

# Mobility Data Interoperability Principles (MDIP) Due Diligence Checklist



After you've decided to include interoperability requirements in your procurement process [MDIP Factsheet](#) the next step is to prepare and execute an interoperable procurement.

This due diligence guide has two parts:

1. Questions you can use to engage vendors about interoperability, and a
2. Final checklist you can use to review vendor's alignment to MDIP values.

With these tools, you will be able to identify potential risks early, enable a more interoperable environment, and make more informed, future-ready decisions while effectively navigating the complexities of MDIP compliance.

Remember: **Interoperability** is **product-specific**, not vendor-specific. What does this mean? It means that each product a vendor sells can be slightly different, and some play nicer in the "interoperability sandbox" than others. Remember to ask these questions for each product you plan to procure, even if the vendor is the same.

There are three main stages of the procurement process: pre-procurement, procurement, and implementation. Think of pre-procurement as doing your homework before "test day," which is the actual procurement. Then, implementation is the post-graduation, day-to-day job stage. Each requires different questions and strategies to engage with vendors about interoperability. Let's dive in!

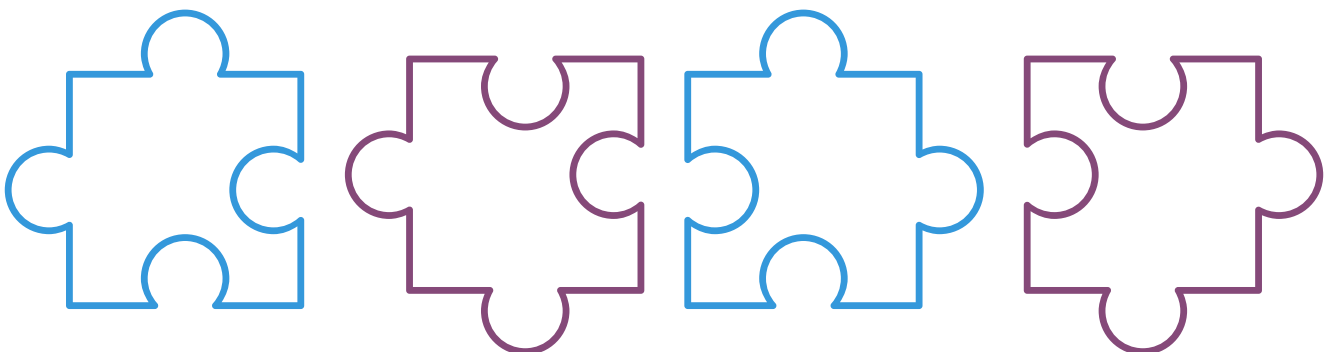
Pre-Procurement

Procurement

Implementation

## 1.Pre-Procurement: Doing your homework

The pre-procurement phase is about planning and learning and often takes the longest. Some of this planning will be internal; talk to your team and be sure everyone is aligned on the goals and how you will define success. It's also recommended to talk to peer agencies and ask them about their experience with various products, vendors and procurement structures. Take your time and have strategic conversations internally and with peers to learn what to ask for, how to ask for it and how to properly review proposals.



## A few things to discuss with your team:

How should this technology system or component interface with our system(s)?

For each point of integration:

- **What:** Develop a list of other technology components (existing or future) the new system should connect to and what information is needed. N-CATT has a resource to help with this!
- **Why:** Understand and document what the business purpose is for the information exchange so that you can communicate the need with the vendor.
- **How:** What is the preferred mechanism for integration in line with MDIP implementation requirements<sup>1</sup>? While you must leverage an open standard if a relevant one exists, MDIP also permits well-documented (for humans and machines), openly licensed, open-standard compatible (same terminology, enumerations, etc.) Application Programming Interface (API) and data schemas.

