Getting Started Guide

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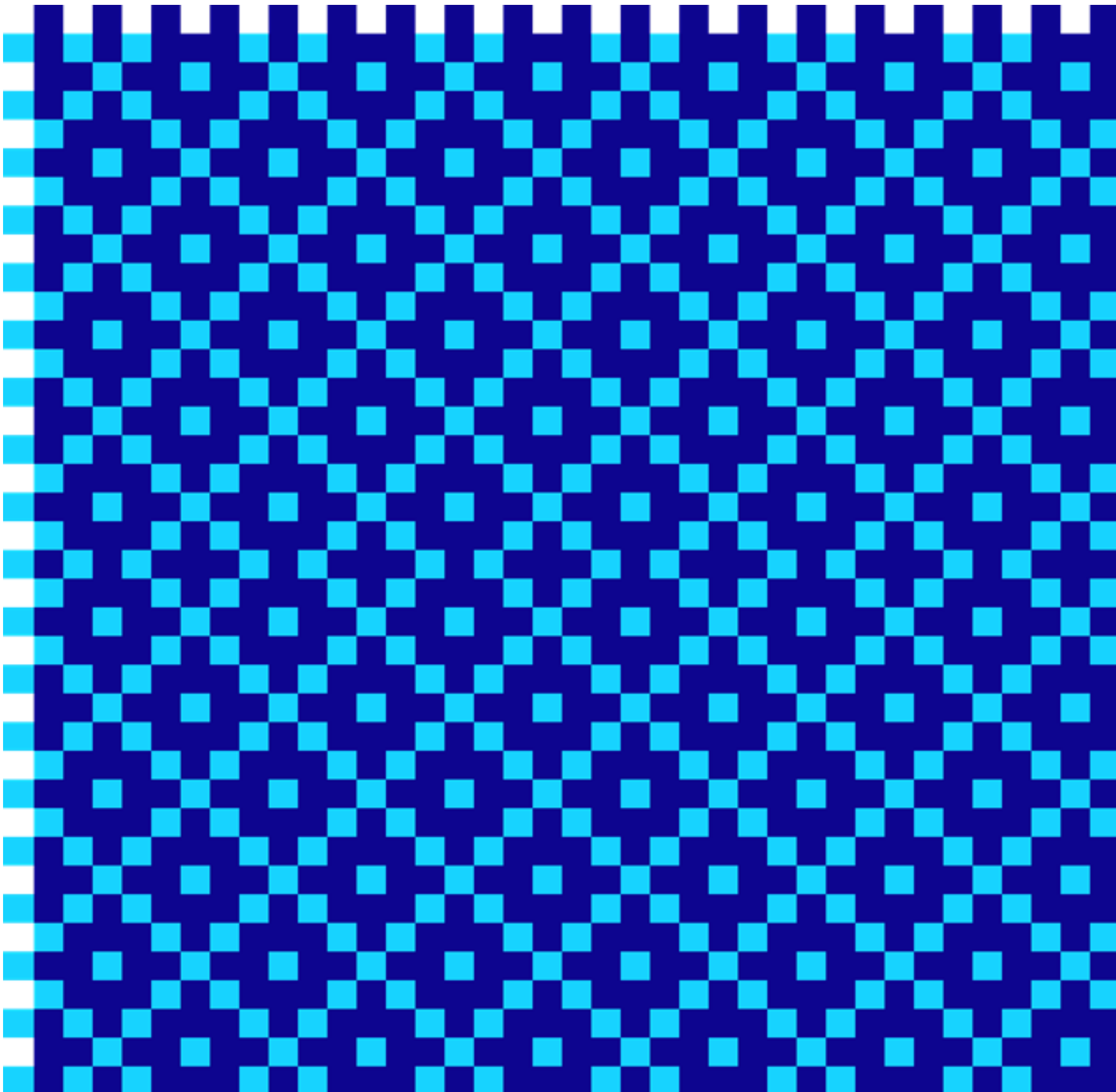
For the latest technical documentation, see the Documentation Portal.

Thredd 6th Floor, Victoria House, Bloomsbury Square, London, WC1B 4DA

Support Email: ops24@globalprocessing.com

Support Phone: +442037409682



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About this Guide

This guide provides information on the stages in a typicalThredd card project.

Target Audience

Technical team(s) responsible for setting up a new card program.

What's Changed?

If you want to find out what's changed since the previous release, see the Document History section.

How to use this Guide

- To find out about the stages in a typical Thredd card setup project, see Stages in a Project.
- To understand about how Thredd manages changes once your program is up and running, see Managing Change.

