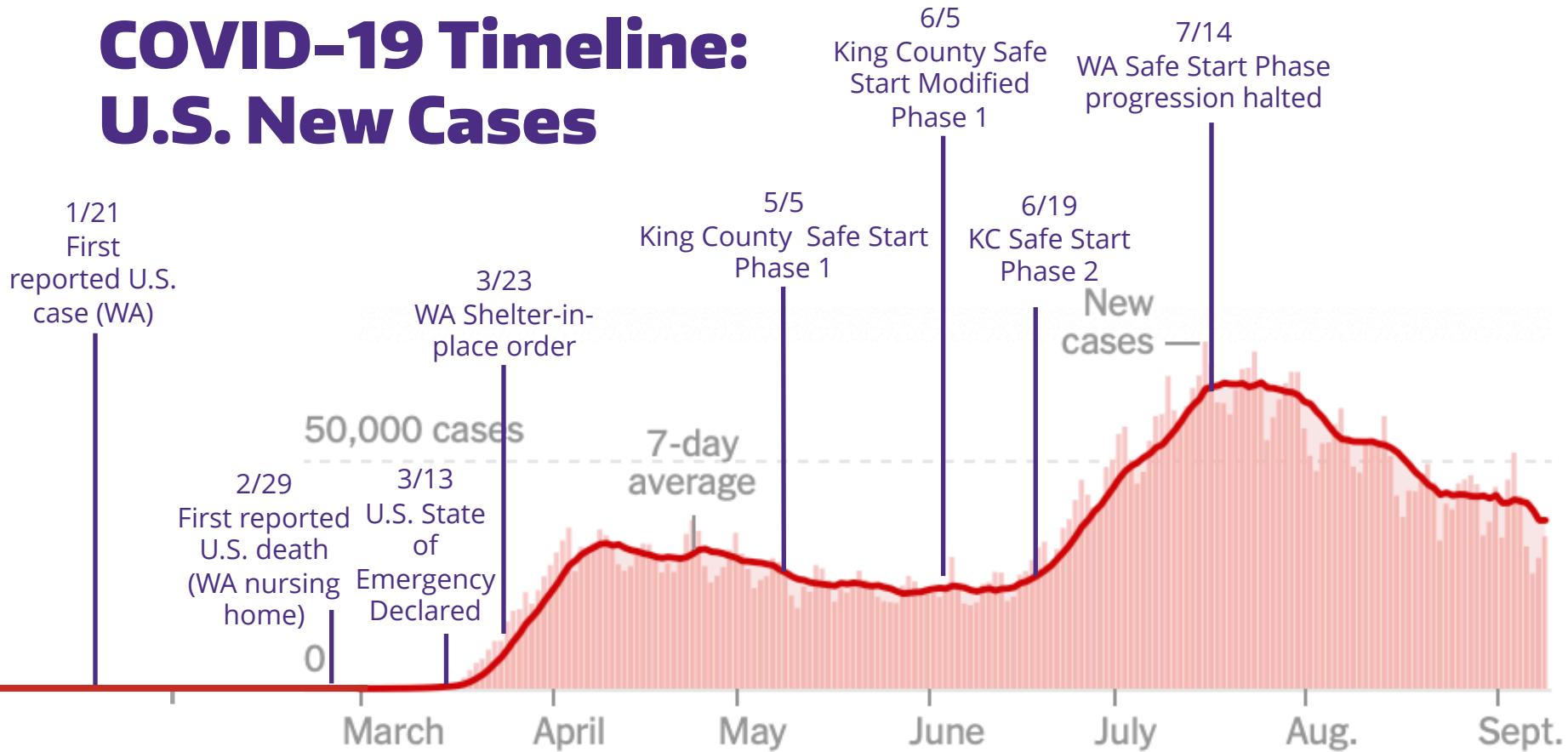


<https://hannahburkhardt.github.io/>

**A reusable, mobile-friendly, FHIR-native** consumer health application for collecting patient-reported outcomes (PROs) and experiences to support the need for COVID-19 symptom self-monitoring and data sharing with appropriate public health agencies.



