

# **Exchange Network Forum**

**Partnerships with EPA, States, Tribes & Territories**

**Thursday, May 9, 2024**

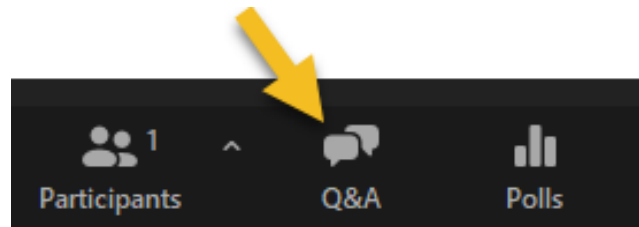
# Format

- **This Forum is an open meeting.** We want to encourage open dialogue. Please be respectful.
- **You will hear from Tribes, States, and EPA.** Calls are divided into thirds, with time for each group to push updates and request feedback.
- **We will send polls, surveys to gauge interests.** This is a call run by Exchange Network partners for Exchange Network partners.

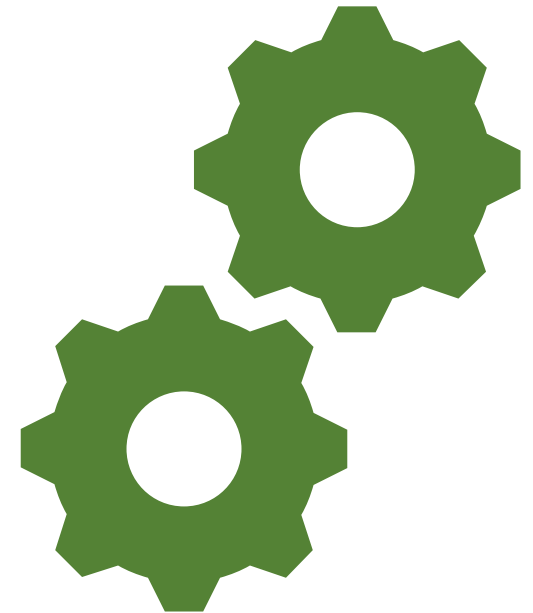


# Logistics

- **Introduce yourself!** If or when you speak, please tell us your name the organization you represent.
- **Submit questions using Zoom Q/A Feature.** We will do our best to answer questions during the call.

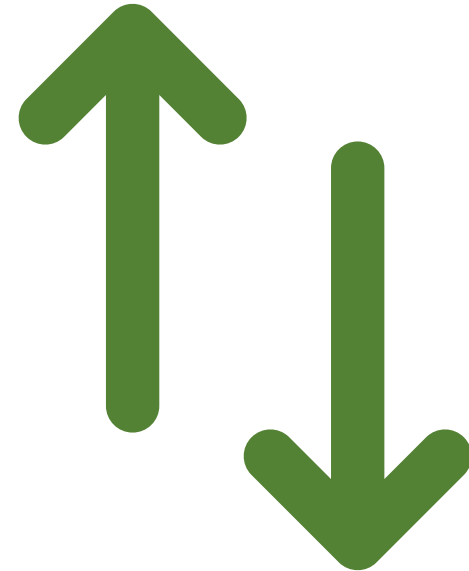


- **Use the chat to share ideas.** You can message the (co)hosts and participants directly.



# Meeting Guidelines

- **Choose to be present and participate**
- **Engage actively, raise your hand to speak**
- **Maintain a respectful, open space to share and discuss ideas**
- **Assume positive intent**
- **Be curious and open to new ideas**
- **Listen and question with a desire to understand**
- **Stay on topic**
- **Turn on your camera when speaking**
- **Meetings will be recorded**

