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# MANAGING FHIR INNOVATIONS IN HEALTHCARE ORGANIZATIONS: THE UNIVERSITY OF UTAH EXPERIENCE

2018 UNIVERSITY OF WASHINGTON FHIR WORKSHOP  
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# DISCLOSURES

- In the past year, I have been a consultant or sponsored researcher on clinical decision support for ONC\*, Hitachi, McKesson InterQual, and UC San Francisco
- Several of the apps, services, and tools described are being commercialized to enable wider impact

\*via various subcontractors

# AGENDA

- Background and Rationale for FHIR Innovations
- University of Utah IAPPS Initiative
- Governance, Strategy, and Program Considerations
- Overview of Technical Approach
- Lessons Learned and Recommendations

# UNIVERSITY OF UTAH HEALTH

- Clinical context
  - 4 hospitals, 10 community clinic centers
  - 1,100 physicians, 2 million annual visits
  - 34,000 annual discharges
- Technical context
  - Epic system-wide since 2014
  - On Epic 2017
  - About to upgrade to 2018



# RATIONALE FOR FHIR INNOVATIONS

- Enables tackling important problems for which native EHR functionality is inadequate
  - Provides an alternate strategy to “ask and hope”
- Feasible to accomplish as a part of a holistic EHR optimization strategy
  - Epic, Cerner, and other major EHR vendors are supportive
- Can harness the innovation of others
  - Local stakeholders, other institutions, vendors
- Could potentially commercialize solutions
- Powerful enabler for externally funded R&D

# UNIVERSITY OF UTAH IAPPS INITIATIVE

- Acronym for Interoperable Apps and Services
- Goal: improve patient care and the provider experience through innovative, interoperable extensions to native Epic functionality
- Multi-stakeholder initiative started by University of Utah in 2016
- Core part of larger Re-Imagine EHR initiative

# GOVERNANCE AND RESOURCING

- Steering committee co-chaired by CIO & CMIO
  - Charged with strategy, prioritization, and resourcing
- Multi-disciplinary project team
  - IT and Informatics, including 7 team members trained and certified in developing new EHR interfaces including FHIR
  - GApp Lab (therapeutic gaming)
  - Clinical and external collaborators
- Baseline operational investment + external funding
  - ~\$20M in external grant funding secured leveraging interoperability infrastructure

# INITIAL STRATEGY

- Gain experience with initial implementations
- Complete a few projects end-to-end prior to widely soliciting for potential projects
- Establish processes and resources for efficient development, deployment, support, and eventual retirement of apps and services
- Educate and empower various stakeholders to effectively provide value
- Ensure security as an essential priority



# CONSIDERATIONS FOR PRIORITIZATION

- Does Epic already do this well?
- Will Epic tackle this problem soon?
- Are there existing operational practices that will be changed? Do they want to change?
- What is the likely clinical impact?
- What is the likely financial impact?
- Is there a committed clinical champion?
- Are there additional resources available?
- How hard will it be to implement?

# SECURITY / INFRASTRUCTURE

- Independent code review
- Third party code audit
- Currently focused on implementations inside the firewall
  - Broad nature of FHIR scopes is an issue
- Environments strategy that supports volume testing

# EVALUATION

- Critical for understanding impact and demonstrating ROI
  - Use
  - Satisfaction
  - Clinical and financial impact
- Need to explicitly prioritize
- High synergy with research