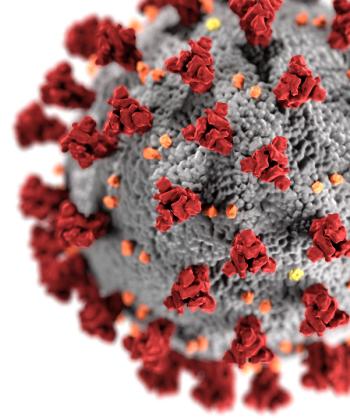
# COVID-19 Timeline: U.S. New Cases



**>190,000 deaths in the U.S.**

# The challenge: Flatten the curve

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- > safe behaviors: wash hands, wear masks, and **monitor for symptoms**
- > widespread testing
- > contact tracing
  - manual, labor-intensive process; workforce is stretched thin!

## How to help?

- > A diary to record symptoms, risk factors, possible exposures as **patient-reported outcomes** (PROs)
- > simple, easy to use, and accessible to everyone
- > Allow users to directly and easily share data to **support public health processes**

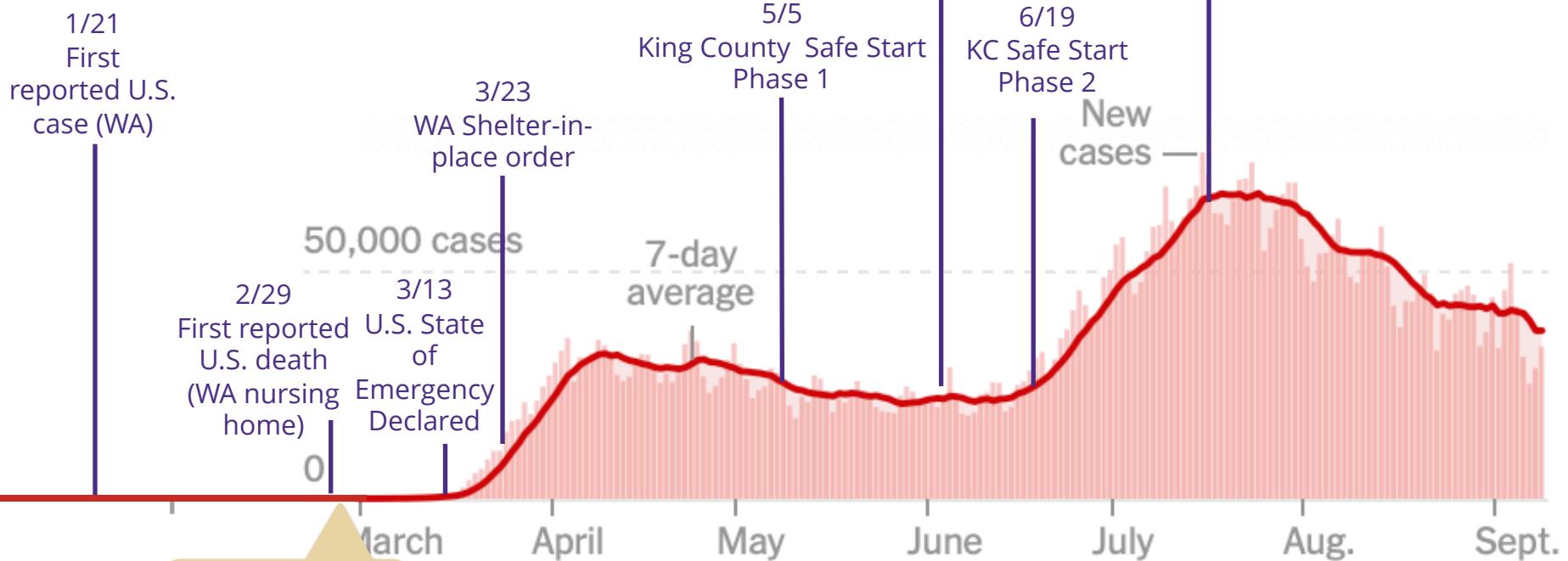


**Informatics intervention idea:**  
**Mobile PROs on FHIR**



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# COVID-19 Timeline: U.S. New Cases



