



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



# October 2019 CDS Connect Work Group Call



# CDS Connect

# Agenda



3:00 – 3:05	<b>Roll Call, Bev Acree (MITRE)</b>
3:05 – 3:10	<b>Review of the Agenda, Maria Michaels (CDC)</b>
3:10 – 3:25	<b>CDS Connect Accomplishments, Lacy Fabian (MITRE)</b> Achievements and Impacts Year 1 September 2016 – September 2017 Year 2 September 2017 – September 2018 Year 3 September 2018 – September 2019 Summary Metrics Question and answer period
3:25 – 4:15	<b>Share and discuss CDS Connect priorities for September 2019-2020, Lisa Ide (MITRE)</b> What's Next for CDS Connect? Sources of Proposed Enhancements General Themes and Attributes for Proposed Enhancements Discussion: Work Group Prioritization Input Question and answer period
4:15 – 4:30	<b>Open Discussion and Close Out, Bev Acree (MITRE)</b> Open discussion and announcements <b>Attending Patient-Centered Clinical Decision Support Annual Conference</b> Concluding comments, review next steps and adjourn

- *CDS = Clinical Decision Support*

# CDS CONNECT ACCOMPLISHMENTS

# Goal

- Advance evidence into practice through CDS and to make CDS more shareable, health IT standards-based, and publicly available
  - ▶ Developing prototype infrastructure to create and share CDS, including coded clinical knowledge, implementation guides, and a publicly accessible repository of CDS resources or “artifacts”

# Year 1 September 2016 – 2017 (1 of 2)



- CDS Repository
  - ▶ Web-based software service that offers structured data, aggregated resources, and the ability to leverage the international standard Clinical Quality Language (CQL)
    - CDS contributors and CDS consumers have equal access to knowledge driven by cutting-edge research implementing evidence-based practice into CDS
    - To balance limited resources organizations can leverage advanced technical resources and secure information critical to the CDS implementation process
- Advisory Work Groups to support development, implementation and inclusion of cholesterol management CDS artifacts
- CDS Authoring Tool
  - ▶ Prototype development of tool that leverages interoperable standards so that CDS can be written to common specifications
    - Easier to compose and express CDS artifacts, this software improves the quality of CDS design, accelerates the velocity of CDS development, ensures open access to supporting CDS resources, and enables integrated software systems for interoperable CDS
- Formed a monthly Work Group meeting attended by a broad array of CDS stakeholders

- Impact

- ▶ Proof-of-concept

- Will lead to the increased use of findings in clinical healthcare practice
- Foundation for improved healthcare outcomes via CDS creation, discovery, integration, and implementation using interoperable data standards to express the logic of the CDS for use by health IT software systems

# Year 2 September 2017 – September 2018 (1 of 2)



- Advanced to Production-level
  - ▶ Repository
  - ▶ CDS Authoring Tool
- Demonstrate repeatable CDS development and the Repository's capability to host and share
  - ▶ Pain Management Summary
    - Developed, tested, and implemented
- Hosted a monthly Work Group meeting attended by a broad array of CDS stakeholders
- Conducted outreach via conference presentations, demonstrations, webinars, and strategic discussions to inform and maximize work efforts and increase adoption of the CDS Connect systems

- Impact

- ▶ Production-level

- Developed into robust, valuable assets to the health care and CDS communities
- Framework for improving health care outcomes via CDS creation, discovery, integration, and implementation using evidence-based interoperable CDS artifacts

- ▶ “Pain Management Summary”

- Reduced clinician burden by compiling clinical data that normally needs to be searched for across several sections of an EHR
- Documentation and sharing of the development and implementation processes promotes transparency and increased awareness to future developers and implementers — furthering efficiency and effectiveness

*Detailed final report available on the [CDS Connect website](#)*

- Repository Enhancements
  - ▶ Application Programming Interface (API) to streamline the import and export of CDS artifacts
  - ▶ Metadata fields provided to describe each artifact
  - ▶ Browse and search for artifacts (i.e., artifact discovery)
  - ▶ Expanded capabilities for user accounts
- Authoring Tool Enhancements
  - ▶ Enhancing the user interface
  - ▶ Supporting an additional version of FHIR (STU3)
  - ▶ Importing and referencing external CQL libraries
  - ▶ Allowing users to annotate data elements
  - ▶ Expanding the testing capabilities

