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DATA EXCHANGE

Foundational Requirements for Data Access Platforms

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Revision History

Document Version	Notes	Date
1.0	Initial Document Release This document was created as a result of FDX RFC 0242 and incorporates the full contents of the RFC for public release.	June 2023
1.1	Incorporates FDX RFC 0265 to replace references of client secrets with public/private keys, to adhere to FAPI standards.	

Contents

1 Introduction

Foundational Requirements have been established to ensure that FDX Certification applicants meet standards that protect Data Recipients and ensure proper interoperability as expected by the End Users. While these requirements vary based on the provider's level of use, they exist for all in the areas of **Functional** and **Non-Functional** requirements. Functional requirements refer to the successful interaction between *end user authorization*, the *FDX API*, *minimum call compliance*, and *data*. Non Functional requirements refer to *availability*, *performance*, *scalability*, and *security*.

This document is part of a series of certification documents and explains foundational requirements. Note that meeting these requirements alone is not sufficient for certification. Please refer to the Certification Model for an understanding of methodology and testing.

Data Access Platforms must meet the same requirements of a Data Recipient (listed in sections 1-2 below), as well as requirements specific to Data Access Platforms (sections 3 and after).

1.1 Terminology

Please refer to Taxonomy for a complete definition of terms used in this document. The relationship between data provider, recipient, agent, and end user are key concepts throughout FDX implementation.

Specific to this process, the term **Certification Case** refers to a use case scenario on a pre-production environment that is only applicable to certification.

1.2 Scope

The scope includes the following areas which are described in detail in the Requirements section:

Functional Requirements

- *User Experience (UX)/End User Authorization:*
    - Authorization End User URL
    - Responsive pages
    - Authorization Code
    - State parameter
    - FDX User Experience - Providers should comply with recommendations specified by the
      FDX User Experience and Consent document
- *API Endpoints*
    - Authorization endpoint
    - FDX Data API endpoints
- *Minimum Call Compliance*
    - FDX Maintenance endpoints

    - Data API
- *Test Data*

Non-Functional Requirements (Formerly Operational)

- *Availability*
- *Performance (Response time and SLAs)*
- *Scalability*
    - Scalability will not be certified in pre-production
    - Providers are required to provision production capacity to handle requester requirements, provided that the requester follows usage best practices (see section 2.2.3)
- *Security*
    - End user authentication
    - End user authorization
    - API connection security for authentication, authorization, and data transfers

1.3 Prerequisites

An FDX certification applicant must meet these prerequisites to be considered for certification:

- A pre-production environment must be available with the following functionality that is equivalent to production:
    - Test profiles for all the supported certification cases and account types, with the supported data set (see "Representative Test Data" in Section 2.1 below)
    - Support for the OAuth 2.0 User Experience for relevant screens and substantially similar content
    - Support for all relevant error codes
    - Support for all relevant end-points
- The certification applicant must employ the latest published FDX API (currently v4.0) or current supported version within the last 12 months (v3.0). All base URI should include the version that is implemented.
    - *Note: OFX is not in scope for this document*
- Documentation for FiAttributes when utilized

As a general practice, the pre-production environment should maintain configuration and test data prescribed within the scope for requirements. Availability and other Non-Functional requirements for the pre-production environment are listed in the "Non-Functional Requirements" section below.

2 Requirements for Data Recipients

Data Access Platforms are considered a data receiving entity and must meet the requirements for Data Recipients (section 2) as well as requirements specific to Data Access Platforms (section 3).

2.1 Assumption

- Any participant in the FDX ecosystem is good data partner, and steward of resources and security
- The compliance to, and enforcement of this certification is outside the scope of this RFC. All requirements are to be written based on an ability to be tested, but the methodology will not be defined here.
- All participants are expected to follow the laws and regulations of their local jurisdictions.
- A Data Receiving Entity may be either a Data Access Platform or a Data Recipient, this certification is aimed at the technical certification standards and best practices of data receiving entities who directly interact with Data Providers in the consumer permissioned data sharing ecosystem.
- All data shared in the FDX ecosystem is permissioned by the end user customer who owns the data.
- Governance, onboarding and certification of a Data Recipient who operates as a Data Access Platform is out of scope and will be handled in a follow-up RFC that has been approved by the TRC and Strategic Planning Taskforce.
- This certification is silent on any bilateral agreement between the parties mentioned.
- This certification is focused on Data Receiving Entities who are consuming data directly from an FDX API, and any other data access methods are out of scope for this RFC.