StayHome  
idea

# Design

- > Undergraduate students:  
**“Should I wear a mask?”**  
**“How do I know if I have the virus?”**  
**“How do I protect myself?”**  
**“I take my temperature daily”**



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# Flutter

Mobile

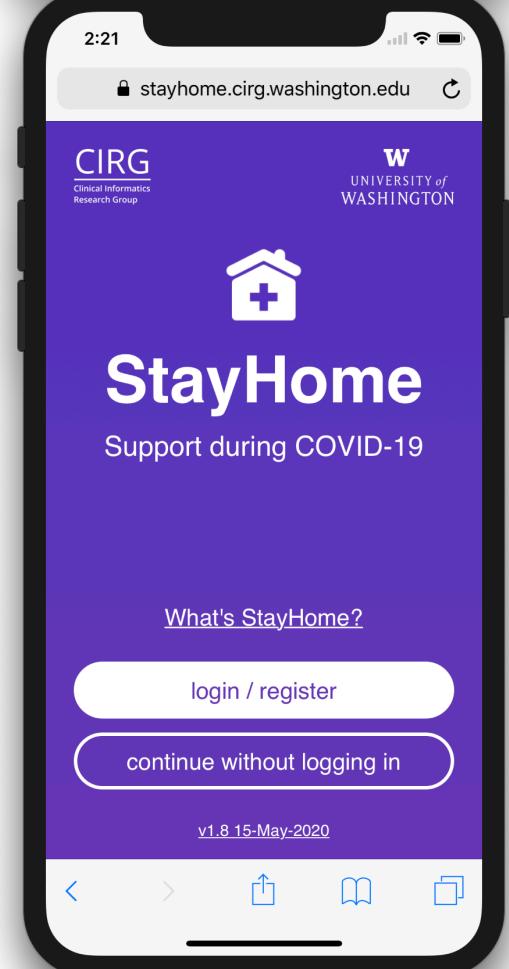
Web

Desktop