For example:

- The fare system must send **payment transaction** data to our **data warehouse** in Transit Integrated Data Exchange Specification (**TIDES**) **format** in order to be summarized **for ongoing monitoring and monthly financial statements**.
- An Automated Vehicle Location (AVL) system needs a mechanism (either within itself, or an intermediate tool) to **get real-time passenger information** to **trip-planning applications** in the General Transit Feed Specification (**GTFS**) **Realtime** standard **so that passengers understand when their bus is coming and can plan accordingly**.
- The Automated Passenger Counter (APC) hardware shall communicate passenger activity with our **cloud data warehouse ingestion endpoint** (passenger-events) **with an authenticated HTTPS POST request with a request body JSON payload has a schema that is compatible with the TIDES Passenger Events table** so that we have a **near-real-time understanding of crowding and can respond operationally or with real time passenger information if necessary**.

Are we considering costs over the life of the technology?

Every integration comes with costs – either upfront or ongoing. In most cases requiring interoperability through open standards is cost-saving in the long-term. While there may be more up-front or explicit costs to create the enabling environment, there is usually a significant decrease in ongoing operational costs for additional tools (e.g. avoiding intermediate data conversion tools), staff onboarding (e.g. avoiding learning all the bespoke steps to get data from A to B), technology maintenance (e.g. avoiding upgrading intermediate tools or processes whenever the data streams change), and staff time compensating for lack of interoperability through brute-force work (e.g. avoiding triple data entry for schedules into GTFS, CAD/AVL systems, and reporting systems). Cost savings also accrue for the flexibility that interoperability provides when your system grows or changes due to changing technology (which is always improving) or operational contexts (e.g. ability to leverage all the reporting tools rather than just the one that works with your APC system's data.)

<sup>1</sup> “Mobility technology components shall: Utilize current or proposed open standards (along with associated best practices) to receive, process, store and export mobility data. **Where neither open standards nor proposed open standards are yet available, data schemas and APIs to receive, process, store and export mobility data shall be compatible with open standards and/or proposed open standards, free from cost and restrictions to use, and posted to a public website in human- and the appropriate language-neutral, machine-readable format.**”

Finally, while difficult to quantify, your system will experience savings and/or increased revenue due to increased reliability and brand credibility from fewer errors (brute-force integrations often introduce more errors than interoperable interfaces). Sometimes this can mean more dollars up front in exchange for less costs and growing pains in the future. It is important to educate decisionmakers about these tradeoffs and real costs in order to limit the likelihood that interoperability features are not removed from a contract because of higher upfront costs even though they would save costs in the long run.

To inform your internal decision making, converse with peer agencies to learn about their procurement experience first-hand. Ideally, these should be agencies of similar size, service type, geographic coverage and importantly similar to your procurement details (i.e. same vendor, hardware, software, technology etc.) to compare “apples to apples.”

#### **A few things to explore with peer agencies:**

**Product Specific Questions:** What services and products did you ask for? How did they work once you got them? Would you do anything differently?

For Example: It's possible they wished they included specific requirements, or optional add-ons that were more crucial than they first realized. This can help you build the request into the initial scope with an accurate cost estimate from the start.

**Vendor Specific Questions:** How was your relationship with the vendor during procurement, contracting, and installation? Would you recommend the vendor (and their products)? Should we know anything before speaking with the vendor?

For Example: Peer agencies can provide honest recommendations about particular vendors, their products, how vendors responded to their procurements and if they would do something differently in the future. These are very important lessons to learn - ideally, secondhand!

**Procurement Related Questions:** Peer agencies can provide insights into your procurements, too. Ask them about how they structured their procurement package, what specifications and interoperability standards they required, if the maintenance and uptime requirements were realistic, and much more. Procurement documents by public agencies are public record, but they often are no longer available online after the posting closes. Ask them if they can share the procurement documents with you as a model for your process.

Find out who else is doing this work - State DOTs and state and national transit associations are resources that can help you build your network, find technical assistance, identify possible partners for joint procurements and learn best practices from others doing this work alongside you –they likely even know who to refer you to and may even put you in touch! MobilityData and their community Slack channel can also be resources to connect with peers.

