

Beneficial Characteristics Desirable in a Directory Service

INTRODUCTION

This Beneficial Characteristics paper offers a foundation for conversation about the specific characteristics required in a directory that seeks to maximize the economic benefits of faster payments for payors, payees, and all participants in the payments ecosystem.

The U.S. Faster Payments Council (FPC) earlier released a paper entitled, “The Economic Benefits of an Independent, Interoperable Directory for Faster Payments”¹ (referred to herein as the “Economic Impact paper”). The Economic Impact paper highlighted the economic impact that could be achieved when faster payments are supported by robust directory capabilities. Realizing these economic impacts will require the availability of certain core capabilities in a directory, this paper explores certain characteristics of a directory and ties them back to the benefits identified in the Economic Impact paper.

The beneficial characteristics highlighted in this document are broken into two groups, dubbed “core characteristics” and “value-added characteristics.” The core characteristics are those deemed to be fundamental to any form of directory in the faster payments space. Without these core characteristics, the ability to achieve the economic impact items is severely curtailed. Value-added characteristics are not deemed essential to a directory capability, but their existence would enhance the ability of any directory capability to help the industry realize the identified economic impacts.

There is no presumption this work has identified every possible feature of a directory to support faster payments. The world of faster payments is quite broad, and many parties are affected. Different directory capabilities may show up in different directory implementations and affect different groups of participants in the world of faster payments.

The scope of this effort is consistent with the FPC charter by including instant payments, push to card, and Same Day ACH. Some of these beneficial characteristics rely on a credit push payment to derive their value, and further consideration must be given to debit transactions.

Discussions around all the beneficial characteristics tend to circle back to a few attributes – safety, interoperability, and governance. Rather than try to weave a discussion of these issues into a description of each individual characteristic, this document describes these as traits that any characteristic should inherit.

¹FPC Directory Models Work Group. (2021, March). *The Economic Benefits of an Independent, Interoperable Directory for Faster Payments*. Faster Payments Council. <https://fasterpaymentscouncil.org/blog/5523/-The-Economic-Benefits-of-an-Independent-Interoperable-Directory-for-Faster-Payments>

Safety

It must be assumed that any directory capability used for the purpose of supporting faster payments is implemented in a manner to ensure safety. Rather than outlining within the discussion of each characteristic that the characteristic will be safe, it can be assumed that safety is an underlying principle of this work.

What does it mean for a directory to be “safe”?

- **Data Security** – Any information not intended to be public will be protected both at rest and in flight;
- **Cybersecurity** – The directory operations will limit access to the directory to those parties that are authorized and protect the directory against cyber-attacks;
- **Integrity** – The information in the directory will be accurate and the actions of the directory or those using the directory will not inadvertently change the data; and,
- **Privacy** – Information in the directory and information provided to participants in the directory should be used only for the purpose of enabling or directing a payment; it should be assumed that the directory cannot be “mined” for information.

Interoperability

It is difficult to have a conversation around payments that does not touch on the ability of various systems, networks, data flows, etc. to work with each other. The FPC Network Committee attempted to address this complexity in a paper entitled, “Faster Payments Interoperability,”² which explores various models for interoperability.

At its core, the function of a directory is to use one bit of information to find another bit of information. For example, when given a name, an old paper telephone directory enabled you to find a telephone number. Directories can operate within a domain, e.g., using the company directory to look up the email address of another employee of the company. This linking of information can also enable communication across domains. A specific example of this type of cross domain interoperability is the processing of an ACH transaction between the two operators, Federal Reserve FedACH and The Clearing House Electronic Payments Network (EPN). A directory capability maintained by those two players identifies which transactions must be routed to the other domain to facilitate processing. This concept of interoperability permeates the discussion of a directory capability for faster payments. Each characteristic articulated here has the possibility to enhance interoperability. The nature of interoperability can vary greatly, depending on the scope of domains implied in the characteristic.

Governance

All parties participating in the payments ecosystem do so under a set of business expectations – customer contracts, regulations, network rules, etc. A directory, particularly one which offers interoperability between different networks or domains, will require a governance structure. Who can participate? What are their

²FPC Network Committee. (2020, June). *Faster Payments Interoperability*. Faster Payments Council.

https://fasterpaymentscouncil.org/userfiles/2080/files/Faster%20Payments%20Interoperability%20WP_June%202020.pdf



obligations? What rights and responsibilities accrue to those using the directory? Governance over directories exists today and will certainly continue to be needed. For the purposes of this document, there is an overriding assumption that the governance issues will be addressed, and the characteristic can operate to deliver the benefits identified in the Economic Impact paper and beyond. Further conversations on governance are warranted but are beyond the scope of this effort.

