



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



# September 2020 CDS Connect Work Group Call



# CDS Connect

# Call Agenda

Schedule	Topic
• 3:00 - 3:02	• Roll Call, Michelle Lenox (MITRE)
• 3:02 - 3:05	• Review of the Agenda, Maria Michaels (CDC)
• 3:05 - 3:50	• Sharing Lessons Learned with CDS: Stewardship of Implemented, Interoperable & Shareable CDS Artifacts: Lessons Learned and Future Directions (RTI International, MD Partners and Alphora Inc.)
• 3:50 - 3:55	• What's New with CDS Connect This Month (MITRE)
• 3:55 - 4:00	Open Discussion and Close Out, Maria Michaels (CDC) <ul style="list-style-type: none"><li>• Open discussion and announcements</li><li>• Concluding comments, review next steps and adjourn</li></ul>

# Objectives

- Sharing lessons learned for use of CDS Connect
  - ▶ Versioning discussion illustrated with a WG member use case
- Share new features and resources available for CDS Connect
- Discuss topics of interest to members relating to opportunities for CDS Connect

# **Stewardship of Implemented Interoperable & Shareable CDS Artifacts: Lessons Learned and Future Directions**

**Laura Haak Marcial, PhD – RTI International**  
**Joshua E. Richardson, PhD, MS, MLIS – RTI International**  
**Robert McClure, MD – MD Partners**  
**Rob Reynolds – Alphora, Inc.**

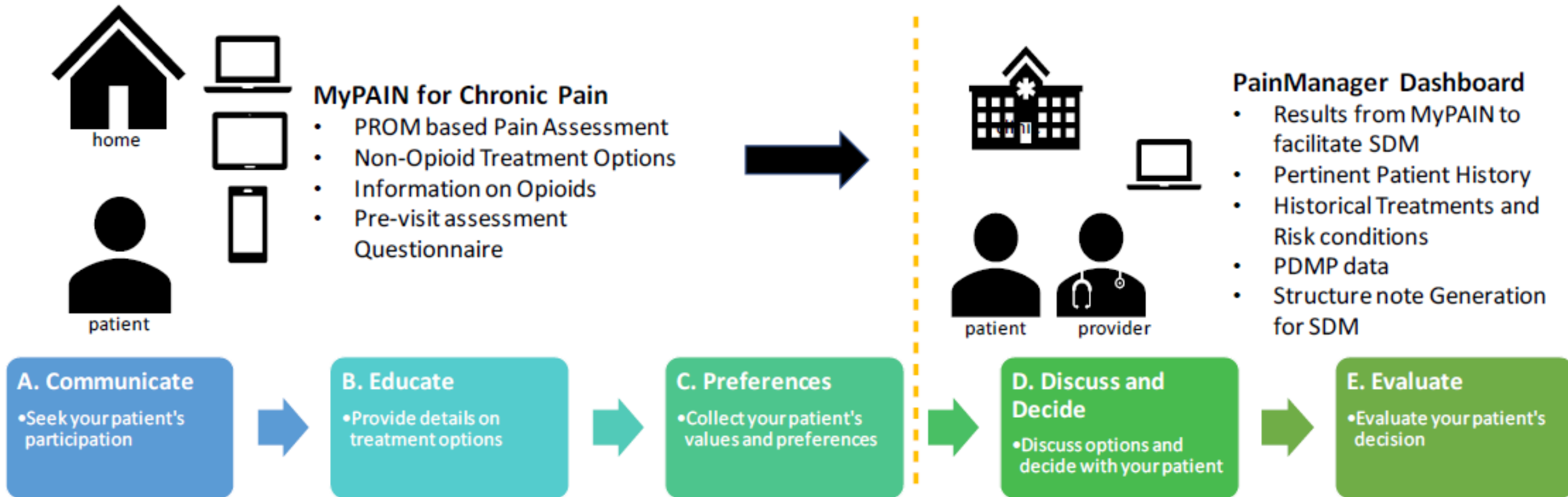
# Agenda

- CDS4CPM Project Background – Joshua Richardson
- Stewardship Challenges and Recommendations – Laura Marcial
- Stewardship Perspectives – Rob McClure and Rob Reynolds
- Open Discussion