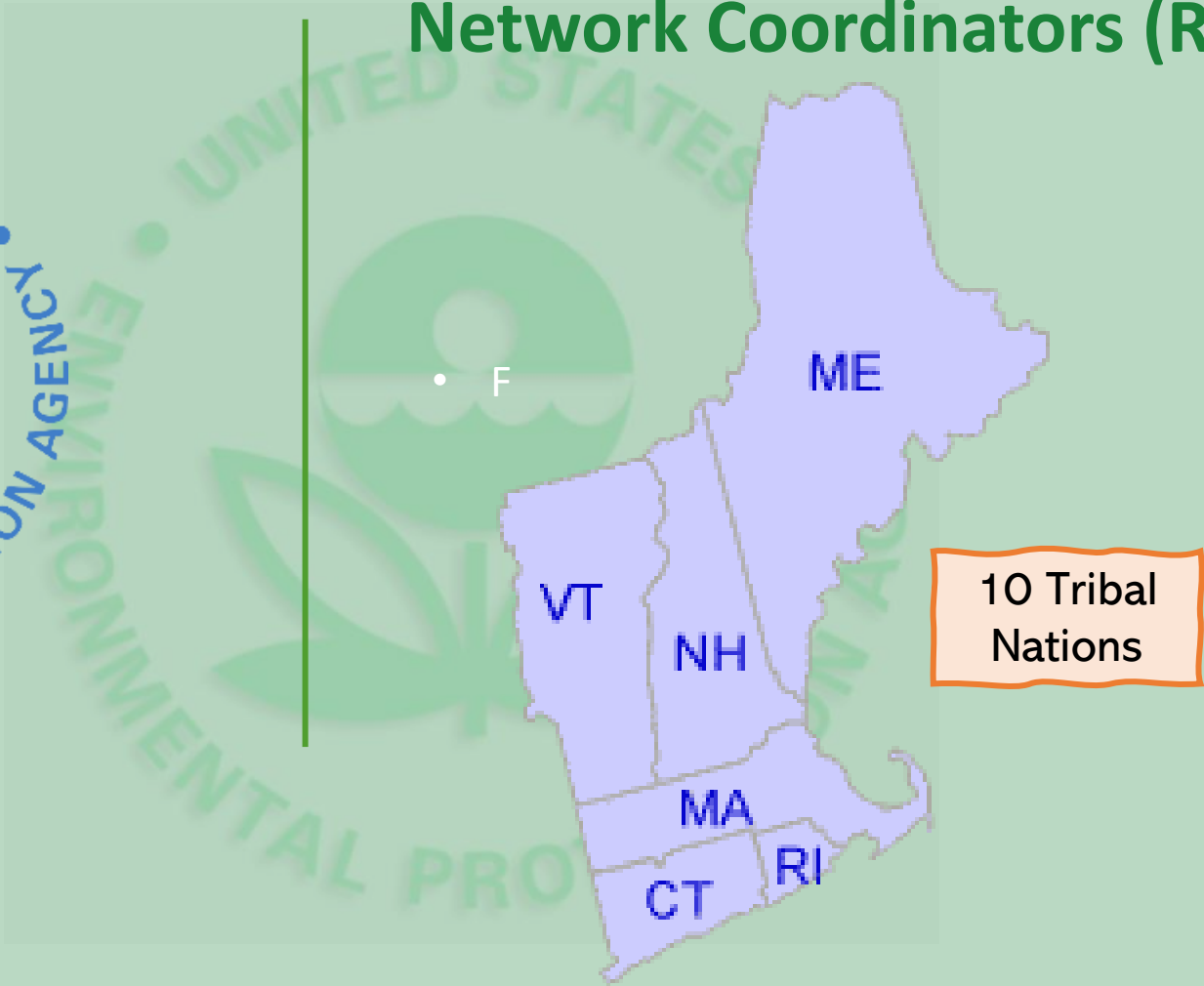


# Agenda

- **Welcome**
- **Meet Your EN Coordinator: Region 1**
- **FY24 EN Grant Solicitation Notice**
- **Environmental Information & Innovation (E2i) National Meeting**
- **Data Exchanges 101**
- **Open Forum**



# EPA Region 1 – Regional Exchange Network Coordinators (RENCs)



# R1 RENC Overview

Name:

Steven Zailskas

Job Title:

IT Specialist

Time at the Agency:

4 years

Time in the RENC Role:

4 years

Other Job (non-RENC) Roles:

SharePoint Support, Web Technical Specialist, Power Apps Developer, GIS, Data FRS Steward

Contact Information:

Zailskas.Steven@epa.gov

617-918-1959



# R1 RENC Overview

Name:

Ed Kim

Job Title:

IT Specialist

Time at the Agency:

> 35 years

Time in the RENC Role:

10 Years

Other Job (non-RENC) Roles:

TOCOR Contracts, LPO, CUI Liaison, GIS,  
Data (FRS Steward, Viz & Analytics)

Contact Information:

Kim.ed@epa.gov

617-918-1945





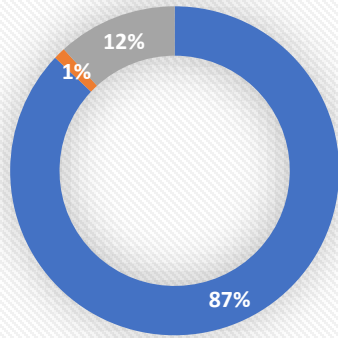
# R1 Regional Overview

13 Current Open Grants

85 Total Grants since 2002

Popular EN Project Opportunities  
(2019 – 2023)

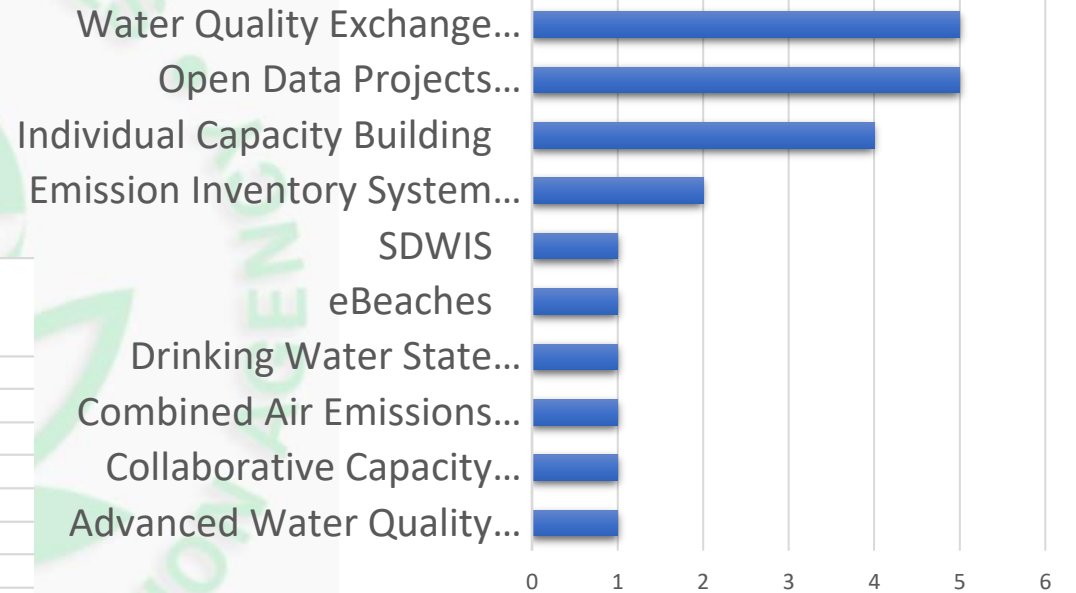
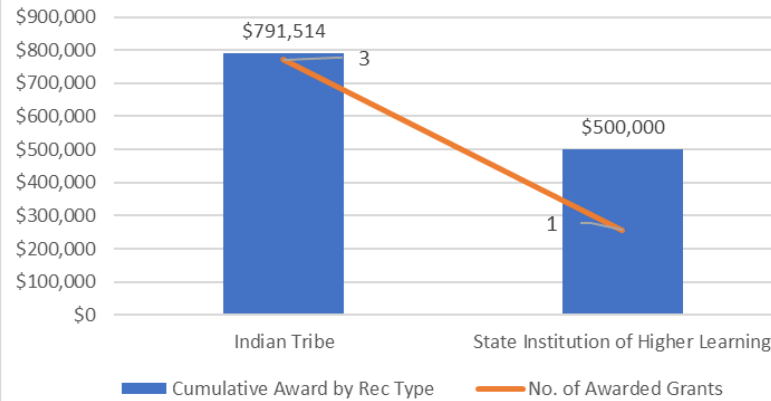
### R1 EN Grant Recipients by Government Type