# Year 3 September 2018 – September 2019 (2 of 4)



- **Prototype Tools**
  - ▶ **CQL Testing Framework**
    - Allows CQL authors to develop and run test cases for validating CQL-based CDS logic
  - ▶ **Enhanced CQL Services**
    - Open-source service framework for exposing CQL-based logic using the HL7 CDS Hooks application programming interface
      - Allows implementers to integrate CQL-based CDS into systems that do not yet support CQL natively
- **Continued a monthly Work Group meeting attended by a broad array of CDS stakeholders**
- **Conducted outreach via conference presentations, demonstrations, webinars, and strategic discussions to inform and maximize work efforts and increase adoption of the CDS Connect systems**
- **Developed four patient-facing CDS artifacts based on U.S. Preventive Services Task Force (USPSTF) recommendations**
  - ▶ Developed, tested, implemented with pilot partner

- Proactively Considering Sustainment of CDS Connect
  - ▶ Analysis of CDS Connect sustainability options
    - Information gathering (outreach discussions and research)
    - Consideration of various models such as private, public, and public/private partnership model

# Year 3 September 2018 – September 2019 (4 of 4)



- **Impact**

- ▶ **Open Source Software**

- Enhanced Repository and CDS Authoring Tool
- Prototype Tools
  - Advancing evidence into practice through the dissemination of shared, interoperable CDS and the development of publicly available tools and resources to facilitate integration of CDS into health IT systems

- ▶ **Lessons Learned**

- Contributing to a learning health community by documenting lessons learned across all project activities and publishing the lessons learned

- ▶ **Public-Private Partnership Model recommended**

- Under consideration by AHRQ

*Detailed final report available on the [CDS Connect website](#)*

# By the Numbers

## Repository

### 57 artifacts published

- 0 Narrative
- 7 Semi-structured
- 49 Structured
- 1 Executable

### 10 unique contributing organizations

### 70 registered accounts

- Non-MITRE/Non-AHRQ: 51

## Authoring Tool

### 205 registered accounts

- Non-MITRE/Non-AHRQ: 176

## Website

Over 17,000 unique page views and 75,000 total page views since deployed

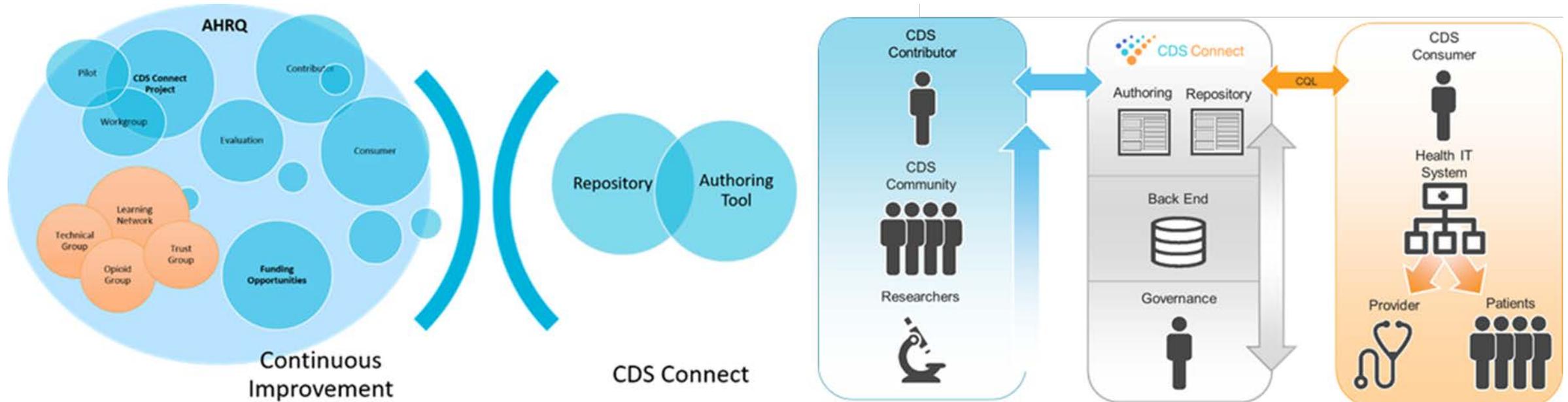
Hundreds of site visits and over 5,000 downloads since deployed