# RESEARCH SYNERGY

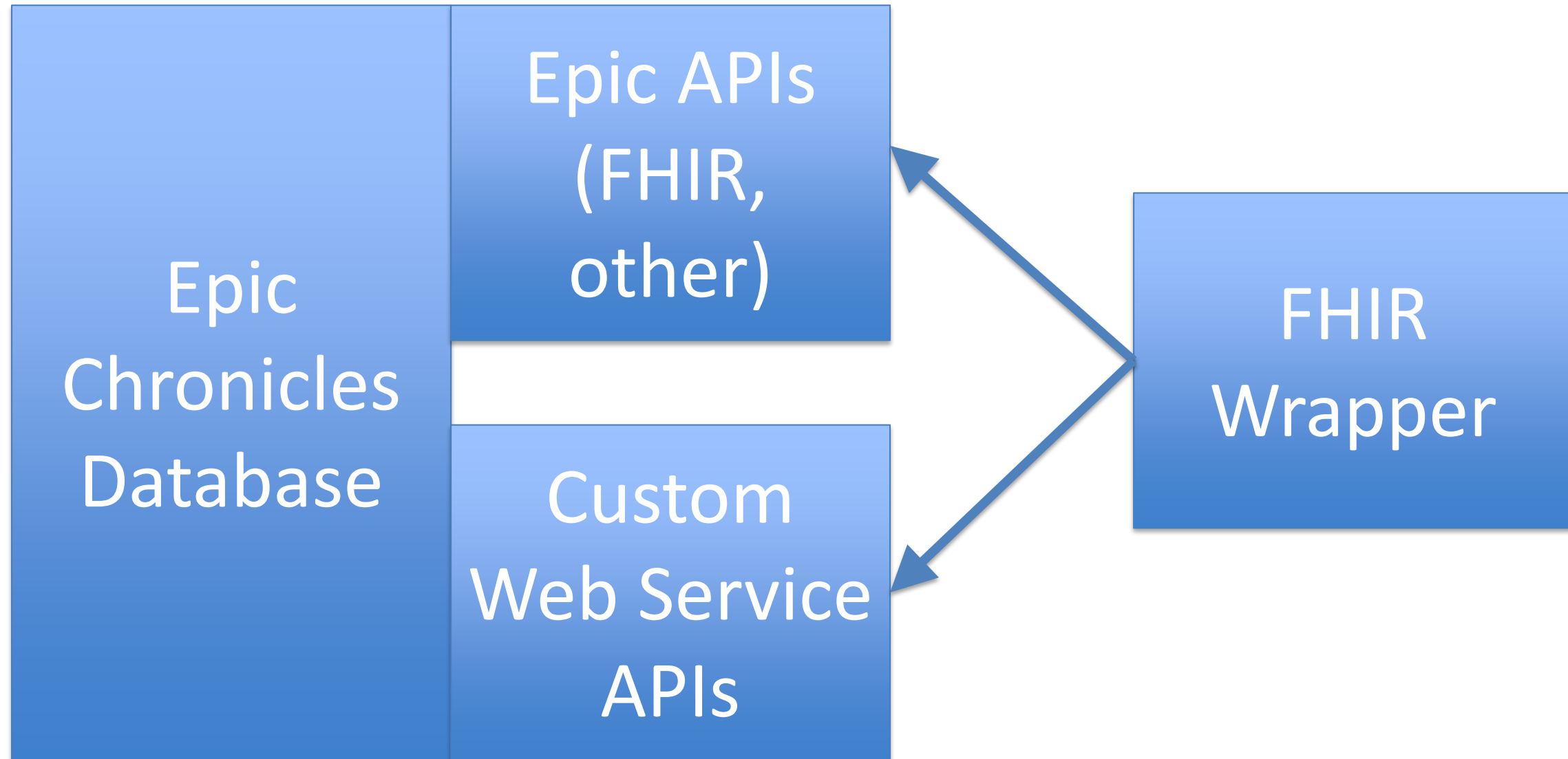
- Multiple grants awarded (>\$20M); more in pipeline.  
Examples:
  - NCI grant for individualized cancer risk management
  - CMS grant for HIE data integrated with EHR via SMART on FHIR
  - Hitachi sponsored research for diabetes predictive modeling and decision support delivered via SMART on FHIR
  - PCORI contract for integrating tobacco cessation across 30 federally quality health centers leveraging CDS Hooks
  - AHRQ proposal for lung cancer screening decision support and shared decision making using SMART on FHIR and CDS Hooks
- Well-suited to multi-institutional grant applications