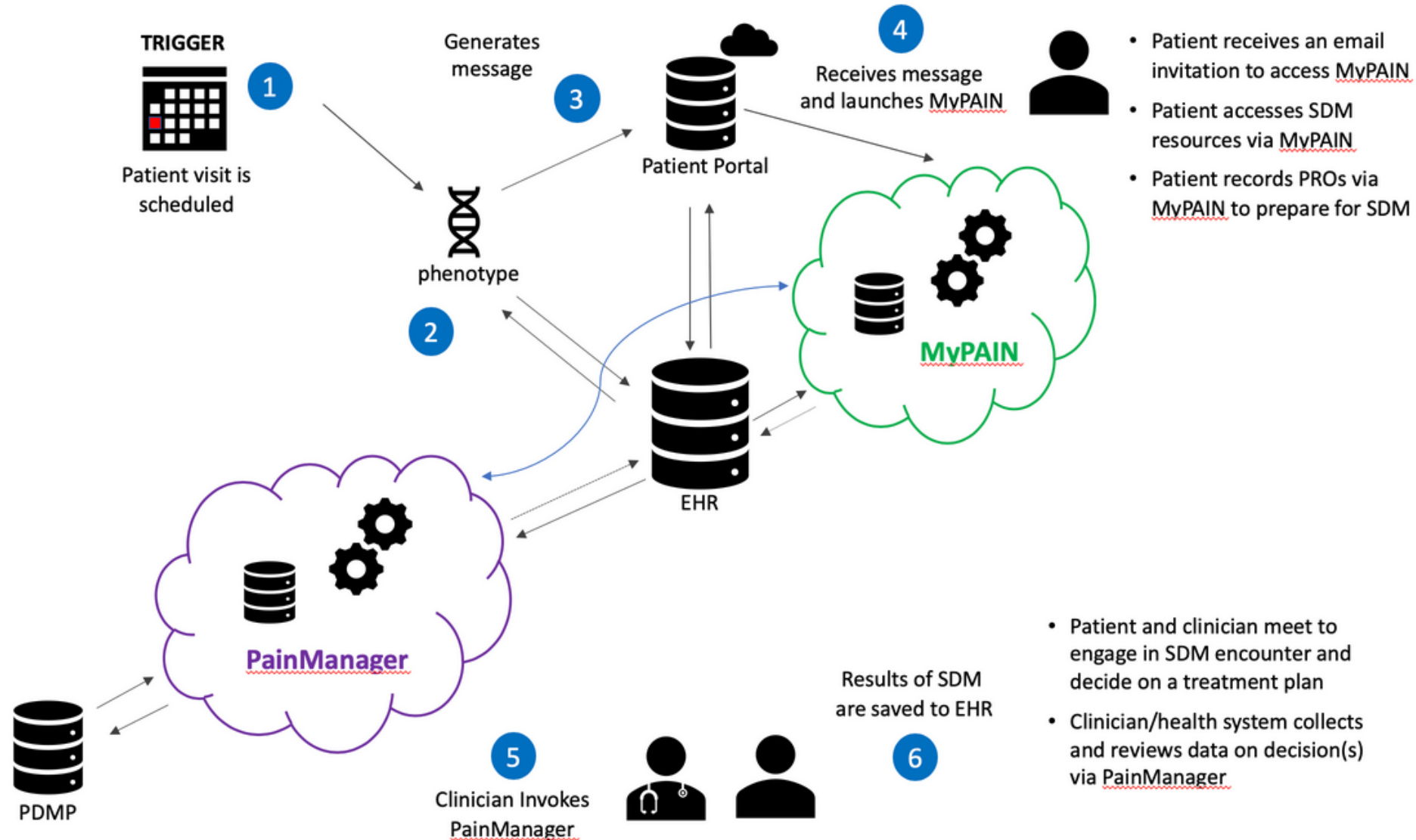
# Questions We've Been Asking Ourselves

- What is the current thinking on conformance to or divergence from CDS Connect artifacts (e.g., “forking” and “breaking the fork”)?
- From a development perspective, what rules, tools, or resources would be helpful to efficiently and economically steward implemented CDS artifacts?
- In a future ecosystem, how is this stewardship managed, especially to foster trust in CDS artifacts?
- Based on prior experience with “open source” tools, or other CDS artifacts to date, what models (e.g., business or otherwise) would best sustain effective stewardship?