■ STATE ■ OTHER\* ■ TRIBE

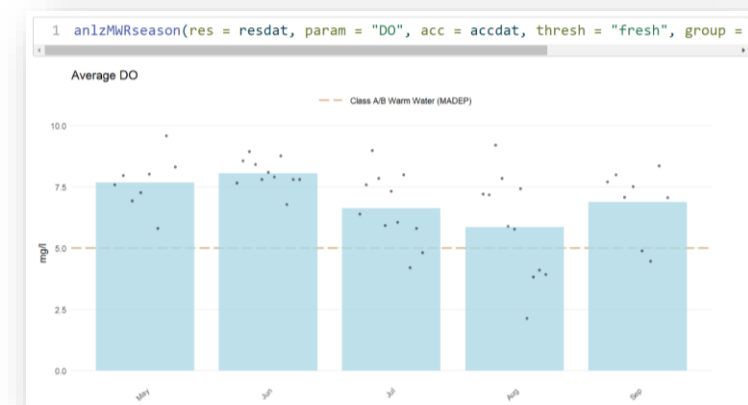
\*Other recipient types are instrumentalities of the state or tribe

### R1 EN Grant 2023 Awards



# R1 Project Highlight

Grantee Org:	MassBays National Estuary Partnership / UMass Boston
Award Year:	2021
EN Partnership Grant?	N
Project Title:	<i>“Leveraging Citizen Science Data to Improve Massachusetts Waters”</i>
Project Description:	Developed <b>MassWaterR</b> , an R-based package for conducting QA/QC, analysis, and WQX upload of community-based water quality data. Roll-out included trainings, support, and a Community of Practice forum. The tool has been taken up by dozens of groups and agencies near and far; resulting in new data in the WQP.



# FY24 EN Grant Solicitation Notice

- **The FY24 EN Grant Solicitation Notice is LIVE!**  
Applications are due no later than Thursday, May 23<sup>rd</sup>, 2024 at 11:59 PM ET.
- **Webinars on FY24 EN Grants were held ([access information](#)):**
  - April 25<sup>th</sup> (General) at 3 PM ET
  - April 30<sup>th</sup> (General) at 3 PM ET
  - May 2<sup>nd</sup> (Tribes) at 3 PM ET
- **Contact the EN Grant Program Leads for more information:**
  - Erin McGowan ([mcgown.erin@epa.gov](mailto:mcgown.erin@epa.gov))
  - Aimee Awad ([awad.aimee@epa.gov](mailto:awad.aimee@epa.gov))



# National Meeting

- **Environmental Information & Innovation (E2i).** National meeting for the environmental protection community that builds on a long-standing meeting series.
- **Abstracts are in!** Thank you for submitting your ideas. We are currently curating our agenda and additional session based on your feedback during the EN Forum.
- **Registration will open shortly!** Meeting website will be shared through ECOS & TXG Listservs.





# Data Flows 101

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Exchange Network Forum

May 9, 2024

What are your experiences in  
using others' data?

# Agenda

- Background
  - What are we talking about?
  - Why are some principles for sharing data – The ‘Data Flow’ concept
- Discussion: How do these principles apply for the future of the EN?

What  
are we  
trying to  
achieve?

**The EN Exists to:** “...provide a way to share data in a standardized, open format, make data exchange more efficient and less costly. The Network empowers Partners to overcome the hurdles to effective data exchange so they can make better decisions—faster.”

(<https://exchangenetwork.net/about/why-we-exist/>)



Principles  
Behind  
Sharing  
Data

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Data Model / Standards

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Common Terms

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Communication Protocols

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Shared Authentication



CANADA	CAD	0.9512
CHINA	CNY	7.3169
EURO	EUR	0.6644
JAPAN	JPY	109.00
SINGAPORE	SGD	1.3712
HONG KONG	HKD	7.0043
NEW ZEALAND	NZD	1.1646
	MYR	3.77



# The World is Built on Standards!

- When people agree to do things in a common way it opens up many opportunities for everybody to do things better.
  - Technology standards: like Bluetooth and Wifi
  - Data Standards: like financial exchanges
  - Government Standards: like the Exchange Network