Participate in virtual and in-person learning sessions - Attend State and National Conferences to network with peers to learn about their experience and how they successfully procure MDIP compliant technology. *\*Note, participation may require fees.*

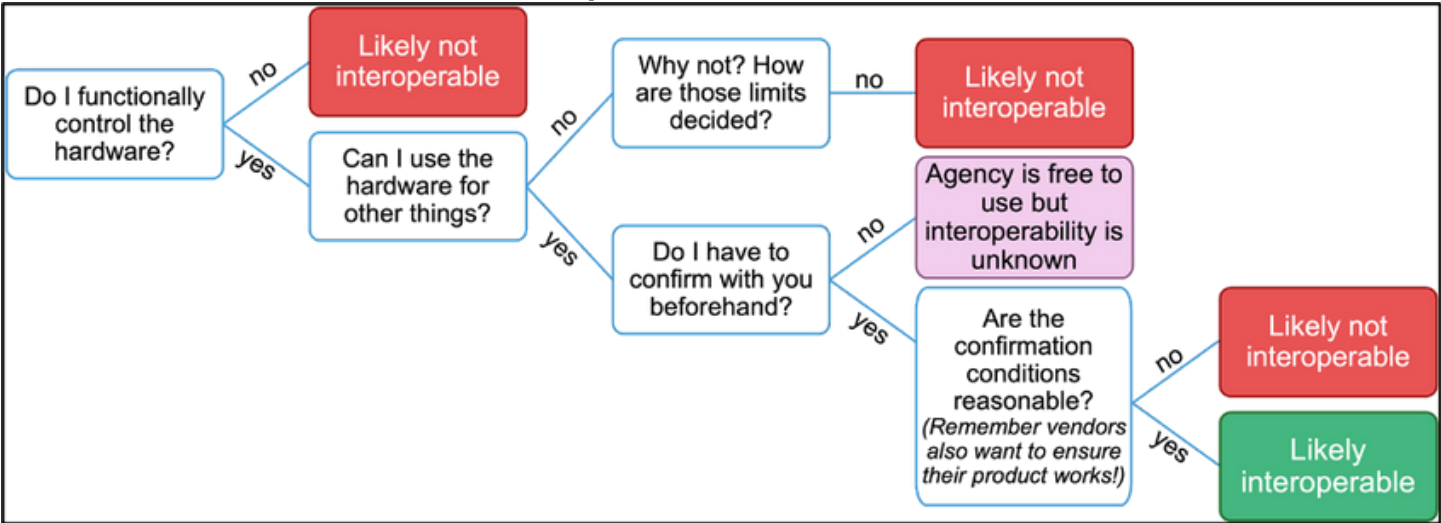
Once you feel confident in the product and your team is on the same page, you can begin talking directly with vendors to learn more about their products. This market engagement lays the groundwork to develop an MDIP-compliant procurement. It signals to vendors that you're serious about finding an interoperable solution that works for you. The better you understand your options and how to ask for them, the more clearly you will be able to express that in a future RFP.