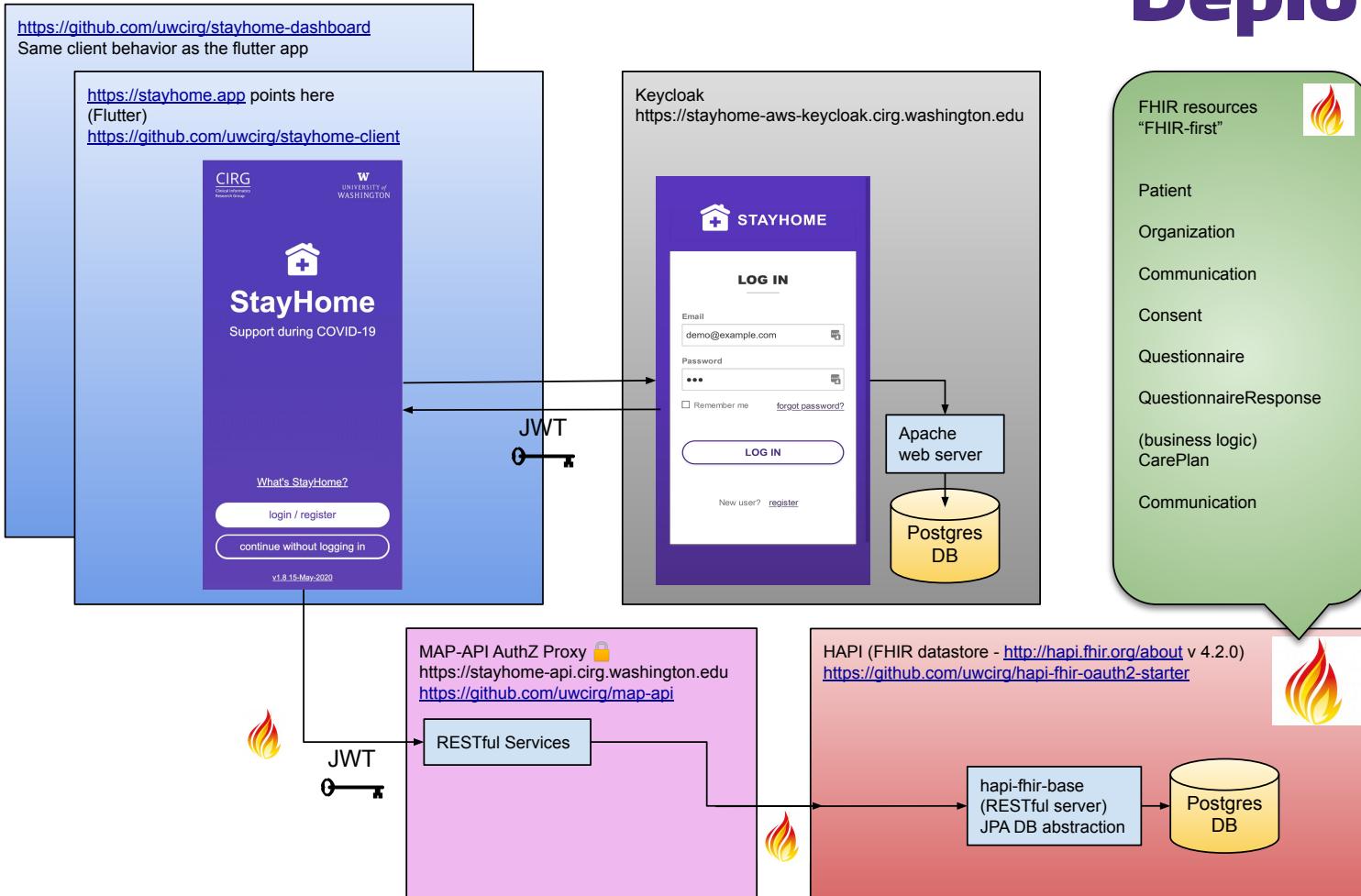
# Development



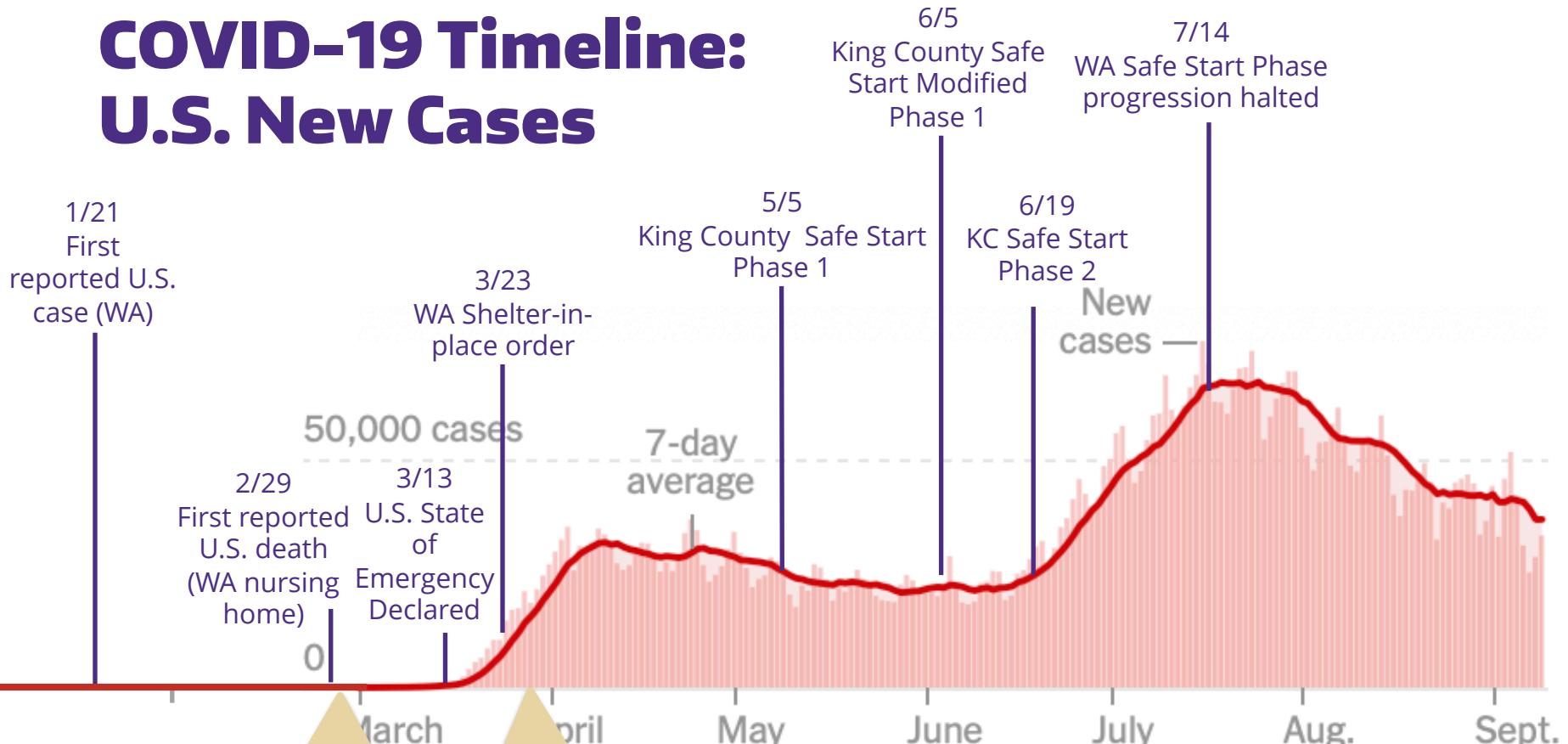
HAPI FHIR



# Deployment



# COVID-19 Timeline: U.S. New Cases



StayHome  
idea

StayHome  
v1.0 live

# Project and code availability

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StayHome went live on March 27, 2020 and is available to the public at  