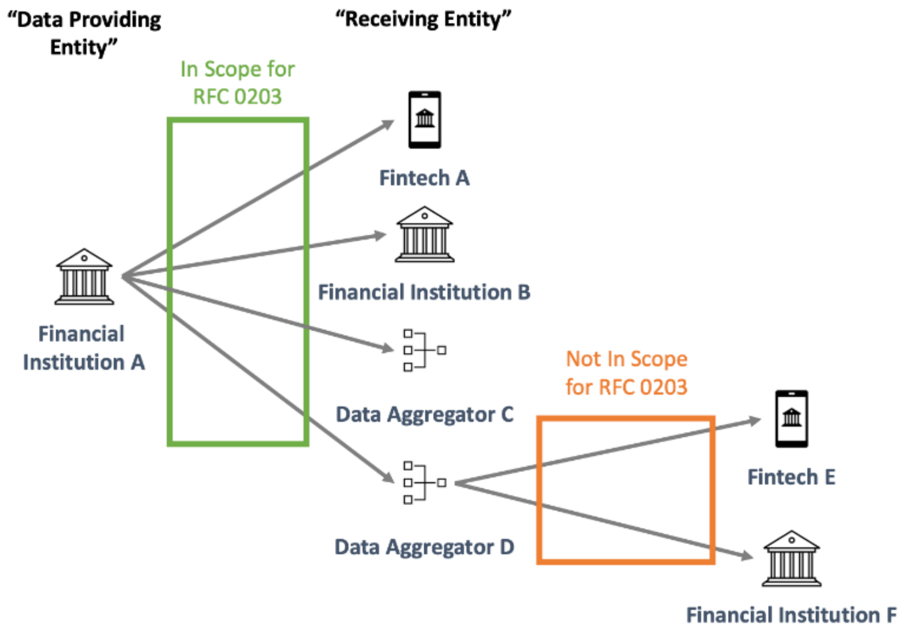
2.2 Definition of Certification

- Behavioral, technology, adoption, and interoperability API standards of Data Receiving Entity that are required to certify as an FDX data recipient, which will inform standing in the broader FDX community.
- Data Receiving Entity will need to continue to demonstrate that they are able to consume the latest version of the FDX standard as a Recipient.
- Dual role certification will be a gap, brought up to TRC.

2.2.1 Scope

This document will apply to any Data Recipients and Data Access Platforms who are acting as a Data Receiving Entity (as illustrated in the Scope diagram below) for consumer permissioned data access to a Data Provider. This document will describe the nature of the certification that will be required of each partner institution. These institutions will need to confirm certification by conducting required testing as directed by FDX.

2.2.1.1 Scope Diagram



Definition of Participants – Refer to the Taxonomy of Permissioned Data Sharing v1.3 document for complete definitions. Some key relevant terms are as follows:

- Data Provider (DP) - Financial Institutions where end user goes to transact their financial transactions. These could included Banking transactions, Brokerage transactions, etc.
- Data Access Platform (DAP) - Firms that engage in the practice of retrieving data on behalf of another firm. Often the individual sharing their data does not know that there sharing via the DAP. An example of this would be firms like Yodlee who aggregate on behalf of other financial institutions.
- Data Recipient (DR) - Accredited data recipients can request, on behalf of a customer with the customer's consent, to collect and use data held by a data holder to provide a specific product or service. Data recipient may elect to become a Data Access Provider, if / when they are given permission to share data with a financial institution.
- End User (EU) - The individual who owns the account that is being shared.
- Data Receiving Entity - Any Entity (DAP, DP, DR, Intermediary, Sub-Intermediary) that is in the role of directly receiving data from an FDX API.

- Related FDX RFCs:
    - RFC 0012 - App ID with OAuth 2.0
    - RFC 0153 - Recipient Registration Automation
    - RFC 0206 - Recipient Registration With Delegation to an Ecosystem Registry
    - RFC 0224 - Taxonomy additions from the Data Recipient TF

2.2.2 Authorization

All FDX API data is end user permissioned using the FDX approved authorization methods. Data access tokens will not be issued for data aggregation unless consent has been granted to the data provider by the customer.

In order for the customer to authorize data sharing with an FDX Data Receiving Entity, the Data Receiving Entity **MUST** redirect the user to an FDX approved authorization method.

2.2.2.1 Revocation

- Data Receiving Entities **MUST** offer end users a means of revoking access. The customer/application user **MUST** have a path to ensuring that the flow of any additional data can be halted. Not all Data Providers offer this functionality, but any application can serve this function. Please refer to the Data Recipient Revoke section of the User Experience Guidelines version 2.0 on pages 51 & 52.
- If a Data Provider offers the ability to revoke data access, then the Data Receiving Entity **MUST** enable the customer utilization of this functionality.

2.2.2.2 Notifications

- If a Data Provider has implemented the guidelines of RFC 0188 Event Notifications Framework for event notifications, then the Data Receiving entity **MUST** demonstrate ability to both receive and consume the notification events.
- Using the revoke notification object, If a token has been revoked, then the application should be notified before the next attempted refresh is rejected.

2.2.2.3 Disclosures

In order to become certified, data recipients SHOULD clearly indicate to the user the details of the data being shared and duration of the consent. The intent of this guideline is to:

- Explain the business purpose
- The details of the data that is being shared (accounts, transactions, statements, etc.)

