Faster Payments Council

FPC FALL MEMBER MEETING

SEPTEMBER 14 – 15, 2022

MINNEAPOLIS

Real-Time Payment APIs, Global Market Practices, & Lessons Learned for the U.S.

Presented by the
FPC Secure Instant & Immediate Payments Work Group (APIWG)

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

Panel of Speakers

Dean Nolan
APIWG Chair
Fifth Third Bank

Moa Agrell
APIWG Vice Chair
Trustly

Steve Wasserman
APIWG Member
Vments, Inc.

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

Secure Instant & Immediate Payments APIs Work Group Presentation Outline

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

- Work Group Goals & Objectives
- API 101
- International Research Summaries
- Next Steps
- Questions & Comments

US Faster Payments Council

Secure Instant & Immediate APIs Work Group
Primary Goals and Objectives

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

GOAL:

- Provide guidance for U.S. implementations of APIs for Faster Payments

OBJECTIVES:

- Gather insights by studying international API standards
- Publish best practices for API Registration and Payments
- Provide resources for FPC members and the industry at large

US Faster Payments Council

API 101 - What is an API?

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

- API = Application Programming Interface
- How systems Communicate and Exchange Information
- Modular building blocks for common functions
- Functional & data-oriented interfaces for:
  - Customers/Clients/Members
  - Suppliers/Vendors
  - Partners

US Faster Payments Council

API 101: Functional Benefits of an API

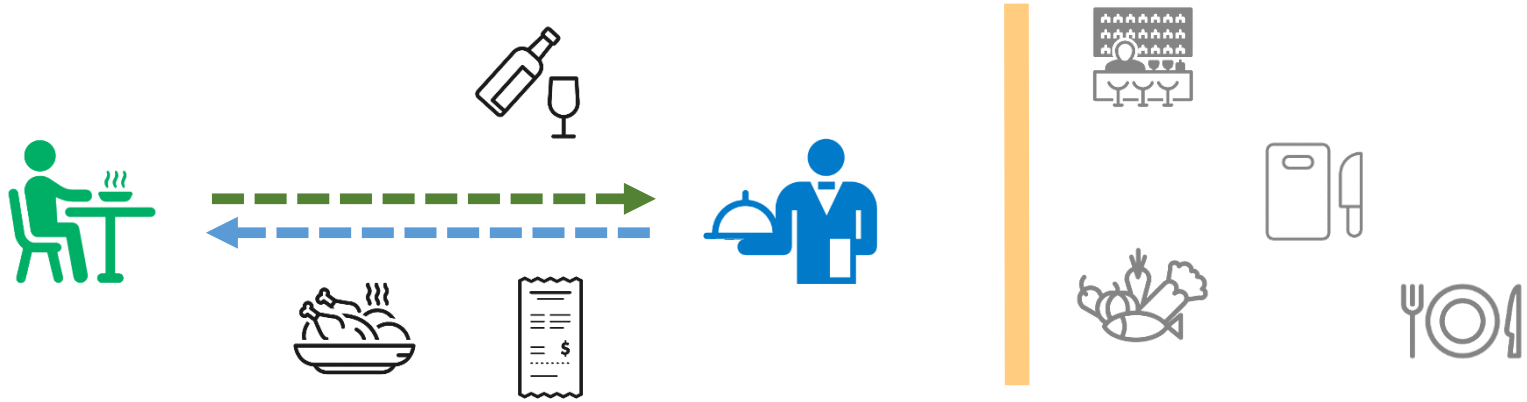
FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

- Enables consistent access to functions and data
- Enables real time transfer of information
- Hides behind the scenes complexities
- Enables flexible extensions of core functions
- Provides security and control
- Facilitates integration and automation