### Vendor Question Tree: Pre-Procurement

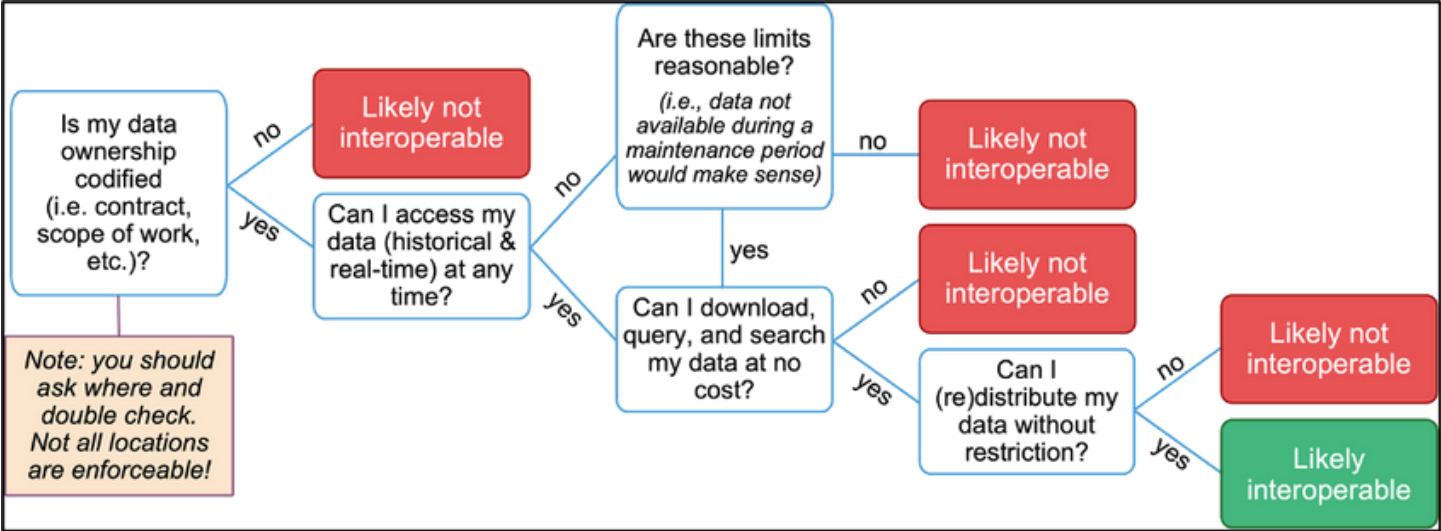
At this stage, you can request informal, online product demonstrations, and ask vendors what they can do. Below are some sample questions that you can use at a conference, during a product demonstration, or in conversations with a sales representative. For each question, we've given some key items to look for in the response to see if the vendor and the product are adhering to interoperability goals.

Remember: The Pre-Procurement stage is likely the only time you can freely ask these questions of vendors. Once you launch your procurement, you can only inquire if interoperability is already defined in the evaluation criteria of your procurement.