# EPIC-SUPPORTED INTEGRATION POINTS

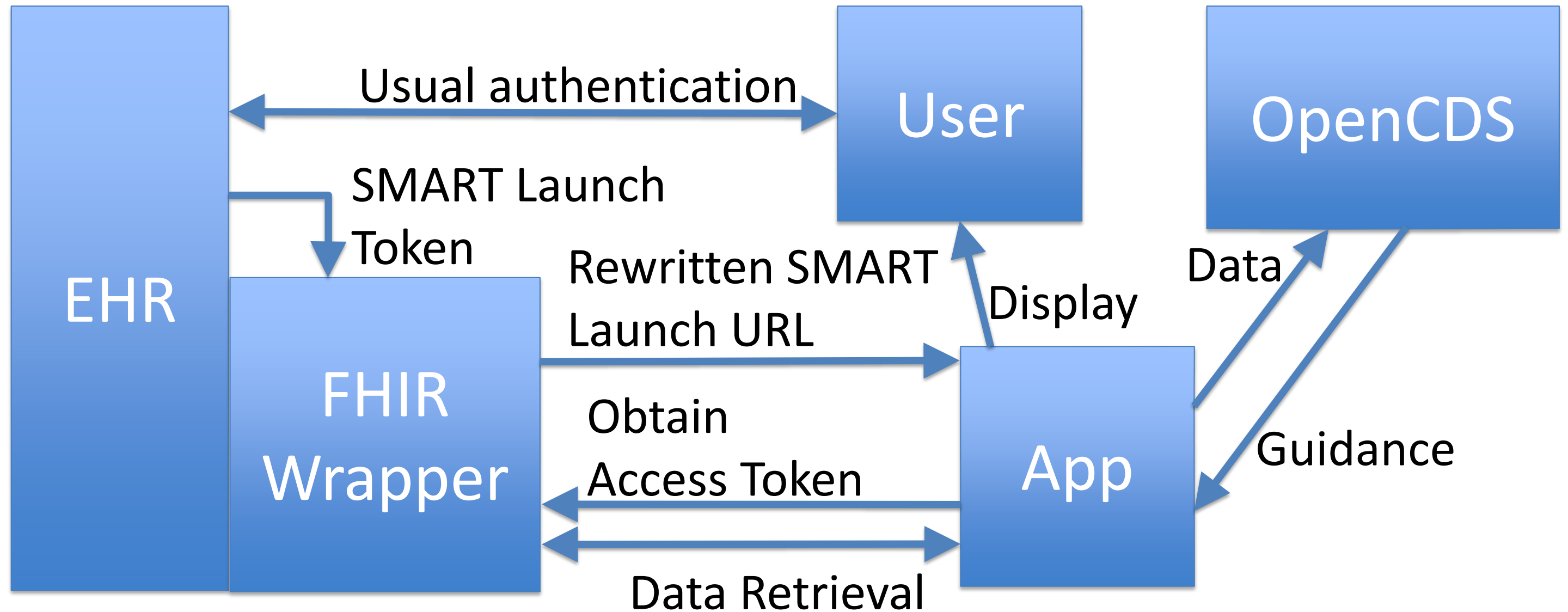
- Interconnect, HL7 FHIR\*
  - Allows obtaining real-time data, placing orders, & saving data
- ClinKB/Active Guidelines, HL7 SMART\*
  - Allows embedding any Web-based “App” into Epic
- BPA Web services, HL7 CDS Hooks\*
  - Allows an external Web service to provide CDS