- State how long this consent will be active
- Tell the end user what happens next
- Provide an option to cancel the flow

2.2.2.4 Disclosure Process

- Data Receiver **MUST** communicate the details of the data being shared which is in scope for consent prior to redirect to the End User Authorization Journey
- Data Receiver **MUST** clearly communicate to the End User that they will be redirected to the data Provider to complete the Consent process
- Data Receiver **MUST** provide an option to cancel the process at any time
- Data Receiver **SHOULD** have the ability to communicate the duration of consent (persistent, time-based, one-time) in the disclosures process
- Data Receiver **SHOULD** explain the business purpose, the parties involved, and **MAY** provide a link to intermediary/DAP and Data Recipient privacy notices during the Disclosures process

2.2.2.5 Select a Provider

- Data Receiver **MUST** provide a means to search for the Data Provider
- Data Receiver **MUST** clearly represent the Data Provider by the known brand name and/or Logo.
- Data Receiver **MUST** provide a means to cancel the pre-consent authorization flow

2.2.2.6 Required Request Data Headers

All recommended FDX Data request headers are specified with the latest major FDX version (refer to section *6.1 Headers* in the API Specification v5.2 document).

Data Receivers **MUST** provide the following data request headers at a minimum:

- Cache-Control: no-cache, no-store
- Authorization: Bearer <bearer_token>
- Accept: application/json
- x-fapi-interaction-id: <unique_number/string>

2.2.2.7 Data Recipient Registration

- Data Recipient (client application) Registration SHOULD follow *FDX Recipient Registration Guidelines* (FDX RFC 0153) & *FDX Recipient Registration Guidelines with Delegation* (FDX RFC 0206).
- Dynamic Data Recipient Registration support (where applicable to a Data Receiving Entity in the case of multiple application support): a Data Receiver

MUST demonstrate the ability to participate in a dynamic registration model that follows FDX registration specifications. DREs with a single application SHOULD have this ability, but this is not directly applicable.

2.2.2.8 FDX Registry Participation

- In order to be certified (receive a badge), Data Receiving Entity **MUST** be part of the FDX directory listing (conformance directory that will post Data Provider information once they have been certified)

2.2.3 Security

Full Security and Control standards are the ultimate source of truth for FDX requirements. Familiarizing yourself with the *FDX API Security Model* document and the standards within is highly recommended.

2.2.3.1 Authorization

The foundational Security and Authorization building blocks for Consumer Permissioned Data Sharing are based off of OAuth 2.0, Open ID Connect, and FAPI.

- OAuth 2.0 - The underlying security foundation (RFC 6749)
- OIDC (OpenID Connect) - Identity layer add-on to OAuth 2.0 protocol (OpenID Connect)
- FAPI (Financial-grade API) - Advanced security Profile for OAuth and OIDC (FAPI Part 2)

The *FDX Foundational Requirements for Data Providers* document defines the core security requirements on the basis of OAuth 2.0 and OIDC (see section 2.2.4 Security Requirements). FDX has since adopted the FAPI security standards on top of the baseline security requirements for Data Providers (FDX RFC 0122 - FDX Adoption of FAPI). The latest FDX Security standards are kept up-to-date in the *FDX API Security Model*, which is a continually revised document in the FDX API release library.

The totality of the OAuth 2.0, OIDC and FAPI security standards give Data Providers a broad range of implementation options that Data Receivers must be capable of supporting. The following are the base Data Receiver Security Authorization requirements necessary for Certification.

2.2.4 Requirements originating in OAuth 2.0

- Data Receivers **MUST** support the OAuth 2.0 Authorization Code Grant (/authorize) flow, facilitating a user redirect an FDX approved authorization method.
- Data Receivers **MUST** support inclusion of Client_id and response_type=code in the Authorization end point (Provider requirement AS2)
- Data Receivers **MUST** support access token requests (/token) for both the authorization_code and refresh_token grant_types
- Data Receivers **MUST** support passing the grant_type, code or refresh_token, redirect_uri and client_id in the access token request (Provider requirement ID7)
- Data Receivers **SHOULD** immediately exchange the returned authorization code for a token set
- Data Receivers **SHOULD** immediately utilize an access token to call the FDX API at the Data Provider to retrieve the data for the consumer
- Data Receivers **SHOULD** encrypt and store a refresh_token for later use if the Data Recipient use case requires future data updates

2.2.5 Requirements originating in OpenID Connect

- Data Receivers **MUST** include an https redirect_uri in the Authorization redirect. Data Receivers **MUST** have the capability to pre-register the redirect_uri associated with the Data Recipient client_id (Requirements strengthened in FAPI). Note: All redirect URIs need to be base64 URL encoded to guarantee safe redirects.
- Data Receivers **MUST** be capable of of passing scope in the Authorization Redirect and **MUST** be capable of passing the Data Recipient required scope parameters available from the Data Provider if applicable
- Data Receivers **SHOULD** include the state parameter in the Authorization Redirect to maintain state between the authorization request and the response. The state should be in a cryptographically bound format to avoid cross-site forgery.

```
GET /authorize?
    response_type=code
    &scope=openid%20profile%20email
    &client_id=s6BhdRkqt3
    &state=af0ifjsldkj
    &redirect_uri=https%3A%2F%2Fclient.example.org%2Fcb HTTP/1.1
  Host: server.example.com
```