# Aim to Use CDS that Promotes Shared Decision-Making (SDM) for Chronic Pain Management

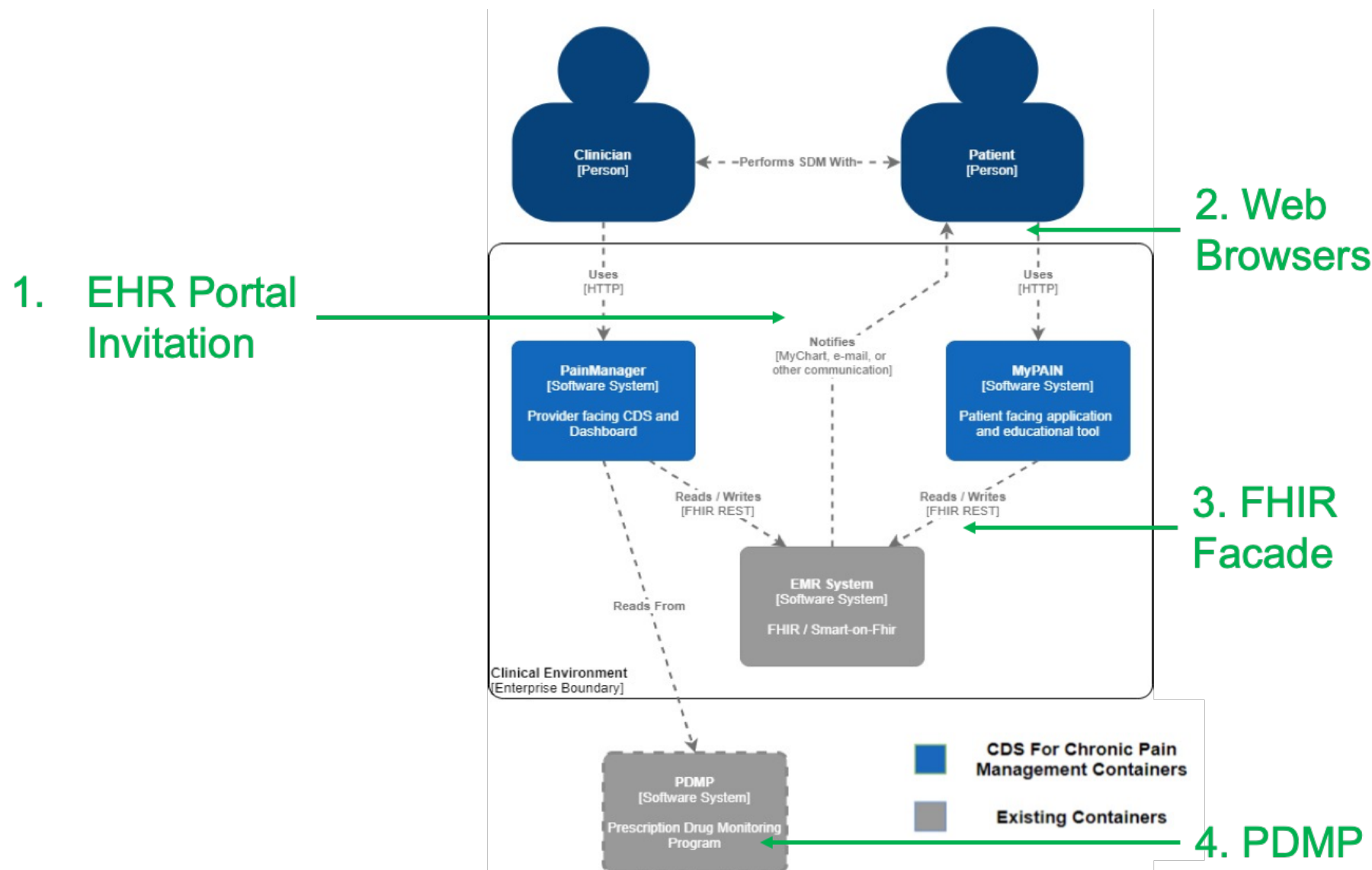


# Overall System Architecture





# EHR Interactivity Achieved via a “FHIR Façade”



# MyPAIN for Capturing Patient Data

We'd like to ask you a few questions about your pain and how it has affected you.

Please describe the worst pain you have had in the past 7 days.

**About my Goals**

We'd like to know more about you and your activity goals (for example, I'd like to be able to walk without pain). Please describe, in your own words, your most important activity goals.

**What are your most important activity goals?**

Your most important activity goals...

**Review and Submit**

Thank you for using MyPAIN, FirstName

A summary of your responses is included below:

**Treatments**

You have noted trying the following in the last 6 months to help with your pain:

Treatment	Did it work?
Stretching	somewhat
Sleep or position aids	somewhat
Over the counter cremes	very much
Yoga	somewhat

**MyPAIN**

# PainManager for Displaying Patient-reported and EHR Data



## PainManager

Pertinent Conditions