US Faster Payments Council

API 101: An API Analogy

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS



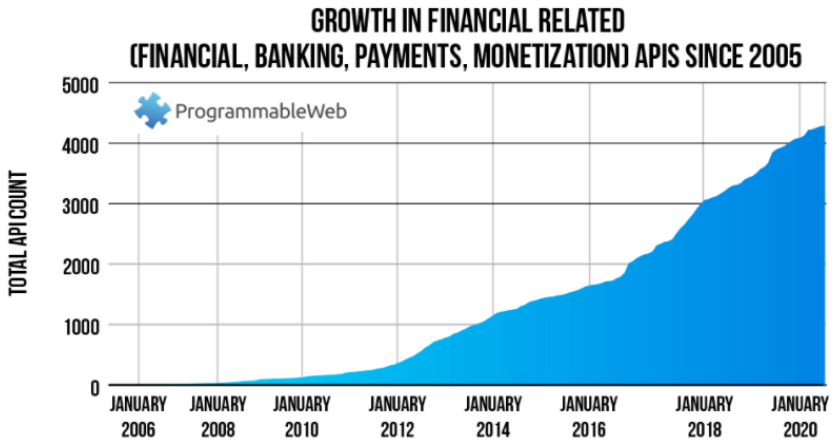
Customer	Items	Waiter	Kitchen, Bar

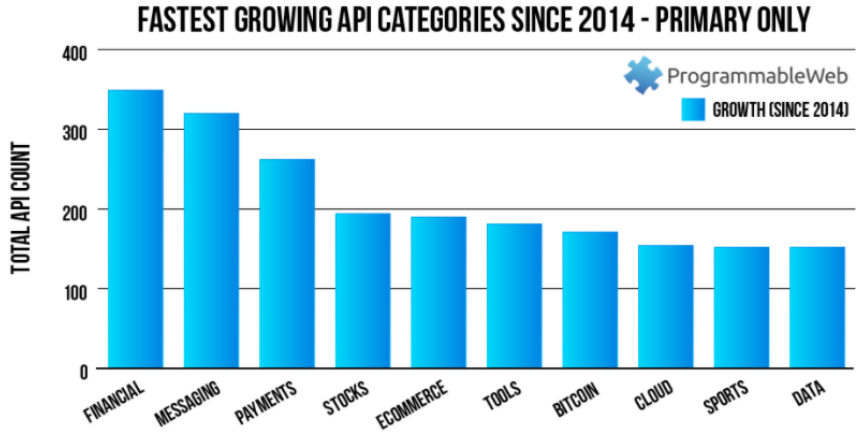
API Consumer, Clients, Partners	Dev Portal, API Catalog, Products, Features, Functions, Data & Information	API Provider, Services	API Gateway	Backend Systems, Data, Services, Resources

US Faster Payments Council

API 101: Trends & Tipping Points for Financial APIs

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS





- Significant growth in Financial Related APIs since 2005
- Financial & Payments APIs lead top 3 in growth since 2014
- Over 50% APIs are to support B2B products
- 55% businesses view API is critical for integration
- Key Drivers
  - Open banking initiatives
  - Rise of digital forms payment
  - Increase demand for real-time data, transactions, and automation

US Faster Payments Council

API 101: The API "Ecosystem"

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

API Gateway

- **Access to APIs**
- **Common authentication & authorization**

Developer Portal

- **For the developer community**
- **Extensions & Customizations**
- **Documentation**
- **Sample API usage**
- **Wizard (code generator)**
- **Sandbox**

Services

- **"Business capabilities"**
- **Transactional (e.g. payments)**
- **Validation functions**
- **Information lookup**

US Faster Payments Council

API 101: File vs API Experience

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

File Based Experience	API Experience
Implementation Guide	Dev Portal
File Gateway	API Gateway
File Layout	API Definition
FTP Credentials	Standardized Security
Acknowledgement File	API Real-Time Response
ACH, EDI820, etc.	JSON/XML
Certificate	Access Token
File Transfer Folders	Endpoint Services

US Faster Payments Council

API Subgroup: International Research

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

APIWG Subgroup: International Research Members

- Moa Agrell (WG Vice Chair, Subgroup Lead) – Trustly
- Varun Abroll – BMO Harris
- Maria Arminio – Avenue B Consulting
- Avnish Gupta- BNY Mellon
- Robert MacColl – Rapyd, Inc.
- Steve Mott – BetterBuyDesign
- Dean Nolan (WG Chair) – Fifth Third Bank
- Federal Reserve Bank of Chicago
- Azeem Sattar – Airbnb, Inc.
- Irina Singh – Mastercard International
- Steve Wasserman – Vments, Inc.

US Faster Payments Council

International Research

What?

Review what other countries are doing to provide recommendation for the U.S.

How?