- Data Receivers **MUST** support the ability to receive a JWT id_token along with an access_token and refresh_token in the /token response from the Data Provider (Provider requirement ID1)
- In the event that a token is encrypted, Data Receivers **MUST** be capable of decrypting the id_token utilizing the agreed upon method with the Data Provider

2.2.6 Requirements Originating in FAPI

- Data Receiving Entities **MUST** support MTLS for communications with the Data Provider Authorization end point as a mechanism to support legitimate receivers of access tokens **OR** Data Receivers **MUST** support private_key_jwt as another potential means of authenticating as a confidential client to a Data Provider Authorization service. This is subject to changes in the Control Consideration Standards (DPoP is coming).
- Data Receiving Entities **MUST** support generating and passing a state parameter in the Authorization redirect which will be returned by the Data Provider in the Authorization response
- Data Receiving Entities **MUST** include the redirect_uri in the Authorization redirect. Data Receivers **MUST** have the capability to pre-register the redirect_uri with the Data Provider

2.2.6.1 Encryption

- In order to be certified Data Receiving Entity **MUST** prove that they are able to implement the mandatory guidelines of the FDX Sensitive Data Taskforce RFC
  - Acceptable encryption/decryption modalities are defined by the FDX Sensitive Data Taskforce.
  - FDX RFC 0063 (API Adoption of End-to-end Encryption) guides the implementation and will be helpful for entities who are looking for certification.
  - FDX RFC 0011 (Message Encryption) lays out the specific encryption requirements of the Sensitive Data Taskforce
- Data Receiving Entities **MUST** have an encryption methodology in place to be ‘certified’ by FDX.
- Data Receiving Entities **MUST** have a decryption methodology in place to be ‘certified’ by FDX
- o Minimum encryption capabilities as defined in the current FDX API specs **MUST** be in place (see FDX API v5.0 - Fall Release 2021)

2.2.6.2 Operational Requirements

Abiding by these operational requirements will contribute to the scalability availability & performance of the consumer permissioned data sharing ecosystem. If you want good data, be a good data partner.

From the FDX Foundational Requirements for Data Providers:

- Data receiving entities **MUST** capture the timeframe of the data that is received so that any use of the data includes understanding of the age of the data on a per account basis. For example, data as of for a particular set of attributes **MUST** be captured if available.
- Data Receiving Entities **MUST** limit invoking the range of successful lookback transaction history to a single query or session per registered application. DREs **MUST** NOT request the full transaction history repeatedly. On subsequent calls, the range **MUST** be limited to the extent required to successfully capture all new transactions.
- Data Receiver **SHOULD** be able to distribute Batch refreshes over an agreed upon window with the Data Provider
- Data Receiving Entities **MUST** have the capability to observe and regiment defined rate limits that are set on a per provider basis. When a rate limit is breached, the FDX specified error code is 429.
- Excessive number of requests by a Data Receiving Entity. As an example:
  A Data Provider MAY place a limit requirement and/or preferred refresh timing on batch requests if there are infrastructure issues related to API access.
- If temporary limits are necessary, they SHOULD be communicated to Data Receiving Entities and Aggregators, both via the API itself and direct communication channels.
- Data Receiving Entities SHOULD demonstrate the capability to handle notifications from a Data Provider which inform the DRE that information has been updated. This capability allows data receiving entities to only request data when new information is available, conserving resources for everyone in the chain. Relates to RFC 0188 (Event Notifications Framework).
- Customer driven refreshes should not be limited, but Data Receiving Entities SHOULD demonstrate the ability to set up a configurable refresh rate that the customer may trigger during the same session.
- Data Receiver **SHOULD** have the capability to control and monitor batch traffic separately from End User initiated traffic

2.2.7 Data Recipient Responsibilities

2.2.7.1 Call Structure

- When a data recipient creates a new use case, the recipient SHOULD consider the minimum data calls required to fulfil the objective.
- Calling for token refresh **MUST** always be the first step of any aggregation. Active bearer/access tokens are required to aggregate. The refresh token will be used to request a new bearer/access token.
  - It is important to work with the individual institution to understand the correct lifespans and orders of token usage.

