

Exchange Network Forum

Partnerships with EPA, States, Tribes & Territories

Thursday, July 9, 2026

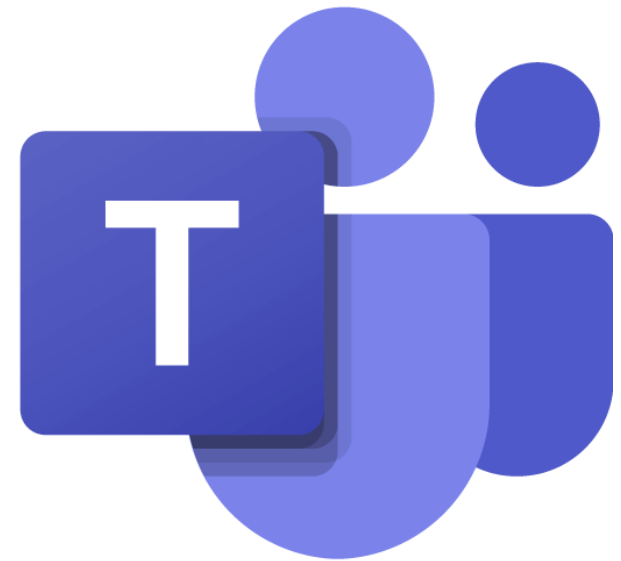
Format

- **This Forum is an open meeting.** We want to encourage open dialogue. Please be respectful.
- **We will send polls and surveys to gauge interests.** Exchange Network partners run this call for Exchange Network partners.



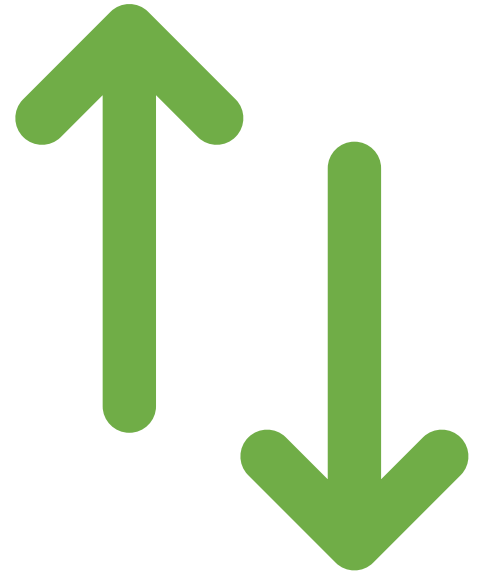
Logistics

- **Introduce yourself!** If or when you speak, please tell us your name and the organization you represent.
- **Submit questions in the Microsoft Teams chat.** You are also welcome to message the meeting host 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

- **Unified Platform Update (Ketan Patel)**
- **API Design Patterns**
- **Next Steps**
- **Open Forum, Questions**



Context for Today's Discussion

April Future of Data Exchanges Meeting (outcomes):

- **EN Vision:** Enabling a common data operating framework between EPA, States, and Tribes to support our shared mission to protect human health and the environment.
- **Key Change:** Focus on the *entire* data lifecycle, not just the submission of data to EPA.
- **Three immediate work products:** 1) Proposed API Standards; 2) API Documentation; 3) Recommended security approach – **these three products are in progress.**

There is value in establishing baseline awareness of modern technologies and approaches that could support this vision. The purpose of today's discussion is to help the community reach a common understanding of key concepts.

EN what is known?



- **Work with partners to enable data needs.**
- **Enable successful new API style and keep EN “API First” approach.**
- **Capacity building required.**
- **Do not assume one size fits all - iterate as API deployments teach lessons.**
- **Do not force standardization but enable it if it makes sense.**
- **Build in API management flexibility > be ready for change.**
- **Apply industry standards first (i.e., RESTful API).**

How Does EPA Enable? **Adjust assumptions and facts based on partners' feedback**

Refresher - what is REST?

- It is a standard for exchanging data that people can read without additional context.
- Example API call: **GET** **api.en.epa.gov/systemxyz/facility/a1b2** = **"Get an Address, Name, and 'data describing data' meta-data about facility 'a1b2'.**
- What does this do?
 - People can read it like a sentence, and machines can read it as well.
- Data returned can be read by both humans and machines.
- Better explanation -> <https://blog.postman.com/what-is-an-api-endpoint/>.

Larger Lesson Learned - Why REST now?

Answer: **Industry Standards!**

- Industry Standards help simplify a problem when applied correctly.
- REST won over SOAP because data is easier to read by humans.
- EN successfully applied “API First” before the term was created and validated by Amazon after 2002.
- SOAP and REST were competing industry standards in 2002.
- Time to continue with EN API First but update to RESTful API.

Back to REST – (technical definition)

- The current **industry standard** built on top of ideas that helped the internet spread.
- URLs that are **human-readable** as well as machine readable.
- Exchange data using standard internet (HTTP) methods.
 - GET | POST | PUT | DELETE.
- Why is it called RESTful?
 - Resource oriented vs the SOAP procedure.
- Advantage over SOAP?
 - Data is explicitly described in an opinionated way that both limits and simplifies exchanges.