Other Documentation

Refer to the table below for a list of other relevant documents that should be used together with this guide.

Document	Description
Key Concepts Guide	Describes the card payments ecosystem and howThredd supports your card program.
Web Services Guide	Describes how to use theThredd SOAP API to send requests toThredd and provides specifications on the available web service calls.
External Host Interface (EHI) Guide	Describes theThredd External Host Interface (EHI) and provides specifications on how to process and respond to messages received from EHI.
Transaction XML Reporting Guide	Describes the structure and contents of the Thredd Transaction XML reports.
3D Secure Guide - RDX with Biometric/In-app authentication	Describes the Thredd 3D Secure Realtime Data eXchange (RDX) service and how to implement a 3D Secure project with biometric/In-app authentication.

Tip: For the latest technical documentation, see the Documentation Portal.

1 Stages in a Project

1.1 Before you Start

1.1.1 Clarify your Requirements

Speak to a member of the Business Development team to find out more about Thredd services and how we can support your project requirements.

Your business development manager will provide relevant case studies and talk you through the products and options available using Thredd.

1.1.2 Understanding your Customer Journey

Understanding your customer's end-to-end experience is a key part to setting up an effective card program. Mapping out the customer journey should be done as early as possible so that the Thredd system can be correctly configured to your requirements.

See the figure below, which summarises the main components in a typical customer journey:

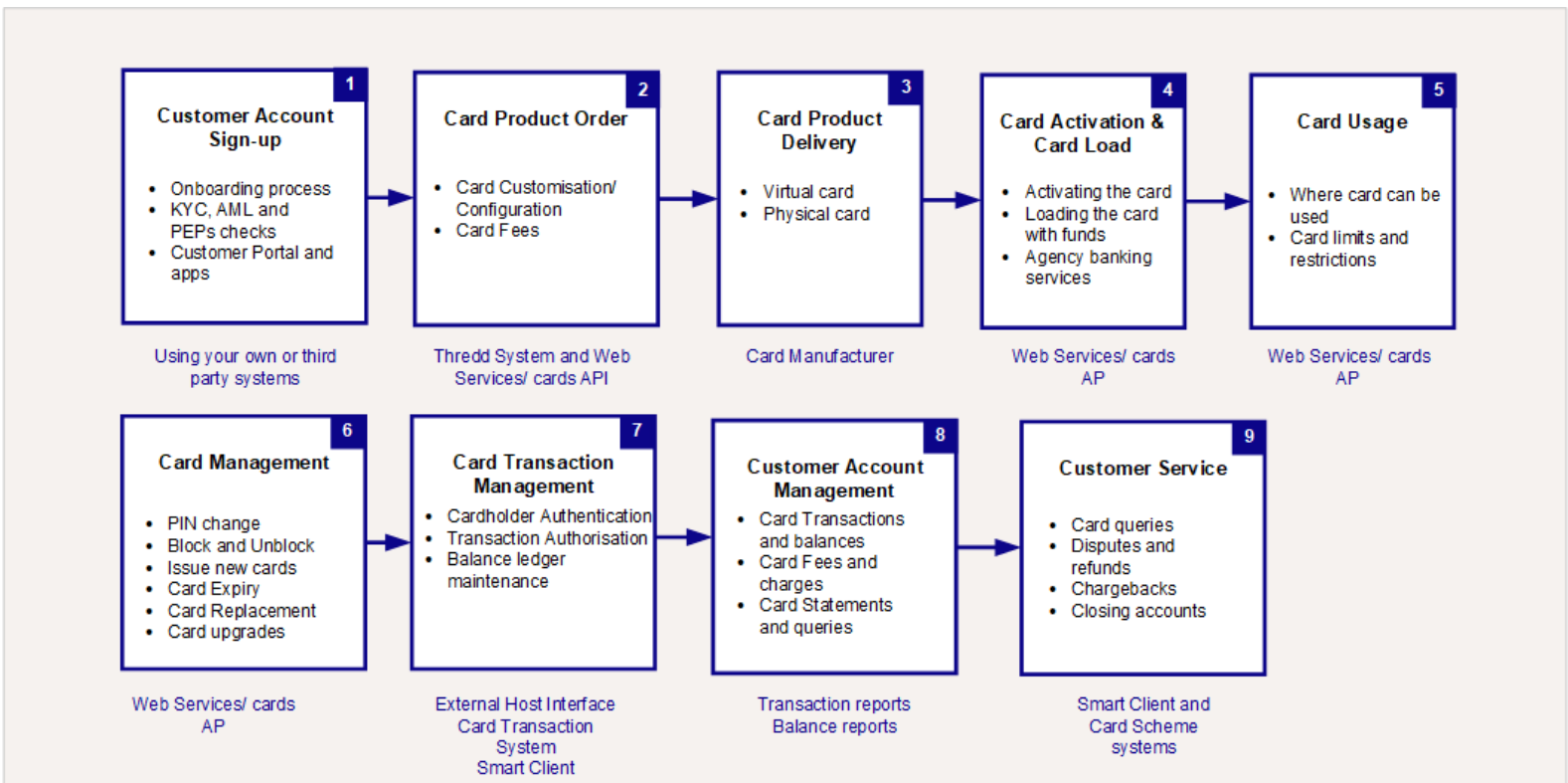

Figure 1: Customer Journey

Early analysis and preparation can save you both cost and time and help avoid potentially costly mistakes that can be hard to rectify at a later stage. Below is a list of basic questions to consider:

- Who are your customers? (age, language, profile)
- In what countries, regions, currencies and business sectors do you plan to offer your service?
- How will customers sign up for your service/open an account? What identity and verification checks do you need to run on customers before they can open an account?
- What card products will you offer and how can your customers customise them? (will you offer a physical card or just a virtual card? For a physical card, what features will it support?)
- What are the charges for using your cards? (This includes one-off setup, regular account fees and card usage fees, if applicable to your service.)
- How will customers activate their card, load their account with funds and transfer funds out of their account?
- How will customers be able to use your card?
    - Where can the card be used, with what merchants and are there any limits or restrictions you want to set on usage?
    - Can the card be used for ATM queries and withdrawals?

- How will payments and ATM withdrawal requests be authorised? Will you do this, or will Thredd manage this?
- How do you want cardholders to authenticate (i.e., verify their identity) if asked to during an online transaction? (For example, via your mobile phone app, biometric or One-Time password.)
- How will you provide information to your customers? (i.e., on card transactions, card balances, statements and fees.)
- How will customers manage their cards? (e.g., block/unblock, replace a lost or expired card and change their PIN.)
- How will customers be able to contact you? How will you manage disputes and chargebacks? How will you communicate to customers in the event of an outage affecting their service?
- Once the service is live, how are you planning to maintain it and ensure your integration is updated with the latest Thredd system changes and regulatory requirements? (For details see Managing Change)

1.1.3 Selecting your Partners

Selecting an Issuer or Go Self-Issuing

An Issuer is a regulated organisation that has local regulatory authority and card scheme approval to issue prepaid, debit or credit cards. Decide whether you will be self-issuing or using the services of an existing issuer to support your card program.

Self-issuing requires a contractual relationship with Visa or Mastercard and additional regulatory authority requirements, and therefore adds time and costs to the implementation phase. For new Thredd customers starting out on a card program with Thredd, speed to market is quicker and easier when using an existing issuer already set up with Thredd, compared to setting yourself up as a new issuer. You can upgrade to self-issuing at a later stage without any impact on your transactions[1].

Please talk to your Thredd business development manager, who can provide you with information on issuers suitable to your trading region and payment processing requirements.

Selecting a Card Scheme

The card scheme provides the network over which card payments can take place. Thredd currently support both Visa and Mastercard, which provide global networks. We are also working to support other global card schemes as well as local schemes, specific to your region.

If you are using the services of an existing issuer, you do not need to have a separate agreement with the card scheme they support.

The card scheme networks have variations in how they process and report payments. When Thredd receives and processes information from the different networks, we provide this to our customers in a consistent format.

Selecting a Payment Service Provider (Payment Gateway)

You will need to provide a facility to enable your customers to fund their accounts via a credit or debit card. This typically requires the service of an online payment service provider (PSP). This is a service outside of Thredd. Check with your Thredd business development manager for details.

Note that Thredd also provide an Agency Banking solution that enables banking payments via bank transfer (BACS, CHAPS, Faster Payments and SEPA).

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[1]Migrating to self-Issuing requires changes to reporting and BIN setup with the card scheme. If you want to find out more about how to become self-issuing, please check with your Business Development Manager.

1.2 Setting up a Typical Card Program

The figure below provides an overview of the stages in a project and the responsibilities of the parties involved. Timescales are subject to full project scoping; timescales for some components may be dependent on third parties, such as card manufacturers, issuers and schemes.