The IRS has open standards for electronically filing your taxes, enabling a better user experience



Banking: OFX Standards enable you to access your banking information from many 3<sup>rd</sup>-party applications

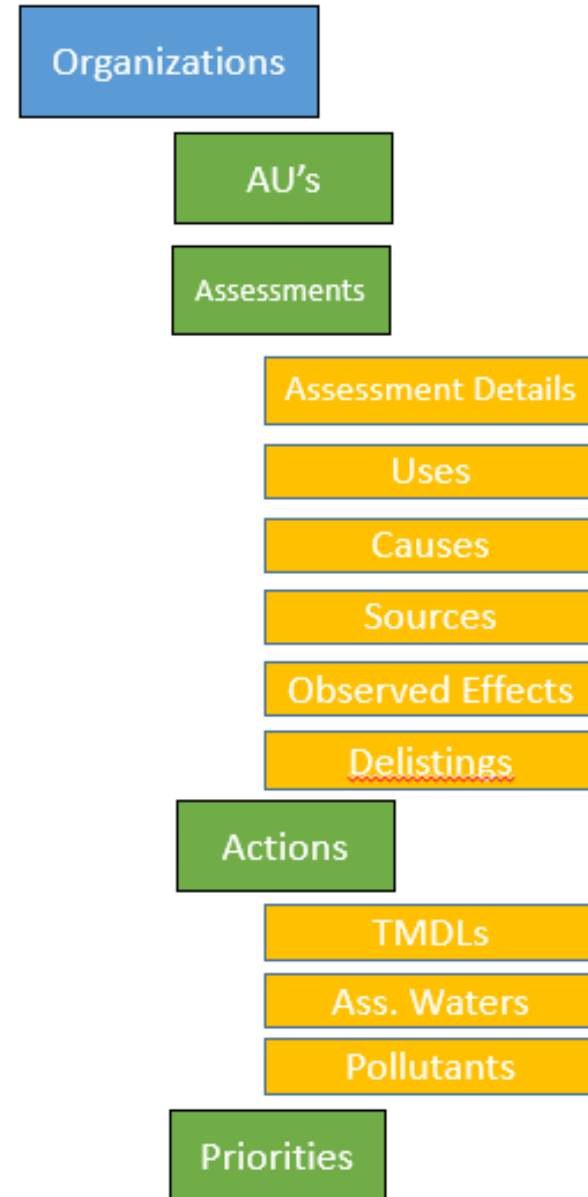
# Other Examples of Standards



# Why use a standards-based approach?

- It is not dependent on a particular technology
  - The data sharing model is based on the science instead of a technology
- Partners don't need to run EPA's software, but rather just need to map their data systems to the standard
- EPA could focus on the 'core' data elements that were needed for someone to communicate the data

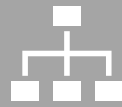
Not  
necessarily a  
'Database'  
model



# Items to focus on



Concepts: What are the concepts that define your data?



Attributes: What are the attributes of those concepts?



Relationships: How do those concepts relate with each other?



Rules: What are the rules that define which attributes are required and under which conditions and which are not?



We've historically used xml and xml schemas to define our data standards (.xsd files) – don't feel constrained to this



We've used Excel, Powerpoint, Visio, and XML Spy to communicate around those standards



I almost always start out with a pencil and a paper

# Technical Considerations

# Some Process Thoughts

- **Step 1: “What are the concepts?”**
  - Leverage Subject Matter Experts
  - Read the governing regulation or guidance
  - Talk to practitioners
  - Create a ‘mental model’ of how this ‘idea’ exists in the natural world
- **Step 2: Draw those concepts out on paper** or whatever works for you, but there’s no need to try to learn a new technology to do this step. It’s all about letting your brain work freely
- As you draw out the concepts ask: “What are the attributes of these concepts?”
  - What ‘attributes’ are common across concepts?