How are EN legacy data flows evaluated?

- Talk to the **owners** of an existing data flow.
- This reinforces the concept of “customer-centric” and build “what your partner needs” based on regulations they “own”.

Resulting discussion topics “logic flow” where each discussion leads to facts that help frame the next topic.

1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

How Does EPA Enable? **Capture** underlying data flows and EPA provide guidance to partners so common styles can be shared and applied between partners.

Regulations and Processes?

1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

- **Owner** advocates their “**knowns**” and their resulting “**needs**”.

How Does EPA Enable? **Frame facts gathered to assist in better outcomes, i.e., ask for more information or adjust constraint assumptions on what facts a data flow owner provides.**

Synchronous API

- **Realtime (request/response).**
- **Like making a phone call.**
- **Good for requesting (querying) a resource.**
- **Native support - RESTful API.**



Asynchronous API

- **Delayed response.**
- **Like a text message.**
- **Good for large exports.**
- **Native support – Message Queue (and others).**
- **RESTful API can enable.**



Data Needs?

1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

- **Requesting data vs Submitting data.**
- **Push data vs Pull Data.**
- **Realtime vs Asynchronous.**
- **Single Representation vs Bounded Context.**
- **Resulting API implementation decisions = Error messages | Limits | Pagination | Versioning | More...**



How Does EPA Enable? **Frame the data needs into data requirements that inform design patterns applied, e.g., Realtime could mean recommending RESTful API specific patterns, i.e., API Standards.**

Data Needs in plain language

1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

- **Describe what you need to do with your data based on what you do now.**
- **Example - I gather samples in the field and upload data manually.**
- **Extra Credit - describe your needs based on regulations and “best practices” you know others do that you agree with.**
- **Example - I have a peer organization that automatically transfers data and I want to remove my manual steps. Is there a way?**

How Does EPA Enable? **Discuss data needs with teams in plain language and discuss about what is needed, what is feasible, and what is a “stretch-goal”.**

EPA “big picture” Data Needs



1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

- **Partners continue to advocate “owner” point of view - up to us at EPA to apply a design that enables enterprise needs and explain choices taken.**
- **Enterprise API security and resulting API management layer is a large opportunity - your data needs influence the decision.**
- **EPA has “enterprise” point of view - opportunity to assist in implementing designs that enable partners with less “ad hoc” patch-work approaches.**
- **EPA enables partner needed cross-media insights and supporting full data lifecycle.**

How Does EPA enable? **Involve partners early on to considered enterprise approaches and impacts to their data needs, i.e., discuss engineering tradeoffs.**

Evaluate Data Flow Patterns

1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

- Choose known design patterns to enable data needs.
- Do not lead with technology, e.g., selling “AI” is the 2026 version of saying “blockchain” in 2021.
- Learn from past ongoing successes – **WQX, e-Manifest, DW-SFTIES.**
- Learn from recent success – **RCRAInfo RESTful API.**

How Does EPA Enable? Engage partner technical team to be involved in design patterns applied. Does an owner suspect a technology is needed, i.e., Message Queue? This could mean an asynchronous exchange is needed. Or could it mean reimaging a flow into a RESTful API compatible approach?