Current Pain Treatments

Urine Drug Screening ⚠️

Shared Decision Making

### Factors to Consider in Managing Chronic Pain

Pertinent Conditions

Current Treatments

Urine Drug Screening ⚠️

Shared Decision Making

NOTE: This summary is not intended for patients who are undergoing end-of-life (hospice or palliative) or active cancer treatment.

The information below was provided by the patient on **XX/XX/XXXX** using the MyPAIN application:

#### ACTIVITY GOALS

I want to be able to walk to my mailbox free of pain. I'd like to get back to enjoying a walk in the neighborhood with my grandkids.

#### PAIN LOCATIONS

Location	Pain Y/N	Type
Head	Y	burning
Neck	Y	burning
Shoulders	Y	aching

#### ACTIVITY BARRIERS

On a bad day, I have trouble putting on my clothes or getting a shower. I need to take care of my cat but have trouble just taking care of myself some days.

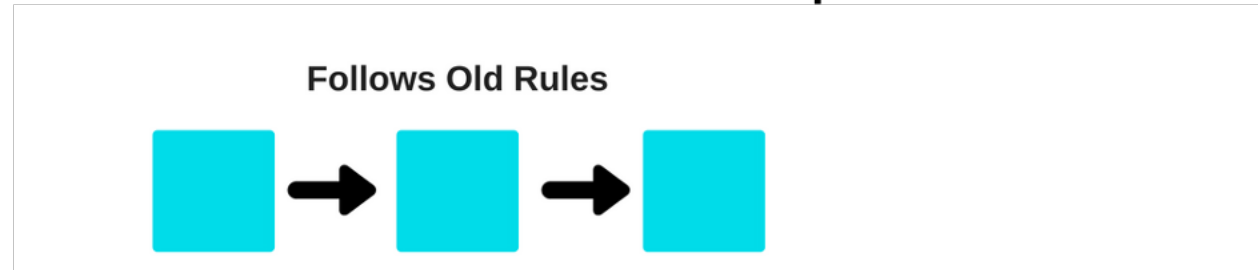
#### PAIN INTENSITY AND INTERFERENCE

Question	Response
How <b>intense</b> was your pain at its worst?	Somewhat
How intense was your average pain?	Somewhat
What is your level of pain right now?	Somewhat