**<https://stayhome.app>**



Project info is available at  
**<https://project.stayhome.app>**



Find all StayHome code and resources at  
**<https://github.com/uwcirg/stayhome-project>**



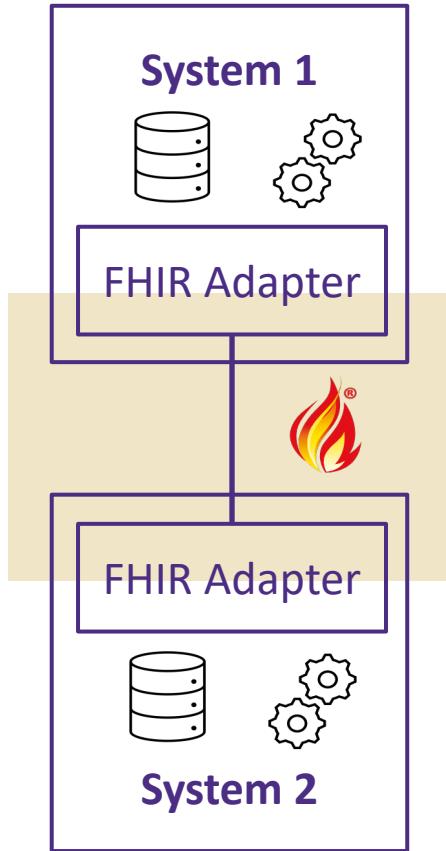
**HL7® FHIR® & StayHome:  
The FHIR-Native approach**