Artifact and summary pages are the most popular

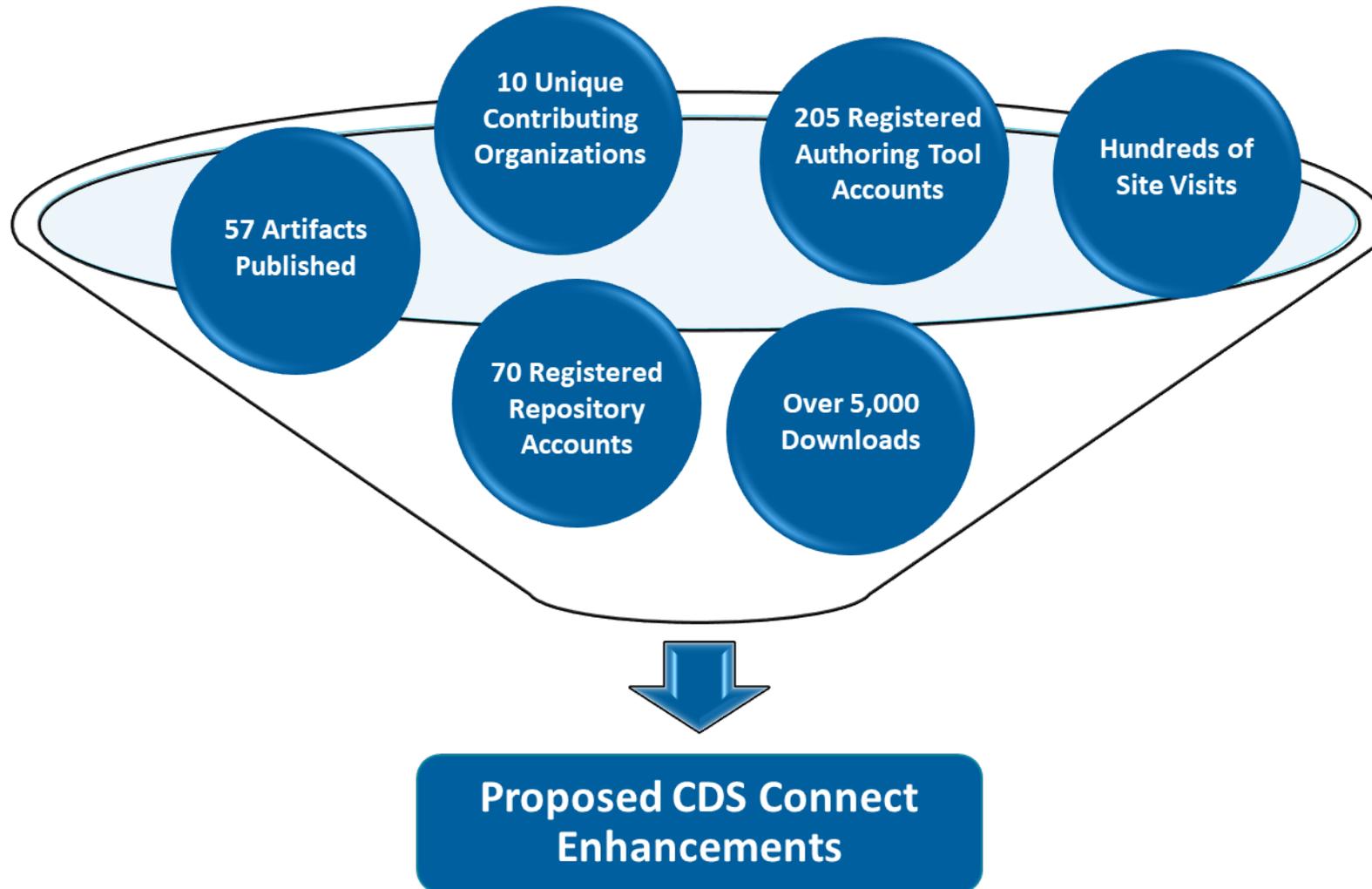
# **CDS CONNECT PRIORITIES FOR SEPTEMBER 2019 – 2020**