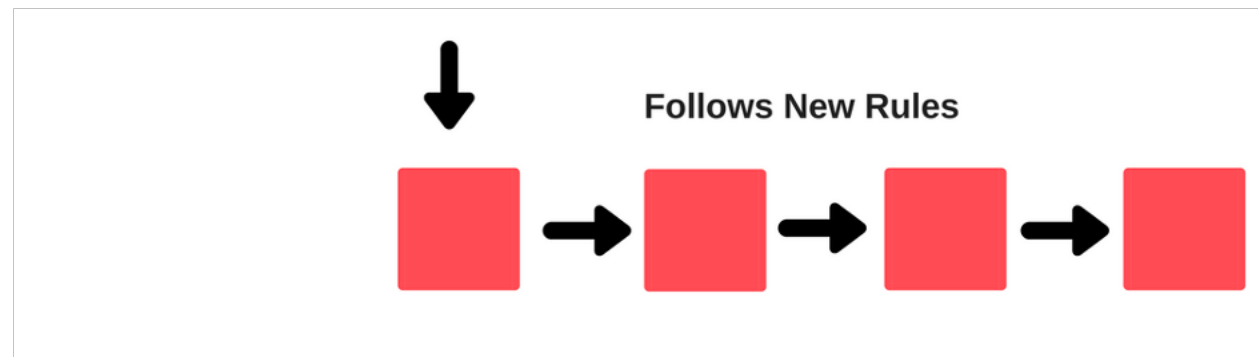
# **Stewardship Challenges and Recommendations**