# Example

- Monitoring Location (Concept) has several attributes:
  - Name
  - Water Type
  - Location
    - Latitude/Longitude
    - Metadata



# Relationships and Rules

- **Step 3: “What are the Relationships between concepts”**
  - This can at times be the most difficult. Is one concept the ‘parent’ of another concept. Are they ‘siblings’? How many iterations of one concept can be related with one iteration of another? What’s the ‘root’ concept?
- **Step 4: “What are the Rules for concepts and attributes?”**
  - Which ones are required?
  - Are there special conditions under which they would or wouldn’t be required?

# So Now You Have a Plan

- **Step 5: Engage, Engage, Engage**

- Data standards cannot be created within a vacuum, nor by the few or the one
- Form a user group of actual practitioners and your user community
- Be open to modify/change
- This process will also help bring them along with the 'change' that you're proposing
- Don't underestimate the power of face-to-face interactions

**No plan survives first contact with the enemy - Helmuth von Moltke (1800-1891)**

# Other Considerations

- So.... Starting with Data Standards is a good thing, but.....
  - Data standards are basically abstractions and/or a model of how something exists in the real world. It's really easy to get it wrong.
  - You may not find out you got it wrong until you actually go to use the standard.
- Once your community adopts your standard you may find yourself 'locked in' with little ability to change
- Common Terminology is the twin to this principle. One without the other cannot survive
- Within the EN, these are documented as 'Data Exchange Templates (DETs)' – here's an example for RCRAInfo:  
[https://www.exchangenetwork.net/schema/RCRA/5/RCRA\\_DET\\_v5.13.xls](https://www.exchangenetwork.net/schema/RCRA/5/RCRA_DET_v5.13.xls)

# Common Terms (You say 'Tomayto, I say Tomahato')

- What are the terms or domains that define your universe
- Once you start sharing data with others, it's important to have a universe of agreed upon terms or 'allowed values'
- Example: are these all the same thing?
  - Dissolved Oxygen
  - Oxygen, Dissolved
  - Dissolved Oxygen (DO)
  - DO
- EPA's System of Registries can be a great place to start:  
[https://sor.epa.gov/sor\\_internet/registry/sysofreg/home/overview/home.do](https://sor.epa.gov/sor_internet/registry/sysofreg/home/overview/home.do)

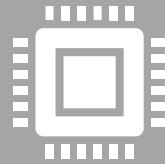
# How do you interact with data?



# What is an API or Web Service?



API stands for 'Application Program Interface'. It's really just a fancy way of saying how does your application interact with the world.



APIs expose the functionality of your application so that others can build upon what you've already done









We interact with APIs and Web Services all the time

# 59

H:81° L:50°

Now	9AM	10AM	11AM	12PM	1PM	2PM
						
59°	63°	68°	72°	75°	77°	79°

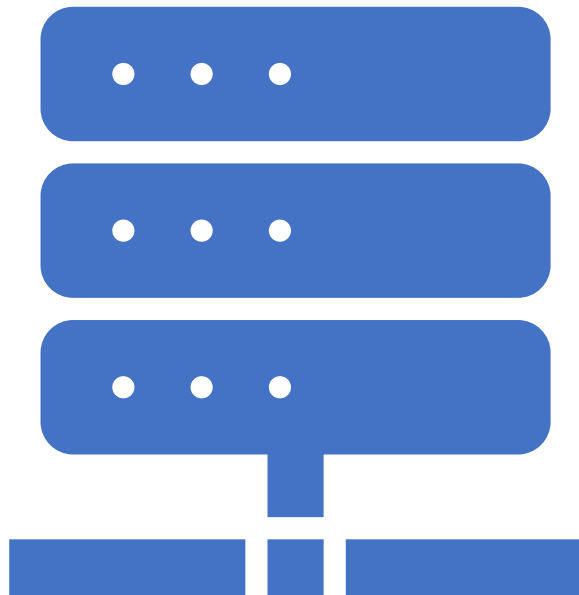
Wednesday		81	57
Thursday	 40%	79	63
Friday	 30%	81	63
Saturday		86	61
Sunday		91	64
Monday		91	66
Tuesday		91	66
Wednesday		91	68
Thursday		90	6

# Inputs and Outputs

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- Most APIs have some sort of 'Input' and produce some sort of 'Output'
- For example, a weather app has an 'Input' of a zip code and the 'Output' of weather data.
- The App turns that 'data' into 'information'