# What is Next for CDS Connect?

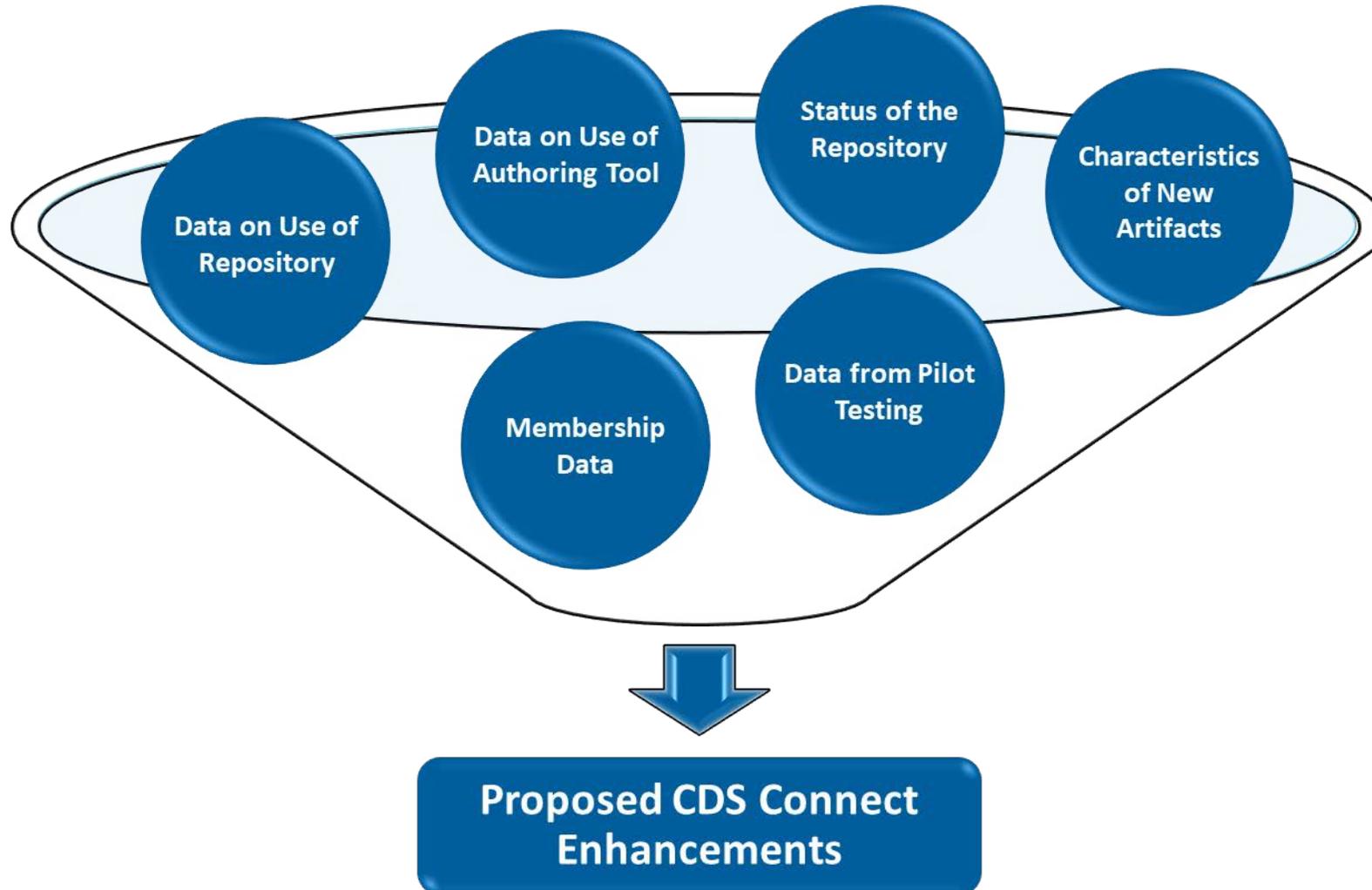
- Focus Year 4 improvements on highest priority target outcomes
  - ▶ Build upon past success
  - ▶ Leverage lessons learned
  - ▶ Incorporate feedback from valued stakeholders