Designed & Completed matrix around core payment functions and key API functionalities and value added services that should be included in a FP API

- API Functions
- Built Descriptions
- Identified and divided the countries in scope among the group
- Available Faster Payments rail(s)
- Available API documentation
- What is included in APIs to support faster payments

International Research

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

OPEN BANKING

Categories	Real-Time Payment API Functions		Australia (Mvo, Steve M)	Canada (Frank, Scott, Varun)	EU (Mvo)	Germany (Azeem) (Reference trial by Deltcher bank)	India (Erno)	Singapore (Amrish)	SWIFT (Frank) Transaction Manager	SWIFT (Frank) gpi (payment tracker)	Switzerland (Frank)	UK Research (Mvo & Steve W)	Summary of this Function across all countries
	Registration	Part of the onboarding and profile maintenance process - Some type of initiation to register to be part of the program and then be able to update accordingly - FI/Fintech/Merchant Services providing APIs		Note: RTR does not foresee any API functionality at release beyond the transactional APIs where they use traditional ISO 20022 messages in an API request/response mode wrappers.	PSD2: Article 30 (1)a RI: Entity accessing information need to be registered as TPP. Not part of the API.	List of TPP in Germa	Participation in UPI is by registering the stakeholders. Provides APIs to the FI to enable registration of their users. Same consumer can be registered in UPI by multiple banks. A single bank account will be mapped to a unique Virtual Private Address. Each bank may have its own vpa domain Example : HSBC will provide @hsbc. Each one will have its unique VPAs- Debtors/Payers / Businesses set up a profile and pick a Virtual private address. The profile set up is enabled within the UPI enabled payment application.	PayNow provides portal for FI to register as merchant to use PayNow network.	Note: For SWIFT's Transaction Management Platform (Transaction Manager or "TM") the APIs will not be available by Release 1 (available April 2023). But APIs are developed alongside the rest of the TM software, so expectation is that exposing APIs will follow soon after initial release.		Note: SNB shared that the SIC IT system does not foresee any API functionality at release. Their current focus is on instant payments through traditional (ISO 20022 based) messaging. Today they do not see clear enough demand for real-time payments and related features in the solution. One reason being that they have another platform in Switzerland that might be used for ATP for IP – also operated by SIX (but not mandated by the SNB). As a reaction to our request, they are now interested in API core features that we might identify as part of our checklists. As it could inform the future releases of their solution (as some market participants wonder whether they should be more active to facilitate innovation, e.g., to create an IP-based solution for the point of sale).	Account & Transaction APIs: Account Access Consents APIs - create a new account-access-consent resource, retrieve the status of account-access-consent resource and delete the account-access-consent resource	
	Login/API access management			generate access token API									
	Entity Verification (participant verification)	Identifying the participant accessing the API (how the API providers knows is valid). Note that end users (persons/busino entities) do not access the APIs directly. They access them through a participant.			PSD2: Article 34. eIDAS QSEALCs or eIDAS QWACs (RTS) for the TPP to identify itself towards the ASPSP using a qualified certificate. The certificate of the TPP shall contain all roles the TPP is authorised to act as. "A TPP may only access the XS2A interface of an ASPSP if the TPP identifies itself at the XS2A interface. According to [RTS] this identification requires a qualified certificate issued by a TSP for electronic seals or for website authentication."		Participant has to register at portal - https://www.paynow.gi/pnk-aktywowac. Each participant will be assigned Api key and singnature key for connection with paynow service				Security & Access Control APIs: Specifies the means for ASPSPs and PISUs to authenticate themselves and provide consent Grants Types: - ASPSPs must use a client credentials grant to obtain a token to access the account-access-consents resource. In the specification, this grant type is referred to as "Client Credentials". - ASPSPs must use an authorization code grant using a redirect or decoupled flow to obtain a token to access all other resources. In the specification, this grant type is referred to as "Authorization Code".	
	Embedded Authentication	End user (anybody that wants to pay) authentication will be done by the entity accessing a platform/application that uses the API integrated into the platform/application. The End User login process includes authentication access to the entity verification that's been pre-setup.					Customer authentication is performed by the Upi enabled app. UPI PIN is required as second factor authentication	Yes - mobile number, Singapore NRIC/FIN, or Virtual Payment Address (VPA) – e-wallet				Covered by Participant Verification when embedded into platform/application login and/or functions within the platform/application which needs to access the payment APIs	
	Directory Functions	Register a person/entity into a directory or update accordingly. The person/entity can be a payee to receive a payment or a payer to send a request for payment.										Cannot find this in the API documentation for UK; new API required to register end user person/entity into a directory	