When reading the discussion of each characteristic below one can assume, in keeping with the discussions in this section, directories in faster payments are and will continue to be safe, will offer some level of interoperability, and will operate under some form of governance.

Terminology

This paper seeks to identify beneficial characteristics independent of choices made regarding implementation of a directory service. It does not attempt to define the ownership, operation, or participation in a directory scheme. While not identifying specific implementation, this paper will use the terms payment route, directory entry, and payment alias, as follows:

- **Payment Route** – A payment route is the information necessary to process a payment from a payor to a payee via one particular payment scheme (e.g., Same Day ACH, RTP, push to card).
- **Directory Entry** – A directory entry contains one-to-many payment routes via which payments transactions can be sent between payor and payee. Generally, a payee is the subject of the directory entry used by the payor or payor’s payment service provider. (This could be reversed for a “request for payment” transaction.) Payees should have control over their data exposed in a directory entry.
- **Payment Alias** – A payment alias is an identifier by which the directory entry for a payee can be located. Payees choose payment aliases that are easy to remember and able to be shared freely with payors. Examples of payment aliases are phone numbers, email addresses, D-U-N-S Number³, ebCore Party Id⁴, etc. For the purposes of this paper, a payment alias is deemed to be unique within a directory scheme. This means that a phone number, for example, can only be associated with a single payee in the directory. A payee could have the option of creating multiple directory entries using different payment alias identifiers to specify different payment routes and related preferences.

The underlying capabilities of a directory or directories could enable a variety of overlay services, e.g., value-added capabilities around the payment. The nature and behavior of these services are beyond the scope of this paper.

³Dun & Bradstreet. (n.d.). *Dun & Bradstreet D-U-N-S® Number*. Retrieved May 7, 2021 from <https://www.dnb.com/duns-number.html>

⁴Oasis. (2010, July 10). *OASIS ebCore Party Id Type Technical Specification Version 1.0*. <http://docs.oasis-open.org/ebcore/PartyIdType/v1.0/CD03/PartyIdType-1.0.html>

CORE CHARACTERISTICS

1 Validates Accuracy of Routing Information

Directory entries should be validated for accurate routing information at the time an entity (e.g., natural person, business, public sector institution, biller, etc.) registers into the directory. Governance processes under which a directory operates can ensure that routing information is kept up-to-date, giving originators confidence in the routing information provided.

What are the benefits?

A directory can help ensure correct routing to payment accounts, and reduce misapplied or unapplied payments, by performing pre-validation of routing information at the time an entity registers in the directory. An intangible benefit of more accurate payments is increased confidence and trust by all stakeholders which could lead toward broader adoption of faster payments.

Who benefits?

Both senders and receivers of payments benefit from having a directory pre-validate the routing information for a payment:

- For receivers, this ensures the funds are applied to the correct account.
- For senders, it provides a level of safety by ensuring funds are being sent to a properly validated account.
- Both parties benefit as this reduces the need for validation each time a transaction or payment is initiated.

Pre-validating the routing information also benefits financial institutions (FIs) by reducing the number of exception items due to misapplied or unapplied payments.

Why are these benefits important?

To encourage real-time payment adoption across the ecosystem, safety and surety are paramount. Validating routing information will help create the confidence necessary to help grow widespread adoption. Both senders and receivers can be confident that funds are being properly routed and applied to the intended account.

2 Ensures Payment Aliases are Unique within the Directory

A payment alias is how a payor can search a directory to find a directory entry for a payee. A payment alias is deemed to be unique within the directory scheme. This means that a phone number, for example, can only be associated with a single payee. Customers may have relationships with multiple financial institutions. The directory should have logic to ensure that payment aliases are unique and return the

most relevant or current result back to the requestor for that particular payment alias. The directory may wish to enable features that identify all payment aliases for any given end user.

What are the benefits?

Unique payment alias capability provides flexibility for customers that choose to have multiple payment aliases and/or work with multiple financial institutions. This also allows financial institutions to participate in a directory without needing to coordinate with other financial institutions regarding the payment alias for a particular customer, knowing that the directory will ensure the most relevant or current payment routes are returned. Lastly, this allows the directory to support multiple payment alias types (e.g., phone, email, social ID, merchant ID) for the same account or across separate accounts.

Who benefits?

All parties in the faster payments ecosystem benefit from a directory which supports business logic that prevents duplicate payment aliases:

- Senders/receivers are afforded more flexibility when provided with multiple payment route options for a given payment alias. Preference information in the directory entry provides the entity processing the payment the ability to use the most optimal payment route.
- Financial institutions that provide more payment alias options to their customers' payment service providers (PSPs) will have clarity in the payment routes available.
- Operators benefit from increased adoption of the platform and more supported use cases due to the flexibility of the directory.