# Who “Owns” the Changes that Result from Implementing Existing Artifacts?

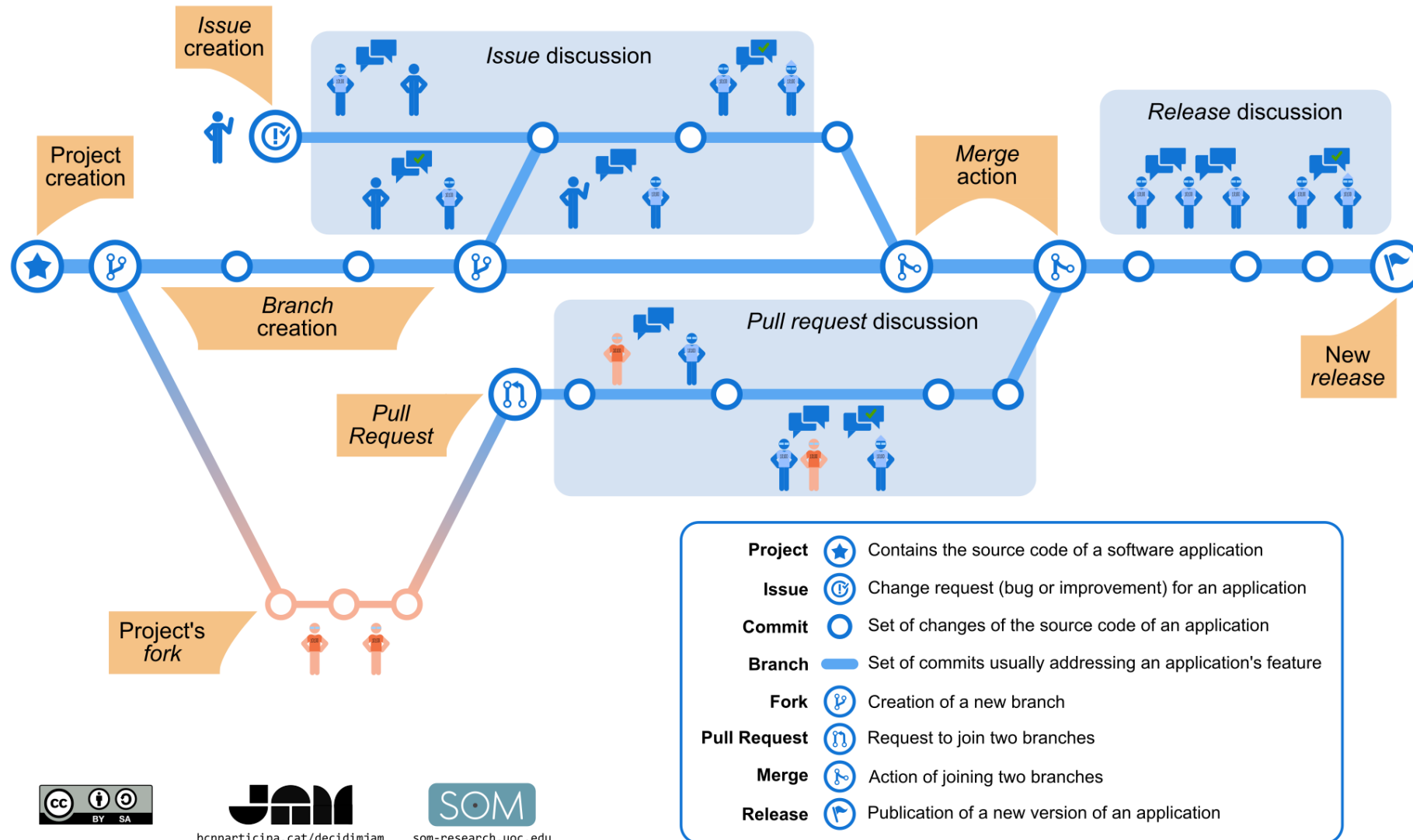
Soft Fork = backwards compatible



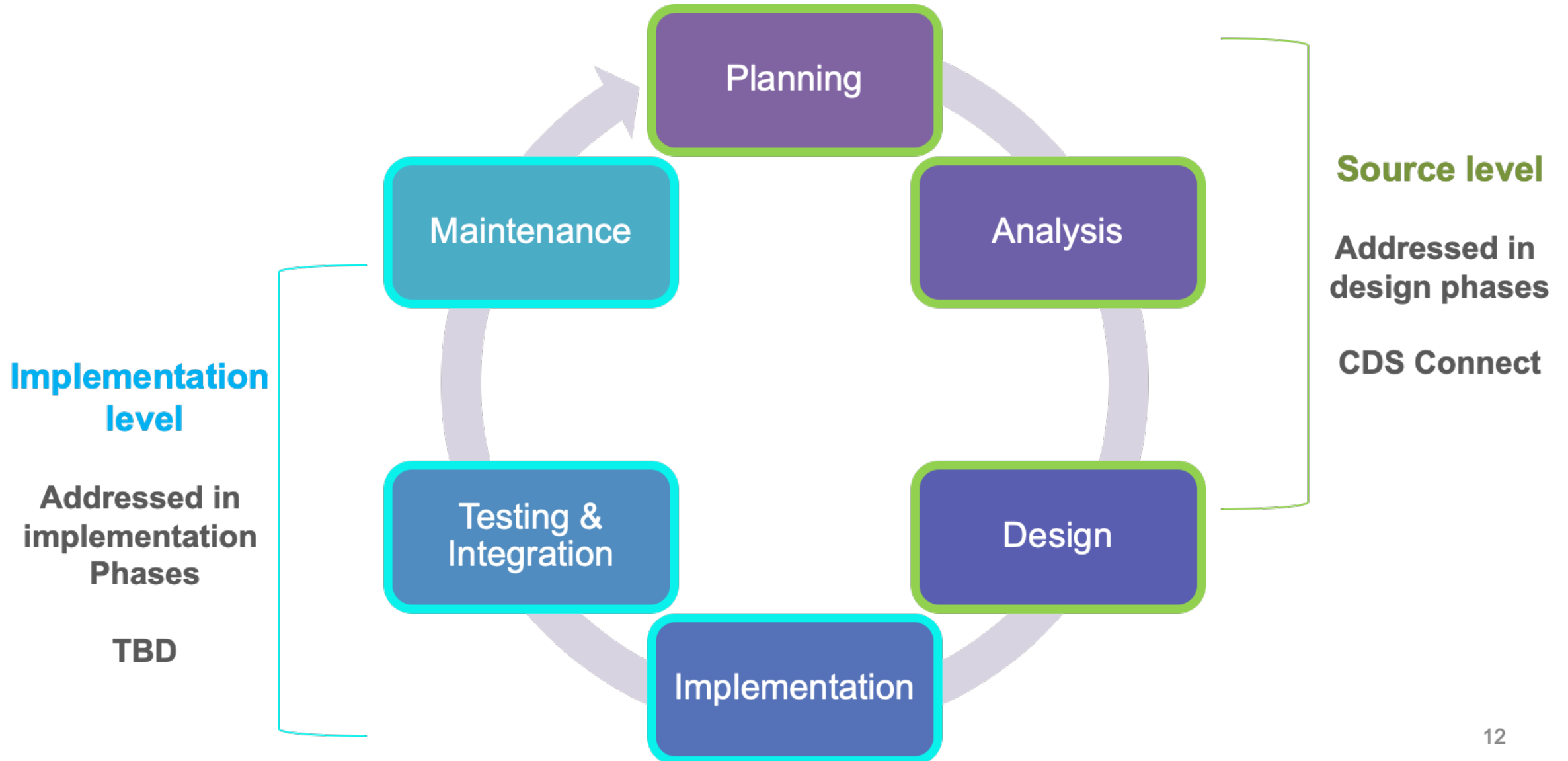
Hard Fork = NOT backwards compatible



# How Does GitHub Handle “Forking”?



# SDLC and Stewardship Implications



# Example 1:

## Stewardship for cloud-based artifacts



**Goal:** To develop and launch a cloud-based app for project sites to pilot during a 4-month period

### Challenges:

- ▶ Communicating with the EHR vendor the underlying purpose of the artifact and that it's for non-profit research purposes
- ▶ Determining who (e.g., developer, site or other) and how a unique identifier for the application gets assigned by the vendor Determining the role and responsibilities for whichever party is the official client

**Solution:** Proceed with a site-based rather than a cloud-based approach



## Example 2: Stewardship for linked terminologies and/or value sets



**Goal:** To either use existing artifact vocabularies or create locally based codes to meet the needs of our artifact

### **Challenges:**

- ▶ Determining the party to be listed as VSAC's steward of record
- ▶ Determining and documenting the handoff of stewardship

**Solution:** In progress, likely assign temporary stewardship to one project organization on an interim basis

## Example 3: Sustainable stewardship beyond the project period



**Goal:** To promote long-term use of the artifact at the project sites

### **Challenges:**

- ▶ Determining the steward of the artifact after the project ends (e.g., each site, third party or other)
- ▶ Defining site plans for using the artifact after the project OR de-commissioning the artifact
- ▶ Determining services and costs to support stewardship beyond the project period

**Solution:** Stewardship is currently assigned to the developer (Alphora) for the project period

# Stewardship Challenges

- CDS Connect is a repository of candidate artifacts and has guidelines for deposit but these guidelines do not typically extend to implementation
- Differing models exist on how to manage integration on the vendor side
- There is a need to anticipate any security and risk assessment concerns, like regular and robust vulnerability scans for cloud-based solutions, implementing organizations might have
- Underlying value sets, uses of terminologies and implementations of clinical practice guidelines are all good examples of items which will require some ongoing maintenance for these artifacts some of which are managed at the repository level but many of which will be customized on implementation
- Each implementing site may face issues associated with both pulling and posting data via API when implementing these artifacts