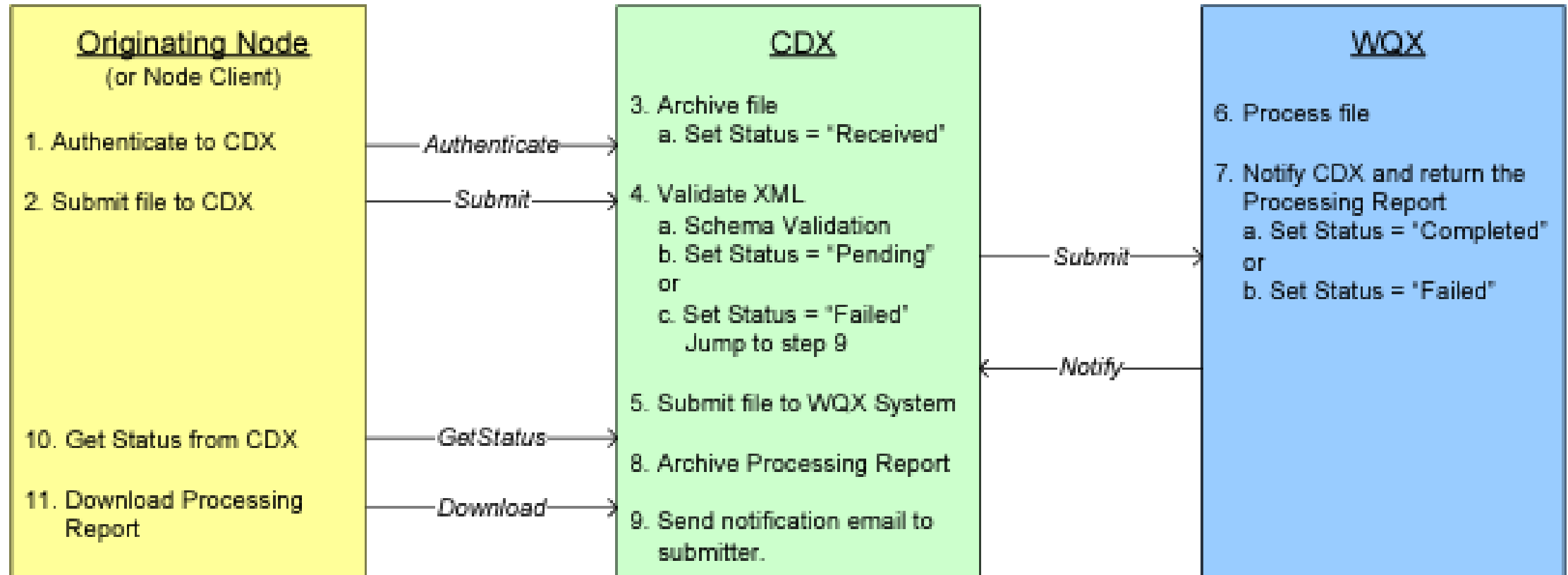




## EN Data Flow Perspective: Defined 'Standard Node' protocols

- Every single node on the EN can respond to a core suite of protocols
- These protocols provide the 'backbone' of an EN Data Flow
  - Authenticate
  - Submit
  - Query
  - Solicit
  - GetStatus
  - Notify
  - Download

# Each Data Flow Documents the Protocols in 'Flow Configuration Documents'





Common  
Authentication

# Discussion Areas



As we think about the future of the EN –  
which of these principles should still apply?



If they do still apply, what do they look like  
in the future?

Questions?

# Open Forum

- **Submit questions using Zoom Q/A Feature.**  
We will do our best to answer questions during the call. If not, we will follow up with you directly or during the next Forum.



# Contact

**Moderator:** [Alex O'Neill](#) (US EPA)

**Panelists:** [Ed Kim](#) (US EPA), [Steven Zailskas](#) (US EPA),  
[Jillian Carr](#) (UMB), [Dwane Young](#) (US EPA)

**Hosts:** [Beth Jackson](#) (US EPA), [Matt Kelly](#) (US EPA),  
[Kate Sijthoff](#) (US EPA, Contractor)



# Thank you!

Questions?