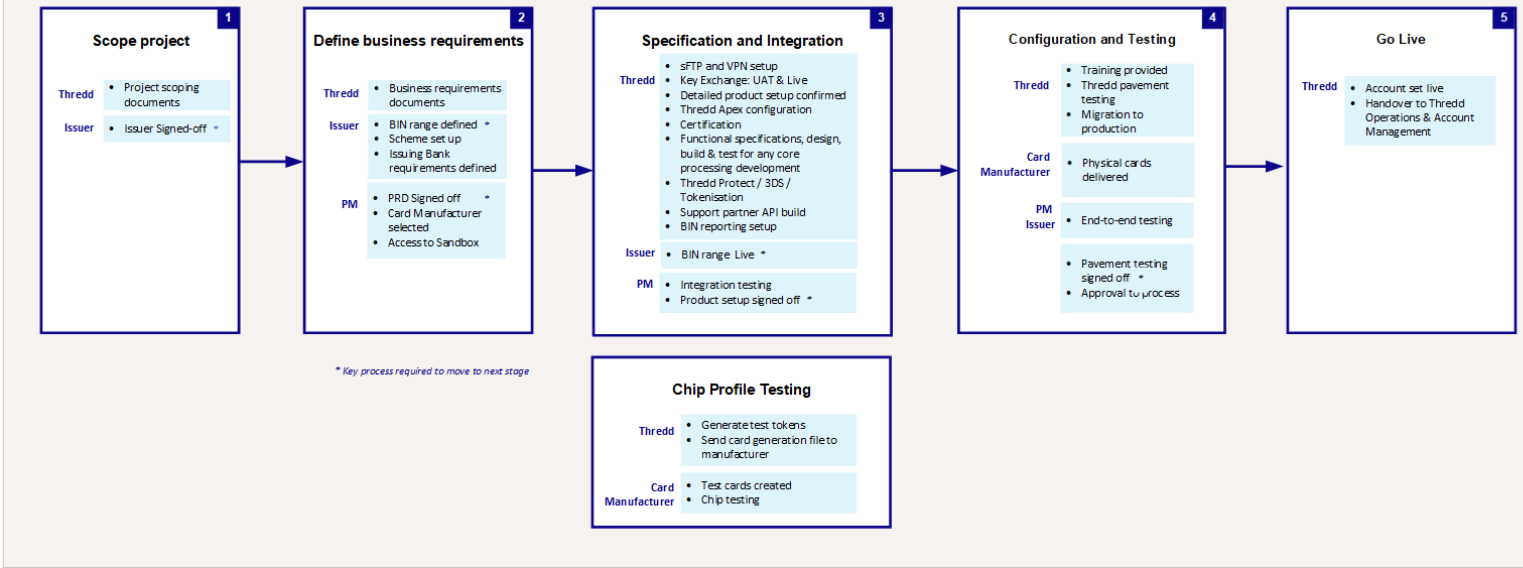

Figure 2: Stages in a Thredd Project

The above figure shows the main parties involves at each stage: issuer, Thredd, Program Manager and Card Manufacturer. Step 1: Scope Project and Step 2: Define Business Requirements are pre-requisites before you can start integrating.

Steps 3-5 cover the integration, testing and go-live stages.

Each of these steps is described in further detail below.

1.2.1 Step 1: Scope Project

A number of documents need to be completed at this stage.

Statement of Work (SOW)

This document provides a summary of the technical solution to be provided by Thredd. Your Thredd Solution and Design consultant should provide this document, which includes:

- Components and services of your solution
- Relevant service providers (e.g., BIN sponsor, card manufacturer)
- Project stages and responsibilities
- Anticipated go-live date and target market

1.2.2 Step 2: Define Business Requirements

Thredd will assign an onboarding manager to provide you with support for commercial queries and act in an account management capacity. Any changes to the intended scope of service – either taking on additional functionality or changing functionality (such as switching External Host Interface (EHI) Mode) – will be managed commercially by your onboarding manager.

Your onboarding manager will send you a copy of the Project Initiation Document (PID). This is a reference document with a generic description of high-level project stages and responsibilities.

Thredd will assign an implementation manager, to support you during the onboarding process in setting up your service on the Thredd system.

Your Thredd implementation manager will arrange a meeting to understand what you want to deliver and discuss your requirements. They will provide you with copies of the following documents:

- *Project Requirements Document (PRD)* – offers a more detailed description of the components and services of your solution, as well as the project stages and responsibilities
- *Project plan* – specifies milestones and preliminary dates for implementation.