# Stewardship Challenges – cont.

- Research initiatives are typically funded for a time-limited period and there is often no plan or funding to perpetually maintain/steward knowledge artifacts after funding
- In a cloud-based and open-source model, need to create space for a role with appropriate costs and fees
- This issue of stewardship is part of a bigger issue about knowledge management at the health system level
- There may be real liability concerns that make this issue critical to address in the short term, such as a change to a guideline or recommendation that is implemented as CQL logic in some form which does not get or manually updated based on that change
- This stewardship role is especially important while EHR vendor support of APIs is limited but may be less necessary once these barriers are resolved

# Stewardship Recommendations

- It could be useful to develop an approach to stewardship that focuses on “levels” with a “source-level” steward for an artifact that is meant to be shared broadly and an “implementation-level” steward for a version that is implemented in a particular site
- CDS Connect does have a designation for an artifact that is intended for research only and not for implementation in patient care (e.g., may not be updated) and this can be modified should an artifact be brought into the clinical setting
- Funding agencies should focus on supporting the long-term maintenance of useful and usable artifacts
- Current EHR vendor business models generally presume a for-profit approach which may not always be the case. For more ‘public good’ or research-oriented implementations, it would be good to encourage vendors or other offerors of CDS artifacts to develop pricing structures and use agreements that addresses this type of use.

# Stewardship Recommendations – cont.1

- Guidelines for implementation and maintenance of shareable CDS artifacts could enhance the conceptual role of stewardship and support ongoing research activities of this type
- These guidelines should:
  - ▶ include specific guidance on management of underlying value sets, uses of terminologies and implementations of clinical practice guidelines
  - ▶ lay out and incorporate lessons learned on various implementation options (e.g., locally installed and hosted versus cloud hosted)
  - ▶ address concerns about liability, perhaps with the use of no-liability type licenses, associated with instantiated artifacts
  - ▶ provide guidance on implementing these artifacts, including challenges and solutions to both pull and post data should be included
  - ▶ proactively address specific security standards

# Stewardship Recommendations – cont.2



- For a steward offering cloud-based access to executable CDS artifacts, secure access would need to be part of the steward's responsibilities
- Some practices simply don't have the information or knowledge management capabilities needed to support stewardship and will find these services valuable if cost effective
- Best practices around knowledge management including details around acquiring, implementing, tracking, evaluating, and maintaining knowledge artifacts should be considered as potentially core responsibilities of the steward
- Explore how the stewardship role might evolve as EHR vendors improved their support of APIs

# Other Perspectives on Stewardship



# Conclusions

- Stewardship is a means to sustain knowledge artifacts for the entire life of a given artifact
- Stewardship needs occur in different phases and at different levels throughout the project lifecycle
- How stewardship is viewed and managed by EHR vendors needs to be better understood or articulated
- Self-sustaining business models that support long term maintenance of knowledge artifacts is needed to complement the implementation of shareable artifacts

# Contact Us

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- Rob Reynolds, Alphora – [rob@alphora.com](mailto:rob@alphora.com)

# WHAT'S NEW WITH CDS CONNECT

David Winters and Chris Moesel, MITRE

# Updates and New Features



- Authoring Tool
  - ▶ External CQL libraries can now be updated in place
  - ▶ Updated AHRQ header and footer
  - ▶ CPG on FHIR Library export (in progress)
  - ▶ External CQL Function support (in progress)
  - ▶ Bug fixes and usability improvements
- Repository
  - ▶ Updated AHRQ header and footer
  - ▶ New user sign-up form, landing page, and toolbar
  - ▶ Updated FAQ entry on review and update process
  - ▶ CDS Connect video
  - ▶ CPG on FHIR work continues
  - ▶ Security patches and bug fixes
- Link to CDS Connect: <https://cds.ahrq.gov/cdsconnect>

# **ANNOUNCEMENTS, OPEN DISCUSSION AND CLOSE-OUT**

Maria Michaels

Office of Public Health Scientific Services  
Centers for Disease Control and Prevention