Why are these benefits important?

It is very likely that customers will have relationships with multiple financial institutions. Customers should be able to create payment aliases which they can share for different purposes (e.g., personal, business, charitable contribution) and tie to different accounts. In addition, payment aliases such as email addresses can be easy to create. A customer may establish directory entries under more than one payment alias through a single financial institution provided the institution offers such support.

3 Supports Multiple Routes Linked to Payment Alias

As noted in the Economic Impact paper, the ability to automate the current manual routing of business-to-business payments through faster payment options by using directory data can save as much as \$94.1 billion. Payment participants from other sectors (person-to-person, business-to-person, person-to-business) would derive additional benefits.

A directory entry identified by a single unique payment alias may contain many different payment routes that identify how the owner of the payment alias can accept payments. The routing number and a secure version of the account number are used to route the transaction. Various means can be employed to determine which payment method would be used for any given payment, e.g., user selection, pre-selection, programmatic options based on preference.

What are the benefits?

Participants in the payments ecosystem may save money because they have multiple routing options available to them and they can have confidence that the payment will be routed correctly. There can be additional savings in automating manual routing processes to faster payment options. Users and applications can add functionality, such as providing supplemental information about a creditor, linking to multiple end-user accounts, adding new payment service providers, etc.

Who benefits?

The recipient benefits because now they can receive payments over multiple means based on the different payment channels reflected in the directory. Recipients can choose the routing path and receive the funds however they want. Benefits also accrue to the sender because they can have confidence that the payments are routed correctly. Networks benefit as this provides the opportunity for the processing of more transactions to occur on their rails.

Why are these benefits important?

Identification of multiple payment routes supports optimal routing options for the sender. With an understanding of the capabilities, the costs and timing associated with these payment routes, the sender of funds can make more informed choices. Additionally, as stated in the Economic Impact paper, the ability to automate the current manual routing of payments through faster payment options by using directory data can save as much as \$94.1 billion per year for business-to-business payments alone.

4 Minimizes Storage of Sensitive Information

End users that may want to make a payment could be relieved from the obligation to store sensitive personal and account data in their applications that use a directory.

What are the benefits?

Directories enable the use of payment aliases, such as email or phone, to find payment routes for an individual, and for transacting with businesses using various types of non-sensitive identification.

Transacting parties provide their preferred lookup types and specify how they want them registered in the directory. These lookup methods identified by the end user should be ones that the end user either never or rarely changes, thereby minimalizing the efforts needed to keep this information up-to-date.

A payee can now store a payment alias rather than sensitive account information. Not having to store sensitive information provides data security and accuracy and can ensure use of the most up-to-date payment routing information.

Who benefits?

Businesses that currently store customer sensitive end user account information must keep that information up-to-date as the transacting parties may change this information regularly. Individuals and

businesses need not share this sensitive information. They no longer bear the burden of tracking where they have shared their account information and updating it as needed. FIs and PSPs that process payments for the end users also benefit from reduced handling of this personal and sensitive account information.

Why are these benefits important?

There are several compliance regulations that must be addressed when any personal or account sensitive information is stored in electronic and/or physical records used by personal and business banking payment applications. These include General Data Protection Regulation (EU GDPR), Payment Card Industry Data Security Standard (PCI-DSS), Gramm Leach Bliley Act (GLBA), as well as part of the bank secrecy laws. The effort and cost of remaining in compliance with these regulations can be significant and could translate into savings if only the minimum information necessary to initiate payment is stored.

5 Prohibits Use of the Directory to Mine Payment Detail Information

Having safeguards in place to ensure confidence, and therefore usage, is an important characteristic of a directory. Such safeguards ensure the directory cannot be searched to mine payment detail information in a manner not intended.

What are the benefits?

Directory lookups should only be enabled using the single payment alias provided by the party controlling the payment alias and the party with whom they want to transact. To prevent attempts to mine the directory for payment information, the user should not be able to look up an alias by name or other search criteria, as is done in a yellow or white pages lookup.

The information directory entries should be limited to is payment routes and should only include personal or confidential information strictly required to identify a payment route.

Who benefits?

Networks benefit from the assurance that the directory cannot be used to mine data about their customers. End users benefit from knowing that their account information remains well-protected.

Why are these benefits important?

These lookup restrictions address the reluctance of networks and other applicable participating service providers to participate in a directory due to concerns about the potential for poaching of end customers that have registered. Parties that contribute lookup information to a directory can be assured that their data privacy will be protected from outside parties.

6 Supports End User Controlled Profiles

Payment aliases are created for end users that can demonstrate control over the identifier used for the payment alias and proper authority to use it as a payment alias. The end customer controls any changes made to the directory entry associated with a payment alias they control. If a directory entry contains multiple payment routes, the directory entry may include preferences specified by the directory entry owner. In practice, it is likely that payees create and manage directory entries for which they are an owner through a payment service provider.