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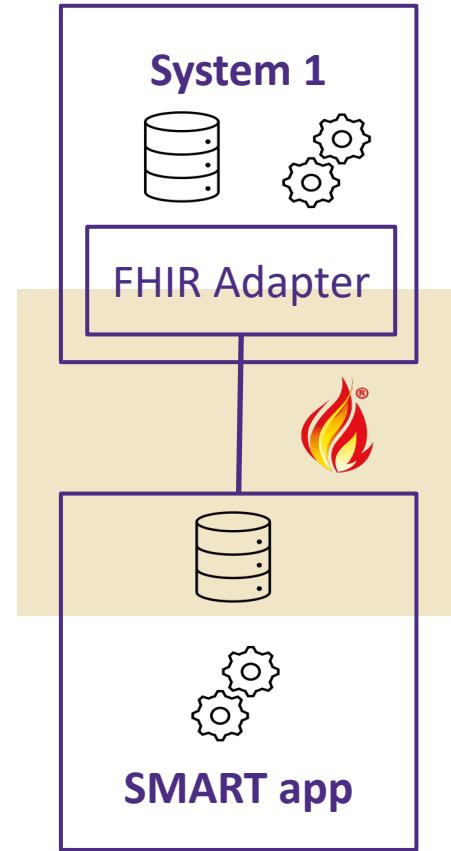
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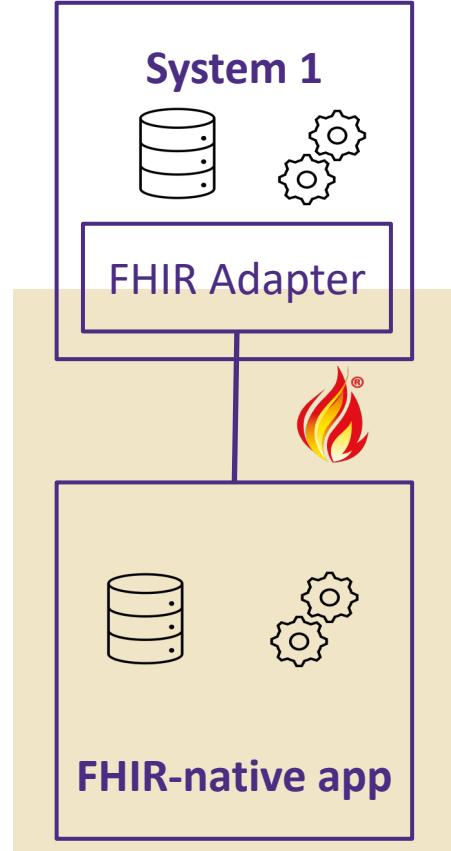
**FHIR for health data exchange  
(messaging/interface only)**