- Completion of data calls - all data calls **MUST** be scheduled to complete prior to the expiration of a newly issued bearer/access token.
- Call sequencing - FDX documentation always mentions which endpoints that you must call, but not the order that these calls must be made. It is expected that a Data Provider has the required sequencing of their API in the Data Provider documentation. Until this is defined within FDX, a Data Receiving Entity SHOULD follow the call sequencing laid out by the Data Provider documentation.
  Data recipients SHOULD place the calls in one of three sequences:
  - Call Sequence #1: /accounts?resultType=lightweight, iterate getting /account/{accountId}?resultType=details, and iterate calling each /account/{accountId}/transactions
  - Call Sequence #2: /accounts?resultType=details, then iterate calling each /account/{accountId}/transactions
  - Call Sequence #3: /accounts?resultType=details and transactionsIncluded=TRUE - returns a list of accounts details and embedded transactions for the range requested (single call)
- Data Recipients **MUST** demonstrate the ability to handle and respond to errors that indicate maximum date range has been exceeded. The response to this kind of error is to make calls that fit within the API date range window.

2.2.7.2 Accounts Retrieval

- Data receiving entities SHOULD provide only the relevant account or list of relevant accounts (accountId) when requesting details.
- Data Receivers SHOULD limit FDX account details API calls to the account types required for the Data Recipient use case.

2.2.7.3 Transactions Retrieval

- When required by the Data Provider API, Data Receiving Entities SHOULD send a start and end time for a transactions request. Start and end time parameters should be governed by the API specification and bilateral agreement in place. The specifics of these details are critical as they impact the resources of a Data Provider.
- Data Receiving Entities **MUST**, where available, check the transactionsIncluded flag to prevent calling the transactions endpoint for accounts which do not support transactions. When applicable, Data Receiving Entities **MUST** only request transactions on accounts where transactionsIncluded=TRUE
- If the lastActivityDate is present in the Data Provider response, Data Receiving Entities **MUST** ingest this information, and use it to determine whether a transactions call is required. This is intended to prevent unnecessary transactions requests.

2.2.7.3.1 Pagination

- Correct use of offset and limit for pagination is necessary. This should be governed by the API spec of the Data Provider. Data Providers will not always have consistent use of pagination and thus Data Receiving Entities **MUST** paginate anytime that an offset and/or page indicator is present.

2.2.7.4 Error Handling - FDX Error Codes

Refer to the Error Codes for Data Recieving Entities spreadsheet for a full list of error codes.

- A Data Receiving Entity **MUST** demonstrate the ability to ingest and handle error responses on API calls.
- A Data Receiving Entity **MUST** follow the FDX error handling guidelines.

2.2.7.4.1 FDX Error Handling Guidelines

Refer to the Certification Cases Errors section of the Data Provider Requirements document for error handling guidelines.

2.2.7.4.2 Partial Error Response

- Not all the data that was requested was returned by the data provider. When this takes place, a Data Receiving Entity **MUST** ingest and handle the error accordingly. HTTP Status Code 206.
  - 501, 401 errors are an example of this CERTIFICATION WG END 8/23/22

2.2.7.4.3 Maintenance Windows

- When receiving an FDX Maintenance Window error code, a Data Receiving Entity **MUST** demonstrate the ability to halt requests to the API.
- Data Receiving Entities SHOULD consult the FDX registry to be familiar with the standard maintenance windows of an FDX registered Data Provider API.

2.2.7.4.4 Retry After

- If the Data Provider provides retry-after instructions, then a Data Receiving Entity SHOULD honor the instructions. Retry-After instructions may be provided along with a 503 maintenance HTTP status code.

2.2.7.5 File Downloads

Image hosting can be both resource and cost intensive for Data Providers. As responsible data partners and stewards, Data Receiving entities should be cognizant of how this will impact the ecosystem.

2.2.7.6 Image Retrieval

2.2.7.6.1 Transaction Images

- Transaction images may be a check, receipt, invoice, etc related to a particular transaction or set of transactions.
- Within transactions, merchants can store an invoice. Some institutions use images here, and this would be a separate data call under the transactions endpoint. Guidance should come from individual Data Provider image retrieval specifications. (eg. Retrieval within observed windows and quantities may be the certification test on this requirement)

2.2.7.6.2 Document Downloads

- User requested statements SHOULD NOT be limited by the Data Receiving Entity
- Data Receiving Entities **MUST** limit requesting a document to a single query or session per registered application. DREs **MUST** NOT request an individual document repeatedly without cause (for example, deleted for security purposes).

3 Certification Requirements for Data Access Platforms

Data Access Platforms are considered a data receiving entity and must meet the requirements for Data Recipients (section 2) as well as requirements specific to Data Access Platforms (section 3).

