FPC Secure Instant and Immediate Payment APIs Work Group
HACKATHON: Statement of Work and Requirements

HACKATHON STATEMENT OF WORK

I. PURPOSE & OUTCOME

A Hackathon is a collaborative coding event that brings computer programmers, technical developers, and other interested people together to improve upon or build a new software program or solution.

To see how APIs can support the evolution of faster payments in practice, the FPC Secure Instant and Immediate Payments API Work Group Hackathon will attempt to prove that directory capabilities will allow payers to make faster payments to payees using payment aliases, rather than using cumbersome account information. This will therefore act as an important tool to drive faster payments adoption, as proposed in the FPC research papers[1] by the API and Directory Models Work Groups.

The goal of the Hackathon is to develop an Open Alias Directory Service and APIs to integrate the Open Alias Directory Service developed into a Private Directory to enable instant payments through the use of an alias.

The target audience for the end state of the API Work Group deliverable includes developers and API specialists, payment directors and strategists, fintech innovators and data analysts. For this initiative, the API Work Group will utilize the research from the Directory Models Work Group for the practical design, development, and testing related to Directory Models in the Hackathon. The intended outcome will be a thought leadership paper showing the insights from these collaborative efforts.

The results from this exercise will benefit the FPC as well as the overall industry by further positioning the FPC as an industry thought leader and attempt to test the findings of, and develop solutions based on, some of the FPC Work Groups' deliverables in practice. This deliverable may also encourage further development of additional solutions that

[1] https://fasterpaymentscouncil.org/userfiles/2080/files/RealTime%20Application%20Program%20Interfaces_APIs_12-2023_Final.pdf ; https://fasterpaymentscouncil.org/userfiles/2080/files/DMWG%20Beneficial%20Characteristics%20Desirable%20in%20a%20Directory%20Service_05-24-2021%20Final.pdf).

demonstrate practical implementation and interpretation of the FPC's API Work Group findings and their open-source code. This also creates opportunities for participants to provide feedback on these best practices and identify areas for improvement.

A. Scope of Effort

The API Work Group presented a white paper in December 2023[2] which shows the following best practices:

1. **Registration and Onboarding**
   Introduce automated registration across all instant payment APIs for seamless and user-friendly integration.
2. **Login and API Access Management**
   Create minimum defined standards for user authentication.
3. **Payment Initiation and Payment Processing**
   Augment payment data to improve approvals, enhance control, and facilitate innovative tool development.
4. **Directory Functions**
   Implement quick look-up directories for swift and efficient transaction setups.
5. **Embedded and Additional Functions**
   Integrate embedded fraud, risk management, and sanction screening controls and tools to protect all parties in the payment chain.

As a next effort, the API Work Group intends to design and execute a Hackathon to 'test' the applicability of the fourth best practice, specifically related to Directory Functions, where the Hackathon will be used as a platform to test the FPC's API Work Group's best practices in real-world scenarios. For the purposes of this Hackathon, the scope of effort is limited to testing how directory capabilities in practice can support the evolution and adoption of instant payments in the U.S. market through APIs.

[2] https://fasterpaymentscouncil.org/userfiles/2080/files/RealTime%20Application%20Program%20Interfaces_APIs_12-2023_Final.pdf

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A directory API provides access to a directory of information related to customers or other entities, which could include bank routing numbers, account details, aliases, and other data that is useful for processing payments or other transactions. The directory itself is typically maintained by a central authority or organization and can be populated with data from various sources. Directory APIs can reduce friction and bring efficiency in the payment ecosystem. They also help promote the interoperability of directory services to support faster payments and improve security by ensuring that only authorized parties can access sensitive information. The API Work Group's research shows that directory tools and features are currently being built into instant payment APIs to improve the overall transaction security and that this positively impacts the safety and soundness of instant payments. The API Work Group also finds that Directory APIs and participant look up features must be supplemented by 'quick look-up' utilities to expedite efficient transaction set up and to remove friction to better user experience.

The Directory Models Work Group paper[3] shows that the role of an open directory capability would be to bridge private directories where payments need to be sent to or received from parties who are not represented in private directories. It also shows that, in this context, an alias (or payment alias) is a value which can be openly and easily shared by a receiver such that a sender can resolve the value to enable initiation of a payment related message.

In a "Happy Path" scenario, this process could look as follows:

- Tali wants to pay Skyler $35
- Tali asks Skyler how to pay, and Skyler provides her email address (skyler@gmail.com) and instructs Tali to send a faster payment
- Tali goes into her favorite payment app and gives an instruction to send $35 to skyler@gmail.com
- Skyler gets her money

In this scenario, skyler@gmail.com is the payment alias Skyler has chosen. What had to happen for this "happy path" to occur? The Directory Models Work Group research suggests a set of prerequisites:

- Skyler has a relationship with a financial institution that participates in faster payments.