#### How to know if vendor hardware is interoperable?

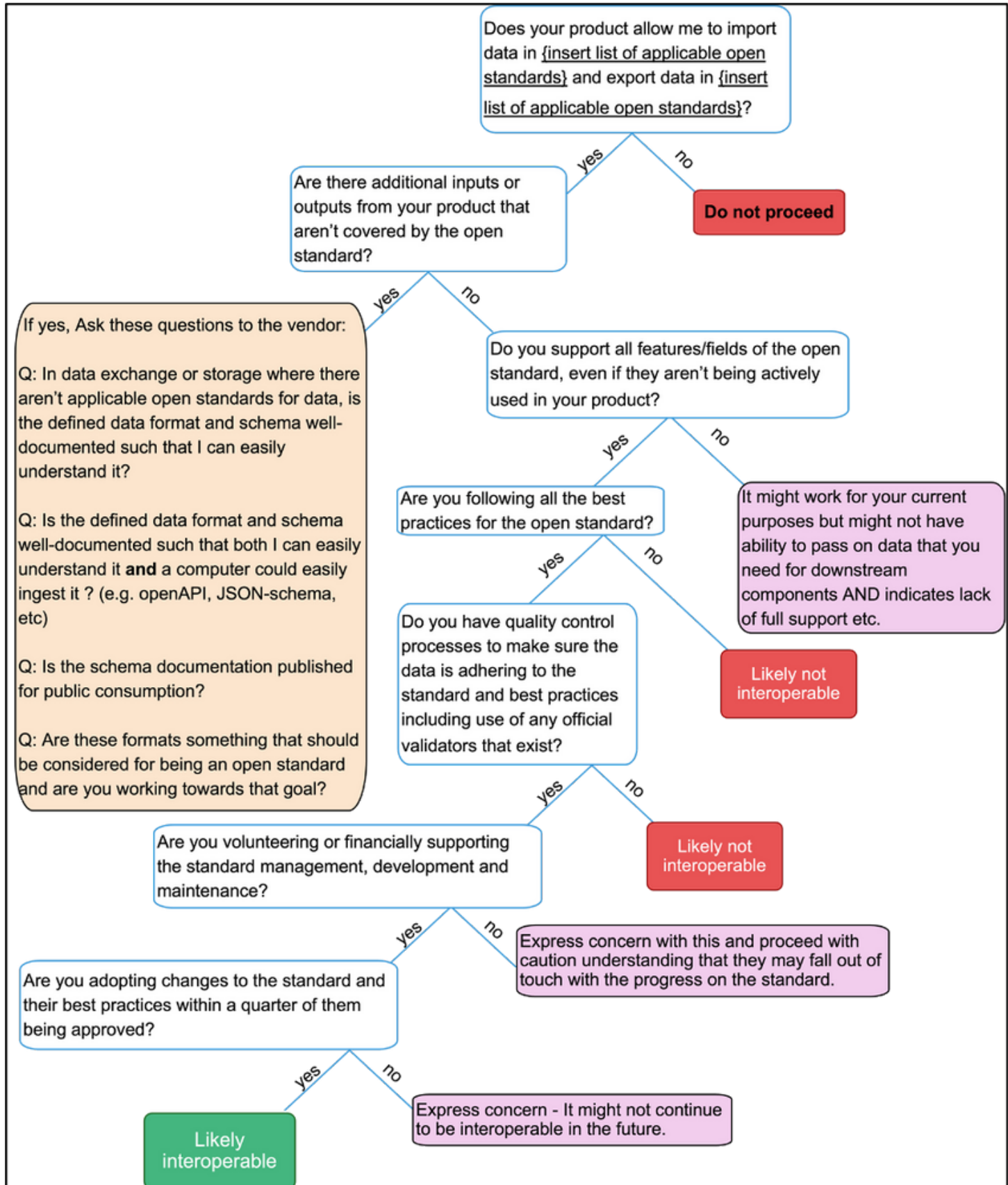


#### Understanding if the data ownership and access leads to interoperability



Use of applicable open standards, as defined in MDIP, for all data that is ingested and exported

Note, prior to using this logic model, understand which open standards are applicable for the component you are interested in.



## How does Personally Identifiable Information (PII) relate to Procurements?

Make sure any rider information you collect is kept safe! Sometimes, PII can be a reason why vendors are unwilling to commit to interoperability. However, there are ways to work around that – PII should not be a deal breaker for MDIP compliance.

Ask what cybersecurity measures exist to ensure PII is securely protected and require implementable privacy protocols, so PII is only accessible to appropriate audiences.

### Here are a few questions to get you started

| Question                                                                                                                                                                                              | What this helps you understand?                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What data do you store that could be considered PII?                                                                                                                                                  | Understanding what data is stored is critical to understand how it needs to be protected (i.e., sensitive information like social security numbers, financial information, etc. need different levels of security than non-sensitive information like names and zip codes). |
| Do I have the ability to designate additional fields or rows as needing special account (e.g. manager) privileges to view and/or edit versus data that I want to be freely available to all accounts? | Account privileges are a good way to secure data internally and ensure only the necessary staff can access it.                                                                                                                                                              |
| Do I have the ability to provision accounts or integrate account provisions without existing Single Sign-On (SSO)?                                                                                    | Not every transit agency has a centralized SSO system, and relying only on SSO could block access or limit flexibility.                                                                                                                                                     |
| Do I have the ability to give the public access to some data?                                                                                                                                         | Providing data back to the public is a great way to improve transparency but should be anonymized and protect PII.                                                                                                                                                          |
| For API access, how are API keys provisioned and managed?                                                                                                                                             | APIs are an important tool in interoperability and can also be used to transmit PII. Insecure API key management could let unauthorized people access PII, so strong controls on how keys are issued, stored, and revoked are important protections to review.              |