Categories	Real-Time Payment API Functions		Australia (Mvo, Steve M)	Canada (Frank, Scott, Varun)	EU (Mvo)	Germany (Azeem) (Reference trial by Deltcher bank)	India (Erno)	Singapore (Amrish)	SWIFT (Frank) Transaction Manager	SWIFT (Frank) gpi (payment tracker)	Switzerland (Frank)	UK Research (Mvo & Steve W)	Summary of this Function across all countries
Core Payment Functions	Person/Entity Registration			CCIN Lookup API (API to retrieve single CCIN lookup). *Need an additional line for API to download CCIN master file with updates.*	Not part of PSD2	No	Directory of the VPA mapped to a bank account	receive money on their online banking platform.				Cannot find this in the API documentation for UK; new API required to lookup and user person/entity which was previously registered into a directory	
	Person/Entity Lookup	Lookup a person/entity in a directory (given the lookup id versus a search function to retrieve a list matching search criteria) Lookup provides information to enable a payment transaction through a participant (banks and third party) of a payment rail.	Get Account Servicer by Alias	CCIN Extracts API (API to retrieve CCIN master and updated extract data, i.e., the file). Note: CCIN is a Corporate Creditor Identification Number assigned to billers to help routing bill payments towards them. Payments Canada maintains the database. Billers apply through their FI.	Not part of PSD2	Yes (partially to ref	UPI enbled app shows the name details of the	TBD - information was not available				Cannot find this in the API documentation for UK; new API required to lookup and user person/entity which was previously registered into a directory	
	Participant Lookup	Lookup a participant capabilities given their participant ID (routing number, BIC) in a payment rail network. Capabilities include receive only, send plus receive, request for payment.		FIF Branch API (API to retrieve branch extract data for a specific branch). *Need an additional line for API to download FIF master file with updates.* FIF Extracts API (API to retrieve master and updated extract data, i.e., the file). Note: The Financial Institutions File (FIF) is an electronic directory containing routing numbers to facilitate payments to the appropriate deposit-taking institution in Canada. FIs subscribe directly with Payments Canada (email based). The Financial Institutions Branch Directory (FIBD) provides routing numbers and addresses for branches of all Canadian financial institutions. Information to the FIBD is drawn from the FIF database.	PSD2: Not part of PSD2 RO: AIS: GET LIST OF REACHABLE ACCOUNTS?	Bank has API's to re		PayNow has 15 banks and 4 e-wallets in network to send and receive money.				Cannot find this in the API documentation for UK; new API required to lookup and user person/entity and their access to the directory along with their transaction capabilities. See UK API Resources tab for UK API capabilities	
	Payee account validation	Validate payee identification associated to valid account information for that payee registered in the directory	Get Account Servicer by Alias	Account Validation API (API to validate an account within the payment rails - admi.029 (request) and admi.024 (response) wrappers).	PSD2: Not part of PSD2. PSD2 covers the Payer where validation is done through SCA. NB. Payee is the TPP		Get Account Servicer by Alias	Yes, it is done at first time registration by participating bank.				Account & Transaction APIs: Beneficiaries APIs - retrieve the account beneficiaries information Parties APIs - retrieve the details on the account owner(s)/holder(s) and beneficiary	
	Routing capabilities	Scheme/rail access/reachability	Only NPP in scope		PSD2: Not part of PSD2 RO: AIS: GET LIST OF REACHABLE ACCOUNTS?		Only NPP in scope	PayNow has been integrated with FromNow (Thailand). In addition, UPI (India) integration is in progress. Basically no user access or NRIC or VPA.				UK OB APIs are scheme agnostic.	
	Account capabilities	Retrieve real-time payment account capabilities for a person/entity registered in a directory		TRANSACTION INFORMATION FOR A GIVEN ACCOUNT		Bank has API's to re						Cannot find this in the API documentation for UK; new API required to lookup end user	
	Payment Processing Related												
	Payment Initiation Consent Validation	Verifies that the participant and then corresponding end user has appropriate access and consent to initiate the payment or request for payment	Payment Initiation APIs: Consent API - register an intent to initiate a Domestic or International Payment Uses Security & Access Control: - PISPs must use a client credentials grant to obtain a token to make POST requests to the payment-order consent endpoints. In the specification, this grant type is referred to as "Client Credentials". - PISPs must use an authorization code grant using a									Payment Initiation APIs: Consent API - register an intent to initiate a Domestic or International Payment Uses Security & Access Control: - PISPs must use a client credentials grant to obtain a token to make POST requests to the payment-order consent endpoints. In the specification, this grant type is referred to as "Client Credentials". - PISPs must use an authorization code grant using a redirect or decoupled flow to obtain a token to make POST requests to the payment-order resource endpoints. This token may also be used to	

Faster Payments Council

International Research

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

What did we want to do?