3.1 Assumptions

1. All FDX DAPs will also be functioning in the role of a Data Recipient and will be subject to FDX Data Recipient certification standards.
2. All participants in the FDX ecosystem will comply with existing laws and regulations
3. This is a technical specification so any laws will need to be incorporated into the standard as they are applicable.
4. This RFC is setting requirements for a Data Access Platform who is providing services for a DRE. This portion of the specification is silent on cases where a DRE is directly integrated to a Data Provider.
5. CFPB has opened the door to alternative consent flows, authorization procedures likely will need to be honored without prior relationship. Once the appropriate steps have been taken then authorization must be granted*
6. FDX certified Data Access Platforms and members of the FDX ecosystem and as such **MUST** consider the FDX guiding CATTS principles when making decisions. A best practice would be to review these principles with data recipients utilizing your Data Access Platform.
7. Per standard FDX Policy, the ultimate source of truth is the FDX specification. These and other RFCs are intended to feed the specification which is reviewed and approved by the TRC, and ratified by the FDX board of directors.

3.2 Application Registration

Primary but not exclusive source document *FDX Recipient Registration Guidelines* (FDX RFC 0153)

- DAP SHOULD be able to determine which options are acceptable to the various data providers that they service, and per FDX *Recipient Registration Guidelines with Delegation* (FDX RFC 0206) it must be mutually agreeable between the DAP and DP. This means that multiple registry methods SHOULD be supported to become an FDX certified DAP.
- A DAP **MUST** be able to interact with FDX Dynamic Client Registration APIs in order to get certified as an FDX DAP.
- Data Access Platforms SHOULD keep track of the approval process to inform the DREs what the turnaround time looks like
- a DAP **MUST** be able to call the status endpoint for dynamic registration to pull the status from the DP per *FDX Recipient Registration Guidelines* (FDX RFC 0153). A DAP SHOULD inform downstream entities of this status when obtained.

- a DAP **MUST** have the capability of using the DCR update endpoints that are set up by the Data Provider
- DAP **MUST** be able to process a passthrough application DELETE command to the Data Provider at the request of a particular DRE. The DAP SHOULD delete any private key material belonging to the application which originated a DELETE command. This is specifically a requirement to serve DELETE request initiated by the DRE.
- When an application has been deleted upon request, then a DAP **MUST** NOT process additional requests for data on behalf of this application.
- When a DELETE command for an application is received by a DAP then they SHOULD immediately revoke all consumer tokens.
- A DAP **MUST** follow the FDX Data Minimization Guidelines (FDX RFC 0235)
- A DAP **MUST** be able to interact with FDX Dynamic Client Registration APIs in order to get certified as an FDX DAP. This entails both upstream and downstream enablement.
- A DAP **MUST** be able to gather each of the required data elements needed to dynamically register a DRE per the terms of *FDX Recipient Registration Guidelines* (FDX RFC 0153).
- A DAP MAY provide DCR or DCR management to downstream DRE.
- If the DAP is going to be the registering party, then the DAP **MUST** ensure accuracy for all recipient and intermediary fields.
- If a Data Recipient has a single consent to cover all Data Recipient Application use cases, and the DAP requires scope during Registration, then the Client ID Registration **MUST** include Scope which covers all use cases.
- If a Data Recipient utilizes multiple Data Access Platforms for consumer permissioned data sharing services, the Data Access Platforms MAY register the Data Recipient with the same client_name.
- DAP **MUST** be able to support multiple Data Recipient registrations with the same client_name.
- In the event that there are separate applications with the same client_name, then a DAP **MUST** respond with separate client IDs and client credentials for each registration.
- In the case of application registration, the Data Access Platform will generate a private public key pair, the public key of which is passed to the Data Provider where it will be used to authenticate the client. The DAP **MUST** NOT provide any private key to any 3rd party.
- DAP **MUST** be able to establish a unique application ID for each individual application as an identifier.

3.3 Intermediary Requirements

The DAP will only have access to this via registration and OAuth

- If an Intermediary is added/removed, the whole chain **MUST** be re-registered and a new client-id issued. From: RFC 0117 FDX OAuth Extensions
- The Client should register with the "Scope" as specified in https://tools.ietf.org/html/rfc7591.

- If a Data Receiving Entity would like to modify the scope of data that the end user is sharing, then the Data Access Platform **MUST** facilitate the process for the Data Provider to obtain consent for the additional data scope.

3.3.1 Security Requirements of App Registration

A DAP has an entire suite of endpoints for initiating authorization, resource calls, and value added products. For Dynamic Client Registration a DAP will have separate endpoints for a Data Receiving Entity to register themselves with the DAP, as well as for the DAP to register the client application with the Data Provider. These endpoints are subject to independent security mechanisms from the other endpoints.