What are the benefits?

End users provide their payment alias to their trading partners to inform them how to send a payment. Account details are only accessible behind the scenes to the FIs and PSPs.

FIs and PSPs will enroll end users (e.g., businesses, consumers) in the directory giving these providers an opportunity for additional verification steps. This also enables opportunities for additional products and value-added services. Payees will select their unique payment alias and identify the payment route information to be listed along with that payment alias. Payees may decide to have multiple payment aliases, and they can register multiple payment aliases either with the same FI and PSP or with multiple providers. The FIs and PSPs ultimately control the accounts registered associated with a unique payment alias through which they can receive payments on behalf of the end user.

Who benefits?

End users of payments (i.e., those consumers, business entities, etc., that are payors and payees) benefit from being able to control payment aliases and the payment routes specified in the directory entry to which the payment alias points.

Why are these benefits important?

The end user's payment alias is flexible as it is chosen by the end user. At the same time, the alias is relatively permanent as email addresses and phone numbers tend to be controlled by the same party for a considerable period of time. The payment routes identified in a directory entry related to a payment alias may change over time as the end user's financial preferences and relationships evolve. The payment alias should also be portable as new accounts can be added and old ones can be removed.

VALUE-ADDED CHARACTERISTICS

1 Enables Payor to Ensure Payment Alias Belongs to Intended Payee

The party originating a transaction by using a directory is able to verify the destination party identifier. A party identifier is minimal information, typically human readable, which serves to give the user of a directory entry confidence that the payment alias has directed them to the trading partner they intend (e.g., familiar name, company name).

What are the benefits?

The deployment of party identifiers with minimum party and/or account verification during the time of use creates benefits tied most closely to security. Minimizing the amount of banking/routing data exposed to the users of a directory entry allows confidence that the payment is being routed correctly.

Who benefits?

All parties of the directory benefit from the party identifier verification feature. The directory provider benefits from providing a safe and secure service which lowers barriers to adoption and makes the directory desirable to reputable players in the faster payments space. The receiver benefits from having only a minimum of their data exposed during interaction with the directory by senders and other third parties. The sender of the payment benefits from being able to verify the payment is going to the right place based on data supplied by the receiver.

Why are these benefits important?

Safety and security are essential to the adoption of faster payments and use of directory services. A directory which does not minimize the amount of information shared with senders or third parties may be open to abuse, which would harm the reputation of the impacted payments rail and the adoption rate of faster payments more generally. Users also need to be confident that the money they are sending is going to the right party. The ability to look up that information for verification purposes is critical to building trust in and adoption of the network.

2 Supports Request for Payment Transactions

Directory entries contain payment routes which are used for sending requests for payment, e-invoices, bill presentments, and other transactions and documents.

What are the benefits?

The benefits of a payment route enabling a request for payment help both the sender and receiver of the request. For the party seeking to receive funds, requests for payment must include the necessary details to ensure that payment is directed to the preferred/designated payment route with the appropriate

remittance detail. The request for payment may also include business-to-business automated e-invoice data.

Who benefits?

Parties in the faster payment ecosystem benefit from a directory that supports payment routes to initiate a request for payment. The sender of the request can send the request with the appropriate/necessary details for the receiver to submit/push payment with the confidence that it is being received into the appropriate account with the appropriate remittance detail. It provides the needed safety and security to accurately push the payment.

Why are these benefits important?

For faster payment adoption to be realized, senders and receivers need confidence that funds being requested for payment will be accurately and securely applied to the intended account, and will be recorded from the appropriate sender, using the necessary remittance detail to reflect the payment by the requested sender.

CONCLUSION

The Directory Models Work Group of the U.S. Faster Payments Council represents many voices in the industry – financial institutions, payment networks, enterprises, and payment service providers. This paper is a testament to the group’s dedication to finding common ground. Even considering provincial concerns, these characteristics were deemed to be valuable in a directory service for faster payments:

1. Validates Accuracy of Routing Information
2. Ensures Payment Aliases are Unique within the Directory
3. Supports Multiple Routes Linked to Payment Alias
4. Minimizes Storage of Sensitive Information
5. Prohibits Use of the Directory to Mine Payment Detail Information
6. Supports End User Controlled Profiles
7. Enables Payor to Ensure Payment Alias Belongs to Intended Payee
8. Supports Request for Payment Transactions

The themes of accuracy, security, flexibility, and user control present themselves in many conversations about faster payments. It is our hope that this foundational work can provide a basis for further development of ideas to advance adoption of faster payments.



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