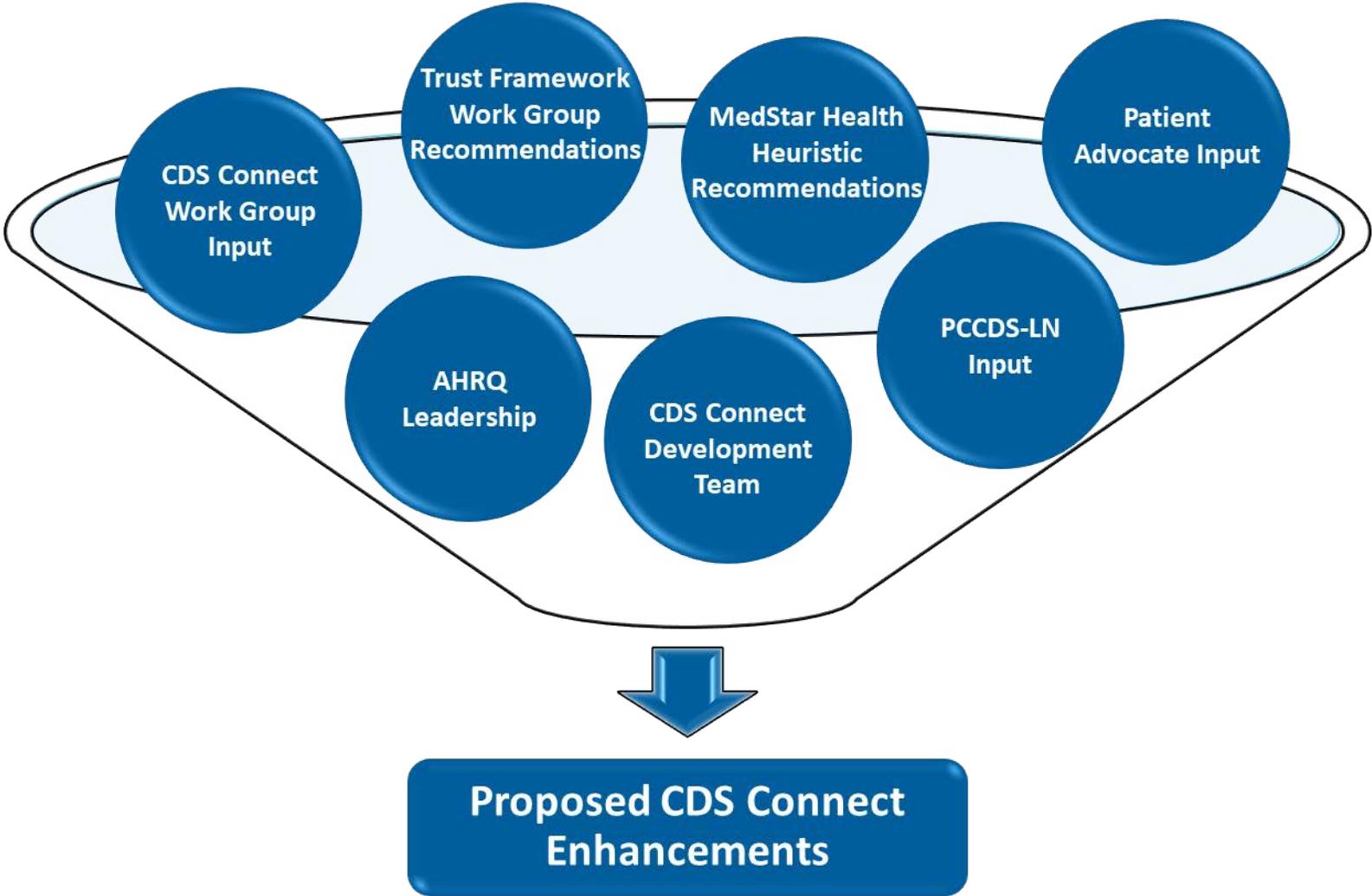
# Past Success



# Lessons Learned



# Feedback from Valued Stakeholders



# Why Prioritize?

**“When everything is a priority,  
nothing is a priority.”**

*Karen Martin*

**“You’ve got to start with the  
customer experience and work  
backwards to the technology.”**

*Steve Jobs*

**“Things which matter most must  
never be at the mercy of things  
which matter least.”**

*Johann Wolfgang von Goethe*

- Focus enhancement efforts on continued growth and impact of CDS Connect
- Reduce risks
- Manage constraints
- Deliver maximum value for AHRQ and the CDS ecosystem