1. Data Recipient registration **MUST** be secured with a method that ensures the Recipient Registration request is from a known Partner (Data Receiving Entity).
2. Data Access Platforms **MUST** secure the Dynamic Client Registration end points with the applicable portions of the current security standards defined by the FDX security standards working group.
    a. Data Access Platforms **MUST** adhere to FAPI Authorization server requirements for Partner Client Authentication and sender-constrained access tokens as stated in section 5.2.2 #5, #6, and #14 (FAPI Part 2 Authorization Server).
        i. #5 - shall only issue sender-constrained access tokens;
        ii. #6 - shall support MTLS as mechanism for constraining the legitimate senders of access tokens;
        iii. #14 - shall authenticate the confidential client using one of the following methods (this overrides FAPI Security Profile 1.0 - Part 1: Baseline clause 5.2.2-4):
            1. tls_client_auth or self_signed_tls_client_auth as specified in section 2 of MTLS, or
            2. private_key_jwt as specified in section 9 of OIDC;
3. If a Data Receiving Entity is planning to use a DAP hosted DCR. Data Receiving Entities **MUST** use and Data Access Platforms **MUST** enforce the practices in RFC 8705 to bind the Credential (Bound Token) to the secure channel during DCR call execution.
4. If a DRE is not planning to utilize a DCR API to register their application, then a secure communication method **MUST** be employed to transmit the registration data that is required of a Data Receiving Entity. The Data Access Platform **MUST** use a secure transmission method to return the client ID back to the Data Receiving Entity.

3.4 Consent

From FDX RFC 0156 Consent API: Request, Issue, and Retrieval Operations and Data Structures:

In the three-party model of consent utilizing the FDX consent API: Data Access Platform *discloses* the parameters of the consent request to the End User; Data Provider *receives* authorization from End User; Data Provider provides the record of consent to the Data Access Platform. These interactions are predicated on a number of conditions:

- Before the consent journey begins, End User **MUST** have independent relationships with Data Recipient and with Data Provider;
- Before the consent journey begins, Data Recipient **MUST** be pre-registered with the Data Provider. Resultantly, Data Recipient **MUST** have established a superset of what may be requested from Data Provider, and Data Recipient has established identity with Data Provider (both in terms of client authentication and in terms of an existing business agreement);
- End User **MUST** initiate their consent journey (requesting new data access) from within Data Recipient's experience/application:
- Data Recipient determines the types of data access it intends to access from Data Provider, and **MUST** disclose its intent to the End User;
- End User **MUST** actively authorize Data Provider to enable Data Recipient's access to End User's data.

3.5 Considerations for Intermediaries

From FDX RFC 0156 - Consent API: Request, Issue, and Retrieval Operations and Data Structures:

In the North American ecosystem, the DR's interface(s) for initiating consent is frequently serviced by an intermediary Data Access Platform (DAP). In this case, the DAP occupies the role of DR in the interaction. Throughout this proposal "DR" may be interpreted as a role in the protocol and data exchange, rather than as a specific category of business entity.

The API operations defined in this proposal are restricted to this three-party model. Data Access Platforms are not excluded from the interaction: they may act on behalf of other entities to perform the Data Recipient or Data Provider role.

A four-party model of consent is not defined by this proposal. FDX plans to expand considerations for intermediaries in future versions of this API.

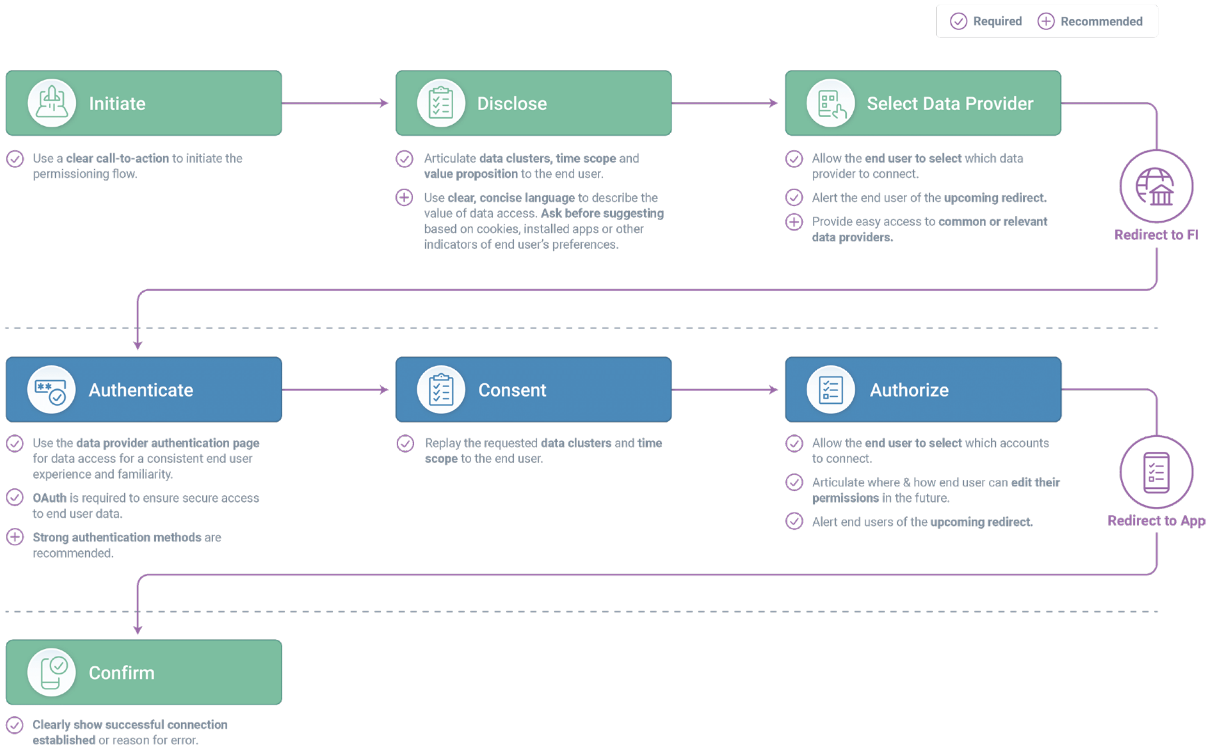
- "A DAP **MUST** capture a record that the end user viewed Disclosures and chose to "Continue" with the redirect to the Data Provider (for Consent and Authorization)."