- Identify the elements included in the APIs from matrix
- Identify key API functionalities specific to the market & why they are beneficial
- Identify the country specific approach to Faster Payments API and compare
- Provide recommendation to the U.S.

"Provide deep dive into country specific aspects of the APIs developed to support real-time payment rails, highlight the areas of commonalities and differentiation in the global market focusing on Credit Push transactions. Research is intended to provide guidance on features and functionality that U.S. stakeholders should be supporting and to identify challenges in building out the API structures that are required for ubiquitous access."

US Faster Payments Council

International Research

Research Challenges

- Access to API documentation
  (Regulatory influence vs. No regulatory influence)
- Proprietary APIs and requirement for bilateral agreements
- Difficulties in making comparisons ⟶ High Level Summary

United Kingdom

- ‘Open Banking’ regulation detailed per use case
  - code & response code included documentation easy to follow
- Open Banking dictates FIs to open up data to third parties
  - in standardized format

- Regulatory influence on API availability
- Standardization of API format
- Scheme agnostic & multi-currency support

European Union

- Open Banking driven from regulatory perspective (PSD2)
  - Descriptions of responsibilities and connectivity requirements in RTS
  - Big focus on authentication and SCA

- Open Banking dictates FIs to open up data to third parties
  - No standardized format
  - Many proprietary APIs

- Regulatory influence on API availability
- Scheme agnostic & multi-currency support

Australia

- **NPP** - documentation available is at rail level (High level)
- No mandate for participants to apply recommendations, encouraged to follow framework
- Some features not included since documentation is at rail level (International payments & scheme agnostic)
- PayID - Payee confirmation (Centrally secured)

India

- **UPI** - Smartphone application (primarily P2P)
- India accounted for most real-time transactions in 2021
- Most matrix functionalities included at rail level
  - Participating FIs can build their own UPI APIs but they have to follow RBI API specs & operating guidelines
- Interoperability with other countries/rails
- Virtual Payment Address (VPA)

Singapore

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

- **PayNow** - P2P and Corporate payments available
- API functionalities included in matrix are included at rail level
- PayNow integrated in online banking/mobile platform
- Interoperability with UPI and PromptPay (Phone #)
- Virtual Payment Address (VPA)

US Faster Payments Council

International Research

Insights and Recommendations

- Regulatory mandates & Standard format requirements accelerate availability
- Fraud prevention features
  - India & UPI (VPA); Singapore & PayNow (VPA); Australia & NPP (PayID)
  - The EU and UK (Authentication and SCA in RTS)
- Benefits of having both Payments and Data API available (Payments use case, fraud prevention, value added services, better End-user visibility)
- Interoperability (scale growth of Instant payments & availability of APIs)

What does this mean for the U.S.?

APIWG Subgroup: Output

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

APIWG Subroup: Output Members

- Moa Agrell (WG Vice Chair) – Trustly
- Maria Arminio – Avenue B Consulting
- Diana Hennel – Catalyst Corp. Fed.Credit Union
- Robert MacColl – Rapyd, Inc.
- Steve Mott – BetterBuyDesign
- Kwun Ng – Fifth Third Bank
- Dean Nolan (WG Chair, Subgroup Lead) – Fifth Third Bank
- Irina Singh – Mastercard International
- Steve Wasserman – Vments, Inc.

US Faster Payments Council

Next Steps

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS

- Finish consolidating research findings and identify best practices
- Create a summary paper offering guidance for U.S. implementations of APIs for Faster Payments
- Clean up research documents and release to the U.S. FPC website

Target Date
EOY 2022

US Faster Payments Council

Panel Contact Information

Dean Nolan

Moa Agrell

Steve Wasserman

FPC FALL MEMBER MEETING
SEPTEMBER 14 –15, 2022
MINNEAPOLIS