**Purpose-built SMART on FHIR apps**



**Reusable,  
FHIR-native app**

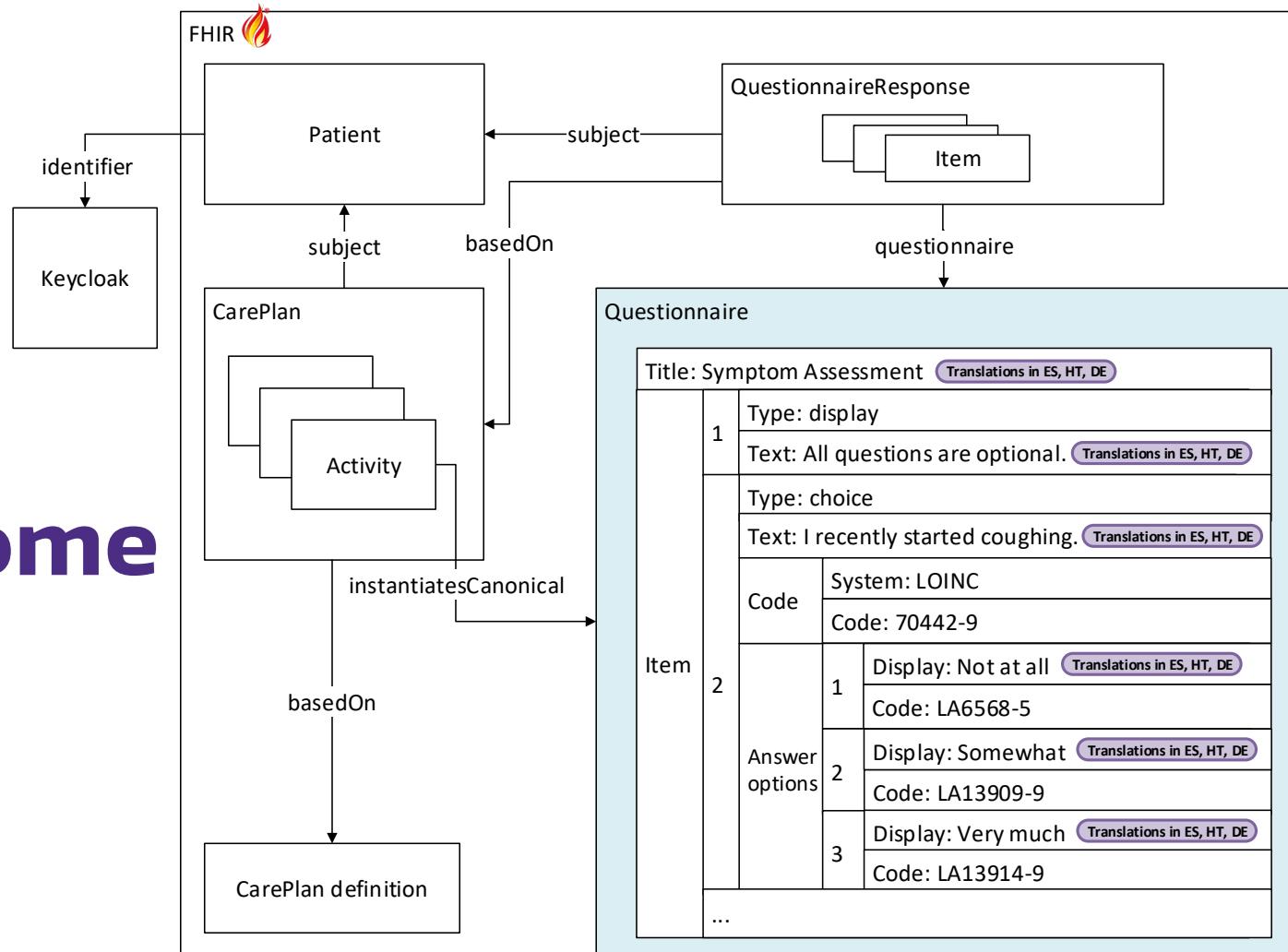


# FHIR-native means that:

- > There is **no custom server code**
- > There is **minimal custom client code**
- > *Content and behavior* are defined in FHIR resources
- > **Client is independent of server**
  - Can operate out of any FHIR-compliant server, e.g. EHR, standalone HAPI, public health system

StayHome is a **generic PRO administration tool** which can easily be **repurposed** for different PRO use cases and health problems simply by modifying the FHIR resources.