[3] https://fasterpaymentscouncil.org/blog/15160/Decision-Points-for-an-Open-Alias-Directory-Report

- Skyler has a relationship with a party (FI or alias service provider) with whom she has registered her payment alias (skyler@gmail.com) and then details one or more payment types via which payments can be accepted by that alias.
- Tali has a relationship with a party (FI or service provider) that has enabled payments where the payment details are discovered through the open alias directory capability.

The goal of an open directory capability is to use an alias to resolve payment details related to that alias. In practice, a query will be made of the directory using the alias where the nature of the query, and what gets returned from that query, are design considerations. Additionally, there are different implementation models for the directory, where the Directory Models Work Group research[4] calls out the following:

1. **Redirector**
   - Open directory stores and returns location of one or more private directories to resolve available payment types.
2. **Forwarder**
   - Open directory stores location and forwards queries to one or more private directories which then can be used to resolve alias to certain payment information which is returned to the sender.
3. **Concentrator**
   - Open directory stores and returns payment information.

The implementation model of the directory also determines where the payment information for an alias will be maintained.

I. Hackathon Requirements for the Participants

Participants are being asked to create an Open Alias Directory and API interface for directory models and to test how directory functions in practice can support the evolution of instant payments in the U.S. market.

[4] https://fasterpaymentscouncil.org/blog/15160/Decision-Points-for-an-Open-Alias-Directory-Report

Participants must:

- Build "Open Alias Directory Service" using one of the three implementation models as the foundation.
- Develop Open Directory Services that support both retrieval and storing of information related to faster payments (as applicable).
- Develop APIs to integrate the Open Alias Directory Service to a mock Private Directory.
- Develop APIs envisioning the support to interoperability between directory services to foster faster payments.
- Address the considerations in the Directory Models Work Group paper on "uniqueness."
- Encourage innovative and efficient solutions, preferably using AI.
- Promote the use of secure and scalable technologies and standards.
- API needs to support **N** requests per second. Error handling must be addressed as mentioned in the proper documentation.

II. ROLES, ENGAGEMENT, HACKATHON PREPARATION & EVENT PROMOTION STRATEGIES

A. Resources for Participation

Participants will conduct the Hackathon in the technical environment of their choice. Every participant should be prepared to provide their own resources for the Hackathon which may include:

- Hardware equipment: reliable laptop/desktop for running development tools and simulations.
- Software: IDEs (e.g., Visual Studio, Code, IntelliJ IDEA), API testing tools (e.g., as Postman), version control (e.g., Git/GitHub), docker for environmental consistency.
- Communication Access: Internet connection for accessing cloud services and APIs, and code repositories (e.g., sample code, sandboxes, or public APIs.)

FPC API Work Group will provide:

- Data Feeds: Mock data for testing (e.g., a JSON containing a list of data from the Directory Model Work Group and mock Private Directory). Teams can opt to supplement or replace mock data that is provided.
- Documentation:

- The API Work Group Statement of Work will be shared with Hackathon participants.
- Detailed requirements of what the API Work Group expects to get from each participant, including sample input/output data, screen shots to demonstrate their solution, the specifications on the models used, authentication method, etc. and how this solution is expected to be presented.
- Communication tool: For support and advisory services for the Participants.
- Meal or Food Voucher: Allocated budget to ensure participants stay energized and focused throughout the Hackathon.

FPC API Work Group may provide (nice to have):

- Environments: Cloud services (e.g., AWS, Azure, Google Cloud) vouchers for API hosting.

B. Composition of Participant Teams / Roles and Responsibilities of Team Members

Participants teams will be built at their own discretion but are likely to consist of the following team members:

- Back-end Developer: Develops the Open Alias Directory and core API logic, implements security and manages. Storage necessary for the Open Alias Directory API.
- Security Specialists (can also be the developer): Reviews the API's authentication/ authorization, ensures proper encryption, and tests the system against common vulnerabilities.
- Project Manager/Business Analyst: Communicates requirements, writes documentation, overseas real-world use cases, and ensures the API addresses the primary business goals.
- Designer (Optional): Creates a graphic interface to help in the demo.

The number of team members on any team is left to the discretion of the participants. Here are some guidelines:

- Minimum: 3 members (Back-end developer, Security and Product Manager)

- Maximum:6 members to avoid complexity and communication and ensure focus teamwork.