\*Potential for interoperability with EHRs beyond Epic

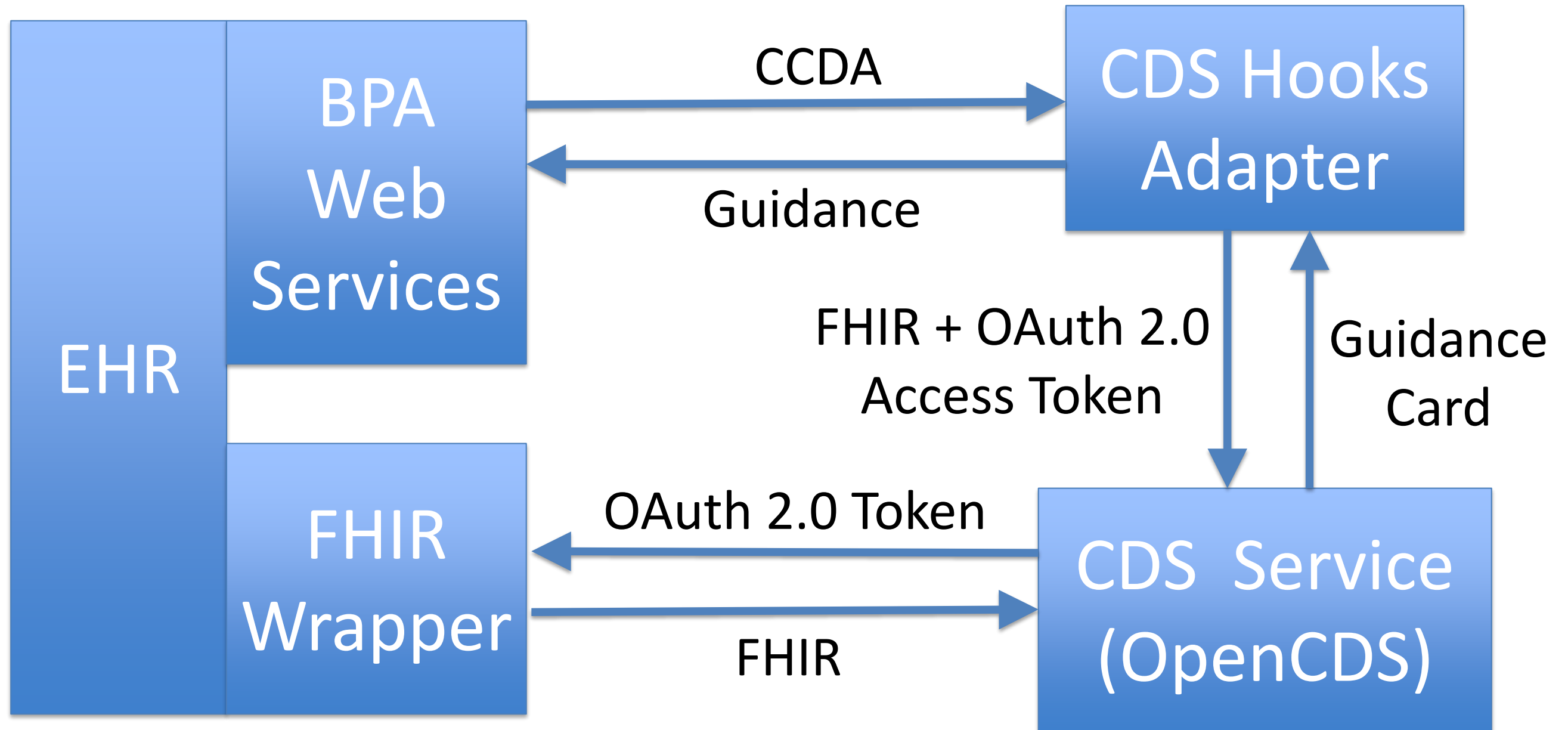
# APPROACH TO DATA: NATIVE + CUSTOM FHIR



# APP FRAMEWORK: SMART



# CDS SERVICE FRAMEWORK: CDS HOOKS





# LESSONS LEARNED AND RECOMMENDATIONS

- Lessons learned
  - FHIR, SMART, and CDS Hooks should be a part of a leading healthcare organization's holistic approach to EHR optimization
  - Baseline operational investment is critical
  - There is high synergy with research
  - Custom FHIR interfaces are often needed to meet user needs
- Recommendations
  - Make a baseline operational investment
  - Incrementally add institutional capacity, e.g., via external grants

# THANK YOU!

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