|                                                                                                      |                                                                                                                        |
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| Do you have view- and row-level security implemented for PII and other data?                         | This can confirm if the vendor has secure, efficient, and auditable processes for granting and controlling API access. |
| What is your data retention policy for PII and other data?                                           | Vendors should have this and be willing to share; review their policies to make sure you are comfortable with them.    |
| Can we delete data associated with that person in order to comply with a request for PII deletion?   | If public requests are made, vendors should be able to anonymize ridership data and ensure privacy.                    |
| See our Data Ownership Factsheet and Translation Guide for more information for more best practices. |                                                                                                                        |

## 2.Procurement: Taking the test

Each procurement is unique, and this section should not be viewed as guidance; agencies should follow their own procurement rules and regulations. The following is a set of best practices to help develop your own guidelines.

Now you can bring all the knowledge you gained “doing your homework” to shape the procurement itself. When you are writing the procurement, you should reference MDIP (and its principles) specifically. Remember that unless these are explicitly called out, the vendor will not be legally required to comply with them. By adding MDIP and interoperability as requirements to the procurement, you will have the chance to enforce them later. Examples of how to include MDIP in procurements can be found in [MDIP Translation Guide](#) as well as on the MDIP Procurement website.

Be Direct- Ask vendors how they meet interoperability requirements. Don’t beat around the bush, ask vendors directly if their product is MDIP compliant or how they achieve interoperability. It can save you time in this process.

In your RFP, include specific questions/prompts for vendors to describe how their solution meets your interoperability requirements.

Example: “Describe how your system exports data in [GTFS or relevant open data format]. Provide examples or attach sample files.” Request that they list all open standards they support and any third-party systems they’ve integrated with. This not only yields useful information but signals to vendors that these items will be heavily weighted.

Remember: To ask these questions at this stage you need to include interoperability requirements in the technical evaluation of your RFP. It is also recommended that you re-ask vendors the questions from the question tree (see above) to confirm their responses and use their responses to evaluate interoperability.

### Vendor Question Bank: Evaluation

These questions are designed to be part of your procurement evaluation. You can include them as a component of the proposal evaluation process or as part of the formal interview questions.

| Question                                                                                                             | What this helps you understand                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>Have you co-signed in support of MDIP?</li></ul>                               | This is a high-level filtering question to see if they are publicly committed to the MDIP principles. Note: being a part of the Coalition does not automatically mean their products are always interoperable but this can be a time-saving way to understand their MDIP compliance! |
| <ul style="list-style-type: none"><li>List 2 or more references from MDIP-compliant deployments.</li></ul>           | This allows you to ask reference agencies about their experience with interoperability and integrations. When checking references, you can ask about any additional costs or any elements that weren't easily interoperable.                                                         |
| <ul style="list-style-type: none"><li>Has your product been independently assessed for MDIP compliance?</li></ul>    | Reach out to N-CATT or the MDIP Coalition, they may be able to confirm if a vendor is compliant or able to achieve interoperability.                                                                                                                                                 |
| <ul style="list-style-type: none"><li>How will you ensure ongoing MDIP adherence after contract signing?</li></ul>   | You want to make sure that any future updates to your transit technology systems can be added seamlessly and that the vendor is planning long-term in their interoperability commitments.                                                                                            |
| <ul style="list-style-type: none"><li>How do you support the open standards communities that you leverage?</li></ul> | Active involvement in managing data standards indicates they will be aware of any changes over time.                                                                                                                                                                                 |

### Things to Consider!

Evaluate MDIP compliance during procurement: Think about the evaluation process early - will you allocate scoring points for interoperability? Will you require a demonstration or sample data output? Consider an evaluation rubric that gives weight to the MDIP principles, so you can communicate the importance of this element to vendors.