Data Flows that We Know

1. Regulations > 2. Processes > 3. Data Needs > 4. Data Flow

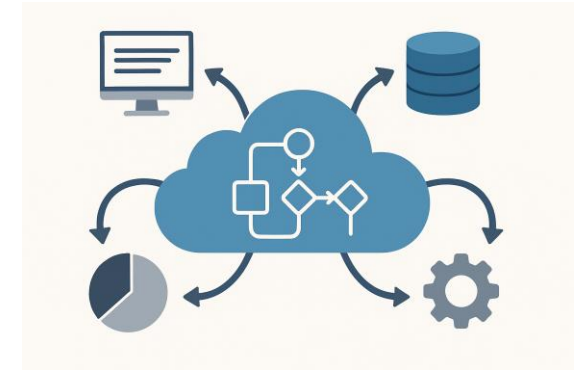
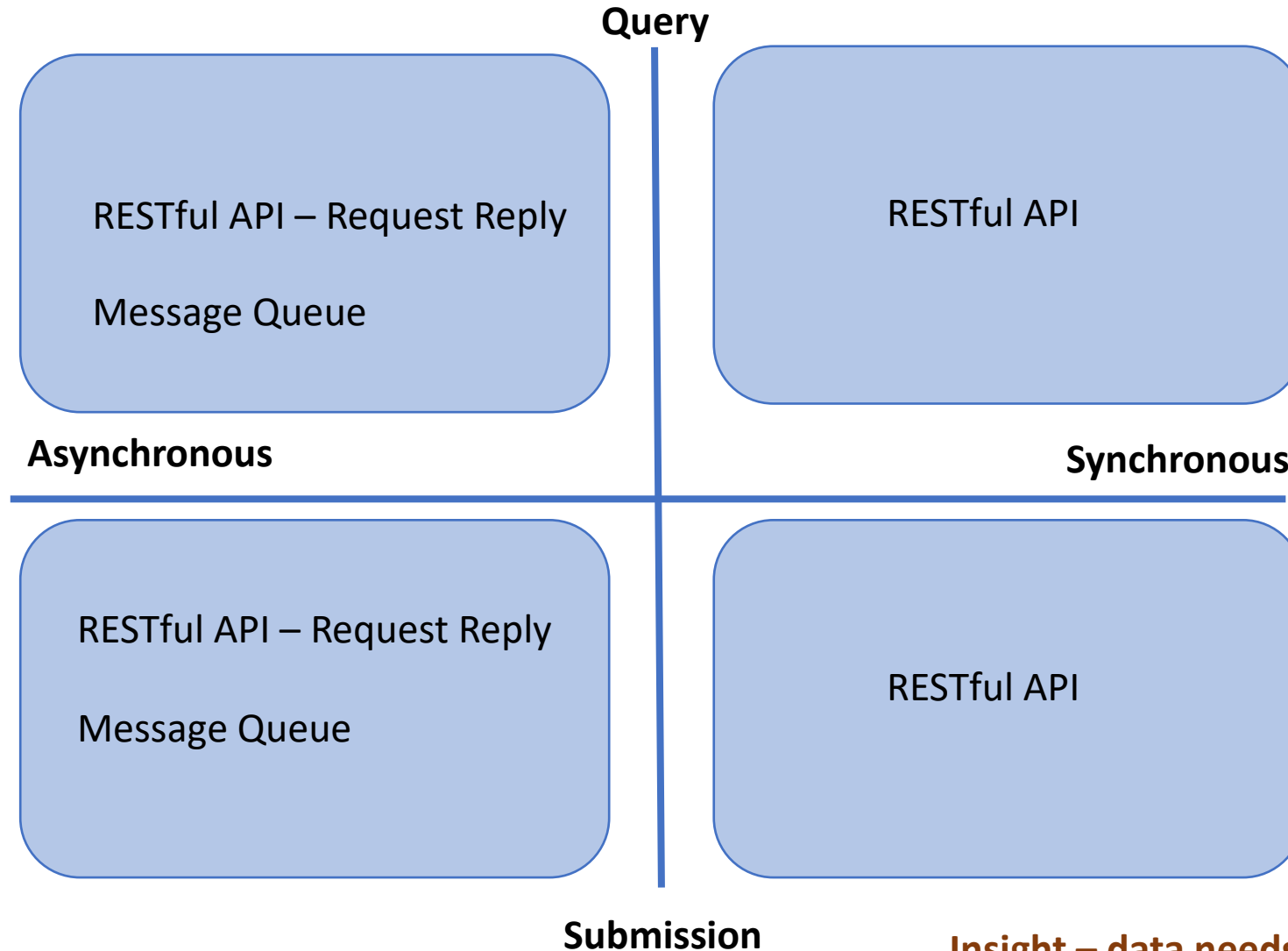
- **Procedure Oriented (Generic - Submit / Query/ Solicit/ Download)**
[**Current EN = SOAP**].

vs

- **Resource Oriented (Get "facility xyx")**
[**Proposed Future EN = RESTful API**].

GET api.en.epa.gov/tri/facility/34243 = Get Gas Station XYZ (see previous slide on REST).

Evaluate API Patterns Simplified Example



More ways to evaluate API patterns

Yes, so many more! As a team we have enough experience to evaluate and implement new flows - it is a matter of capturing data needs.

- **Bulk vs Transactional.**
- **Streaming response.**
- **Analyze existing legacy EN data flows and decide bandwidth to update.**
- **Does a data need require a non-API, i.e., analytics platform approach?**

How Does EPA Enable? **Allow input from partners on tradeoffs. Decide on how flexible API should be versus how much data standardization API enforces.**

What do we recommend to our partners?

Keep advocating for your data needs and IT system planning needs.

Next Steps

- **More discussion to come - the purpose of today's discussion was to help us reach a common understanding of key concepts.**
- **We expect the API standardization documents to be ready for review in August.**
- **These concepts are already showing up in new system design, e.g., DW-SFTIES, RCRAInfo, ICIS, Unified Platform.**

Open Forum

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Thank you!

Questions?

Appendix

Who is involved?

- EPA OFA
- EPA Offices
- States
- Tribes
- Local
- Regulated Community
- Public
- <https://www.epa.gov/compliance/engaging-state-and-tribal-partners>

Proposed EN API First

- EN encourages new workflows using RESTful API standards
- Encourage and support API creators (owners of workflows)
 - Programs
 - States
 - Tribes
 - EPA OFA
- EN Governance
 - Choose tradeoff between API creator flexibility and simplification

API Standards Tradeoffs

- Convention (Guidelines)

Vs

- Mandate (Required)

- Flexibility

Vs

- Simplified (Limited)

Risk

- Loose standards = each workflow owner can create “similar” but different APIs
 - Shifts burden: Implementors -> Regulated Entities and Public
- How to mitigate?
 - Shift burden: to EN to find where API standardization can occur
 - API Standards + Practical Guidance for API implementors

API Styles

- RESTful (Proposed API Standard)
- gRPC
- SOAP (Legacy API Standard)
- GraphQL
- WebSocket