This size allows for effective collaboration without too many people overlapping on tasks.

FPC API and Directory Models Work Groups will provide advisors available through a communication tool to answer questions about the requirements.

C. Time Frame for Proposed API Hackathon

The Hackathon will be conducted remotely over a span of three weeks, culminating in an onsite meeting with the FPC API Work Group.

- Pre-Hackathon preparation (1-2 weeks) - Reminders of the engagement, date for the event, additional contacts, etc., to help engage the participants.
- Development Phase (24 to 48 hours) - Includes rapid prototyping and Open Alias Directory and API development during the Hackathon.
- Presentation and Feedback (1-3 hours per team) - Post Hackathon judge's feedback to refine the solution and gather feedback from participants to understand how the event went and what can be improved for future Hackathons.

IV. Intellectual Property developed during Hackathon

More information will be shared on this topic

V. JUDGING CRITERIA AND GUIDELINES

A. Participation Incentives

Incentives for participation may include:

- Monetary prizes
- Access to industry mentors
- Tech tools and resources
- Cloud credits
- Public/Media recognition
- Career opportunities

The FPC API Work Group agrees that incentives will be provided and how this will be funded would need to be built into the cost of funding the Hackathon. Trophy, prize (small but has FPC logo), mug, computer bag, etc.

B. Judging Criteria /Process

Post Hackathon Results:

- Comparison on end-to-end experience and capability.
- Judging will be over **X** period of time after the Hackathon has ended.
- Each Participant solution will be evaluated and scored in the following categories:
  - Functionality 30% - Does the solution work as expected? Does it fulfill the directory's purpose for instant payments? Does it support lifecycle management (new and inactivated aliases and accounts)?
  - Innovation 20% - Is the solution creative, unique, or leveraging new technologies like AI to enhance functional security?
  - Security 20% - How secure is the API? Does it follow best practices for data protection, encryption, and authentication?
  - Scalability 15% - Can the API handle a high load of transactions? Does it get designated with future growth in mind?
  - User experience/integration 15% - How easy is it for institutions or developers to integrate? With the API, is the documentation clear and helpful?

C. Judging Panel

The API Work Group will select technical experts for the judging panel, (e.g., software engineers), to help test the Open Alias Directory and APIs and make sure the teams are delivering what they say they are delivering. The judging panel will also include business experts on APIs and directory models.

D. Team Presentations

Participants will present their solutions to the FPC API Work Group panel of judges in a format and time frame to be determined. The FPC API Work Group needs to determine how and where the final presentations are being made – in person, remote, on video clip, etc.

Participants will report on their solutions in a clear and concise manner, addressing the following areas:

- Describe the approach they use to develop their solution - Briefly state the model chosen for the Open Alias Directory and how solving their API and how their solution fits in real world cases.
- Demo - A quick live demo of the solution (Postman, Load Test, Excel/PowerPoint) to show the solution's capabilities.
- Technical details - Dive into the architecture of security measures, scalability, and how the core functions (e.g., latency, data consistency).
- Future Vision - Show how their solution could evolve to be implemented in a production setting.
- Q&A – Participants must be prepared for questions about how they handle security deployment and any issues they faced.
- Documentation – Provide clear and concise documentation that explains how to use the Open Alias Directory and the API such as endpoints, authentication methods, requests and response formats, and error handling. Use friendly, worldwide examples.

CONCLUSION AND NEXT STEPS

This Hackathon represents a pivotal step in advancing the adoption of faster payments in the U.S. by practically testing the FPC API Work Group's best practices related to Directory Functions[5]. The collaborative efforts of the participants in developing and demonstrating Open Alias Directory Services and APIs will provide invaluable insights, directly contributing to forthcoming thought leadership efforts and potentially inspiring further innovative solutions within the industry.

The FPC is committed to fostering an environment of innovation and practical application. The outcomes of this Hackathon will not only serve to validate theoretical findings but also to establish tangible proofs of concept that demonstrate the power of directory capabilities in creating a more efficient, secure, and user-friendly instant payment ecosystem.

Based on the Hackathon's outcomes, the FPC API Work Group will assess opportunities for continued development, potential standardization efforts, and the integration of successful prototypes into real-world applications. This may include follow-up initiatives, work groups, or open-source contributions.

We look forward to the impactful contributions from all participants and the significant strides this Hackathon will enable for the future of faster payments.

[5] https://fasterpaymentscouncil.org/blog/12946/Real-Time-Payment-Application-Program-Interfaces-APIs-Infographic