Conduct Interoperability-Focused Interviews/Demos: As you shortlist vendors, hold Q&A sessions or product demonstrations that focus on MDIP issues. Prepare scenarios or use cases to test their capabilities. For example, ask the vendor to demonstrate exporting a GTFS feed from their system, or show how their API works by pulling data into a sample third-party tool. You can also role-play an integration: "If we have a separate trip planner, how would your system provide data to it in real time?" A strong vendor might show a live GTFS-RT feed in action or have a sandbox API for you to try. Use the same scenarios for all vendors to compare how each handles them.

Contribution and Community Involvement: Consider asking if a vendor is involved in any open-data standards communities or initiatives?" If they participate in groups like MobilityData, the Open Mobility Foundation, or are listed as MDIP co-signatories, it shows commitment. It's not a requirement, but a vendor engaged in developing standards is likely to take compliance seriously. For example - some software providers actively contribute to GTFS enhancements or are early adopters of specifications like TIDES (Transit Integrated Data Exchange Specification) for operational data.

## 3. Implementation: Post-Graduation

Selecting a vendor is not the end of the interoperability road! You now want to make sure your reality reflects the contract. This includes project deployment, testing, launch, and ongoing operations. A system may meet the technical specs on paper but still present interoperability challenges if not implemented correctly.

| Implementation Checklist                                                                                                       | Consider these best practices...                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• We verified all promised product features and conducted quality assurance.</li></ul>   | Facilitating a "soft launch" to make sure the GTFS-RT features and data are working and accurate before you go "live" |
| <ul style="list-style-type: none"><li>• We are using the data fully and integrating it across technology components.</li></ul> | Interoperability is about connecting data across technologies and simplifying this complex process                    |
| <ul style="list-style-type: none"><li>• We are monitoring data quality and availability.</li></ul>                             | Reviewing your CAD/AVL operational logs weekly to ensure they are accurate and meet our availability requirements.    |

|                                                                                                                                                       |                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• We are prepared with a contingency plan if the vendor stops supporting a feature or falls behind.</li> </ul> | <p>Developing redundancy plans in the event of a product malfunction or system downtime scenarios, such as having an emergency communication procedure ready if the CAD/AVL system does not work.</p> |
| <ul style="list-style-type: none"> <li>• We are documenting lessons learned for future procurements.</li> </ul>                                       | <p>Having a postmortem with your team (and with vendors) on where your procurement stood out as excelling, could be improved, how to better clarify your asks, etc.</p>                               |
| <ul style="list-style-type: none"> <li>• We are staying up-to-date on new open standards and interoperability opportunities.</li> </ul>               | <p>Conduct bi-annual reviews of MDIP and N-CATT resources to learn new information and incorporate changes in your technology assessment procedures.</p>                                              |

### **Even More to Consider!**

Are you capturing lessons learned for future procurements? – After a period of using the system, debrief internally: Which MDIP requirements turned out to be the most important? Were there any we wish we had included?

For example, if your agency starts a new microtransit service, you might use the same MDIP principles to require data in GTFS-OnDemand or APIs that integrate with your existing trip planner. The initial procurement may inspire a broader cultural change in how your agency approaches all technology projects – moving toward openness and interoperability as default. Encourage this mindset beyond this one project.

Are you staying aligned with new standards and opportunities? – Technology doesn't stand still. Periodically ask: "Has a new standard emerged that we should adopt via our system?"

For instance, you might realize you should have required a certain report in an open format, or that the API documentation needed improvement. This will inform your next procurement and can be shared with the community. Many agencies are in this learning process together

Share your procurement with N-CATT! - They will summarize what worked, and lessons learned so other agencies can improve their approach to interoperability

**There are even more resources to help you navigate this topic! Check these out, too:**

- [\*\*Glossary of MDIP Terminology\*\*](#)
- [\*\*MDIP Procurement Best Practices\*\*](#)
- [\*\*MDIP Factsheet\*\*](#)
- [\*\*MDIP Translation Guide\*\*](#)

**If you have any questions, reach out to the N-CATT Team at [helpdesk@n-catt.org](mailto:helpdesk@n-catt.org)**