# FHIR in StayHome



# **Advantages of FHIR & FHIR-native**

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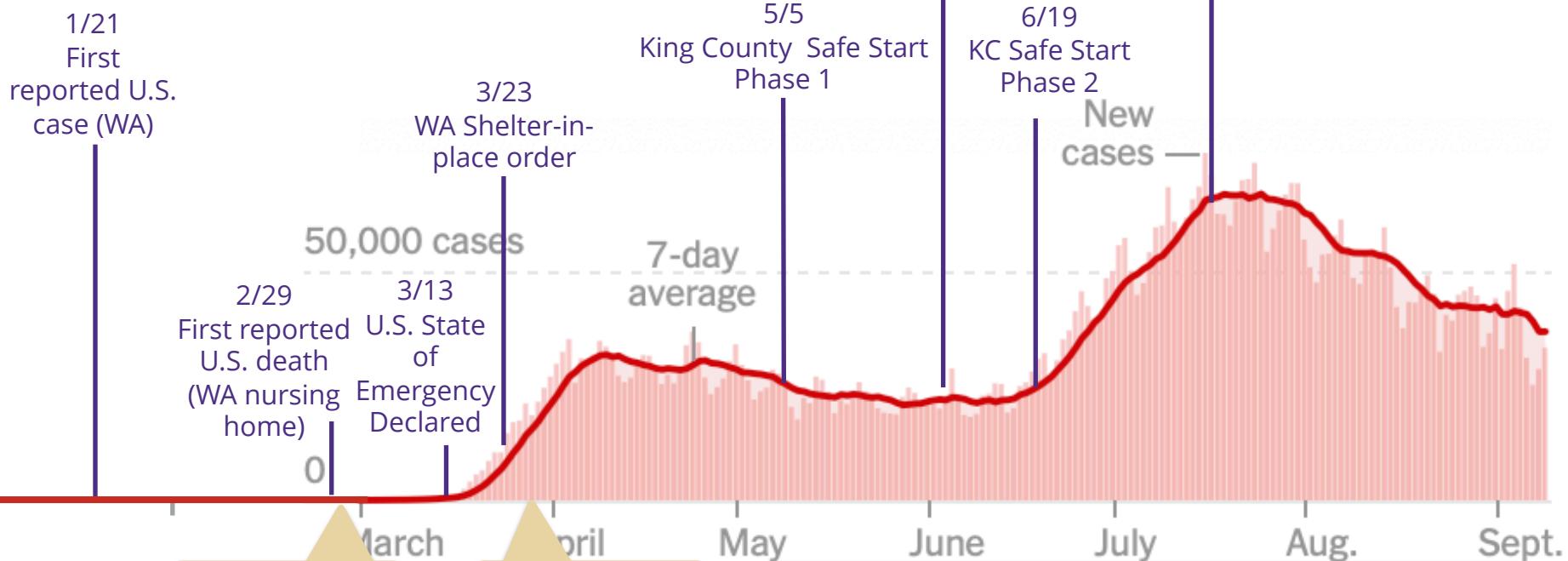
- > **Ready to use, domain-appropriate data model** developed over years by many experts
- > Basic and advanced **functionality is available out of the box** with freely available FHIR implementations
  - Storage, queries, CRUD, versioning, localization, bulk export, terminology services, subscriptions, CQL
  - FHIR **implementations are interchangeable!** HAPI, Azure and Google Cloud FHIR servers, EHR with FHIR APIs, public health system with FHIR APIs
- > **Implementation guides** are available to help solve common problems
- > Out-of-the-box **interoperability** & EHR integration

# Disadvantages of FHIR & FHIR-native

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- > FHIR spec is **large and complex**
- > Does not cover everything: e.g. auth
- > Is so flexible that it can be **tempting to use it in unintended ways**
  - Resources and resource elements should make sense outside of the application context
  - Follow recommendations and observe common constraints
- > **May not be well adopted** in some circles, e.g. consumer health applications
  - Smaller value of “interoperability-readiness”

# What happens next with StayHome?



StayHome  
idea

StayHome  
v1.0 live

Work with CommonCircle

# What happens next with StayHome?

- > UW still working out details of “Back to School” – 2 weeks away
- > **Commoncircle.us** is the UW effort
  - **Exposures:** Google Apple BT Exposure notification part of the strategy
  - **Assist:** support for Contact Tracing, Case Investigation, Patients
    - > patient- and public health-centered functions overlap
    - > **Sx assessment, reporting, health diary**
    - > Assessment and support for Quarantine, Isolation
    - > Personalized, privacy preserving risk-messaging
    - > Patient-centered decision support – can we go beyond Sx Checking, in a world where infectious people are asymptomatic
    - > Would we do better if we knew more about **people's experience...?**



Get StayHome at  
**<https://stayhome.app>**



Project info is available at  
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Find all StayHome code and resources at  
**<https://github.com/uwcirg/stayhome-project>**

## Acknowledgements

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