# General Themes for Prioritization

1. Enforce Standards Compliance (Artifacts)
  - ▶ Update artifacts already in the Repository to ensure compliance with applicable standards
  - ▶ Ensure CDS Connect provides consumable CDS now and in the future
2. Enforce Standards Compliance (Repository)
  - ▶ Define and implement submission coding and metadata standards
  - ▶ Ensure CDS Connect provides consumable CDS now and in the future
3. Ensure Artifact Currency
  - ▶ Update / validate artifacts to ensure they reflect the most recent clinical guidelines
  - ▶ Ensure that CDS Connect artifacts provide value to the CDS ecosystem
4. Expand the Repository
  - ▶ Improve usability and workflow and support development / addition of new artifacts
  - ▶ Expand the footprint for CDS Connect as a primary government source for CDS artifacts
5. Expand the Use of Existing Artifacts
  - ▶ Improve usability and update the Repository to support expanded use of existing artifacts
  - ▶ Demonstrate the value of CDS Connect
6. Increase Trust
  - ▶ Implementing recommendations from the Trust Framework Work Group
  - ▶ Enhance stakeholder confidence in CDS Connect

# Specific Trust Attributes for Prioritization

1. Competency
  - ▶ An actor is deemed to be competent in the role played in the CDS ecosystem.
2. Compliance
  - ▶ A knowledge artifact should conform to defined standards and criteria including copyright and intellectual property.
3. Consistency
  - ▶ A knowledge artifact should repeatedly generate expected results over time when given requisite inputs.
4. Discoverability & Accessibility
  - ▶ The evidence behind an executable knowledge artifact is documented (discoverable) from metadata associated with the artifact.
5. Evidence-based
  - ▶ The evidence instantiated within an artifact must apply to the clinical condition it is meant to support.
6. Feedback and Updating
  - ▶ Stakeholders have the functional ability to provide timely feedback and suggest improvements to a knowledge artifact.
7. Organizational Capacity
  - ▶ An organization that sponsors knowledge artifact development or implementation (or both) should have the necessary funding, staffing, and resources to maintain a knowledge artifact and measure its effect(s).
8. Patient-centeredness
  - ▶ When possible, a knowledge artifact should leverage patient-centered outcome research findings and/or patient-specific information to support decisions.
9. Transparency
  - ▶ A knowledge artifact should be applied and used ethically to clearly convey all potential conflicts of interest and disclosures of interest related to its development or recommendation to detect bias or discrimination in its use.

# Discussion: Work Group Prioritization Input

**Mo**

Must Have

*The most vital things you can't live without. Critical to the success of CDS Connect this year.*

**S**

Should Have

*Things you consider important, but not vital. Try to include this year if possible.*

**Co**

Could Have

*The "nice to haves". Not critical to the success of CDS Connect this year, but still wanted.*

**W**

Won't Have

*Things that provide less value. The least critical to the success of CDS Connect this year.*

# Discussion: Weighing Priorities (1 of 2)



## ▶ How would you rate the relative importance of each General Theme this year?

## ▶ Why?

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<b>Mo</b>	Must Have <i>The most vital things you can't live without. Critical to the success of CDS Connect this year.</i>
<b>S</b>	Should Have <i>Things you consider important, but not vital. Try to include this year if possible.</i>
<b>Co</b>	Could Have <i>The "nice to haves". Not critical to the success of CDS Connect this year, but still wanted.</i>
<b>W</b>	Won't Have <i>Things that provide less value. The least critical to the success of CDS Connect this year.</i>

# Discussion: Weighing Priorities (2 of 2)



## ▶ How would you rate the relative importance of each Trust Attribute this year?

### ▶ Why?

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

# Announcements



- Attending the Patient-Centered Clinical Decision Support Annual Conference in DC on October 21<sup>st</sup>
  - ▶ If you'd like to connect to further discuss CDS Connect, please let us know.