  Note that the existing language uses the term "Consenting to utilize the service" and per FDX definitions, Consent is the step at the Data Provider between Authentication and Authorization. Per the FDX definition of consent, the DAP will not have a record of that event.

- Evidence of consent for Data Access Platforms is limited to auth code and timestamp. Future certification profiles will incorporate FDX consent API data entities.
  - A DAP SHOULD capture a timestamp of the auth code receipt following the assumed consent by the end user. This is functioning as a receipt that authorization took place at the data provider.
    - The presence of an active access and refresh token is proof that the consent and authorization flow was completed.

    - The Consent API defines a mechanism (GET /consents/{id}) to retrieve the Consent Grant, which should serve as the “record” of consent.
- In order to become certified, a DAP **MUST** demonstrate the ability to initiate and complete the consent and authorization flow on behalf of multiple downstream data receiving entities.
- The UX Guidelines SHOULD serve as a model for these requirements and flows, from page 27 of the FDX User Experience Guidelines

Grant Consent Journey



Initiate

✓ Use a **clear call-to-action** to initiate the permissioning flow.

Disclose

✓ Articulate **data clusters, time scope** and **value proposition** to the end user.

⊕ Use **clear, concise language** to describe the value of data access. **Ask before suggesting** based on cookies, installed apps or other indicators of end user's preferences.

Select Data Provider

✓ Allow the **end user to select** which data provider to connect.

✓ Alert the end user of the **upcoming redirect.**

⊕ Provide easy access to **common or relevant data providers.**

Authenticate

✓ Use the **data provider authentication page** for data access for a consistent end user experience and familiarity.

✓ **OAuth** is required to ensure secure access to end user data.

⊕ **Strong authentication methods** are recommended.

Consent

✓ Replay the requested **data clusters** and **time scope** to the end user.

Authorize

✓ Allow the **end user to select** which accounts to connect.

✓ Articulate where & how end user can **edit their permissions** in the future.

✓ Alert end users of the **upcoming redirect.**

Confirm

✓ **Clearly show successful connection established** or reason for error.

3.6 Instruction Passthrough

- If a customer revokes access through a Data Recipient, then a DAP **MUST** be able to pass this revocation (and notification) back to the DP.
- FDX does have a two way notifications rail, and DAPs SHOULD be capable of utilizing the framework as defined in FDX RFC 0188 (Event Notifications Framework), FDX RFC 0198 (Consent Event Notifications), and presumably FDX RFC 0236 (Expansion of Notification Framework to Include Two Way Notifications) when ratified.
- From an implementation standpoint, many of these will be defined as a **MUST** at a future date. A future RFC will likely specify these items as required.

3.7 Data Minimization

This is a placeholder for new requirements that are in flux. They will need to be incorporated into the certification standard at a later date once completed and approved.

What are the regulatory components of Data Minimization?

- A Data Access Platform **MUST** follow the data minimization guidelines of FDX RFC 0235, which includes:
  - The Data Provider uses information from the Consent Grant to determine what, if any, data is shared with the Data Access Platform or Data Recipient. Information in the explicit Consent Grant should include:
  - Data set(s) and/ or data elements to be shared
  - From whom, with whom, through whom
  - For what purpose
  - For what duration
  - For what lookback period
  - Accounts to be shared - The UX guidelines specify that this should be selectable.

A Data Access Platform SHOULD demonstrate the ability to facilitate the end user's ability to select which accounts' data is to be shared.

3.8 Security

- Data Access Platforms may institute CIBA, and if doing so **MUST** follow the specifications of FDX RFC 0122 (FDX Adoption of FAPI). CIBA is not an FDX required authorization method at this time.
- Data Access Platforms **MUST** implement the requirements of FDX RFC 0122 (FDX Adoption of FAPI)
- Data Access Platforms **MUST** be able to demonstrate the capability of managing access and refresh token lifespans.
- DAP attests that: Data Recipient controls for data at rest comply with regulatory requirements and in the absence of a regulation, have controls commensurate with the risk.