Please review these documents carefully and indicate any changes you require. You should also provide them to your issuer to review. You will need to sign off these documents.

Issuer Requirements

If you are using the services of an issuer, they will need to set up your BIN range and specify their requirements for how they will be supporting your service. You will need to complete any documentation requested by your issuer.

Your issuer may also ask you to complete documents required by the card scheme (Visa or Mastercard) to set up the card product on their systems.

> **Note:** Thredd can provide input into your issuer and card scheme documents where relevant and appropriate (e.g., provide you with endpoint information, Mastercard session/Visa Process Control Record (PRC) details and keys information).

Selecting a Card Manufacturer (Card Bureau)

If you are going to be issuing physical cards, you should select a card manufacturer at this stage. Thredd has existing partner relationships and plug-ins to over 40 card manufacturers worldwide and can support local card creation programs in regions worldwide. Check with your Business Development Manager or Implementations Manager for details.

You must have a separate commercial agreement with your card manufacturer.

Sandbox Access

Thredd will provide you with access to our generic sandbox system (in our Test environment), shared by all of our clients, where you can try out our web services API and explore the system functionality. Please provide Thredd with a list of static public IP addresses allowed to use this service.

The sandbox provides a restricted set of card functionality, which enables you to perform basic actions such as: create and load cards, manage PINs, change card status and change card velocity groups.

Access to the Thredd sandbox enables you to make an early start on your integration to Thredd via the web services.

1.2.3 Step 3: Specification and Integration

At this stage, your implementation manager will set up your card program on the Thredd system. There are a number of key tasks to complete:

Complete Thredd Product Setup Forms

Your implementation manager will work with you to complete the main Thredd *Product Setup Form (PSF)*. This document provides details of your card program setup and field-level configuration on the Thredd system.

There are additional product setup forms to complete for other Thredd products, such as 3D Secure and Tokenisation.

You and your issuer will need to sign off the Product Setup forms.

Thredd Provides Systems Access

You will be given access to firewalls, web services and other systems.

Thredd will manage the security key exchange with your card manufacturer and the card scheme if required, so that we can generate the PAN stock in our systems to create your card product.

Set up on the Test Environment

Thredd configures your dedicated program on the test environment, with unique credentials, based on the details agreed in your Product Setup Form (PSF). At this stage transactions are managed within the test environment and not via the card scheme network.

Ensure you have the following:

- Secure access to all the required Thredd systems:
    - Provide Thredd with a list of IP addresses allowed to use the web services. Note that Thredd only supports static IP addresses for permission listing.
    - You require VPN access to Thredd in order to use Thredd web services and Thredd Smart Client in the Production environment.
- The required user credentials and codes needed to submit web service requests. For details, see the Web Service Guide.

Test your Integration

Decide which web services you need. This depends on the Thredd External Host Interface (EHI) mode you are using. For example:

If you are set up for EHI mode 1 and 4 you mainly use the web services related to card creation, card management and authorisation. If you are set up for EHI modes 2 and 3, you may need to use other web services for updating the balance on the card.

For more information, refer to the External Host Interface (EHI) Guide.

Submit test web services transactions to the Thredd test system. View the results and fix any errors.

When you are satisfied you understand how the web service API works, build your front-end user application with the Thredd web services API functionality included.

Test your EHI integration. You can submit test transactions, using the Card Transaction System (CTS) to view the end-to-end transaction process.[2] For more information, see the Card Transaction System (CTS) Guide.

1.2.4 Step 4: Configuration and Testing

Once you have successfully integrated, you can start configuration and testing.

Create Chip Profile and White Test Plastics

Create test card tokens and ask Thredd to generate white test plastics, if required. These are generic, non-branded cards with test keys on the card that can be used to check that the card Chip profiles are working correctly[3]. Your implementation manager will work with your card manufacturer to produce test cards:

- Thredd generates a card file for any test cards that have been created and manually sends to the card manufacturer.
- The card manufacturer produces white test plastics in line with the agreed project plan. Test cards are sent to the relevant parties (e.g., the Program Manager and Visa or Mastercard).
- Testing is undertaken in line with the agreed scope.

Get your Card Design Approved by the Scheme

New card designs, which include the scheme's brand, need to be signed off by the scheme. You need to do this directly with the scheme or via your issuer, as Thredd is not involved in this process.

Order Base Plastics

Live base cards, with your branded image can now be ordered from the card manufacturer. These cards contain the default Chip and Magstripe data, but do not have any personalised data and do not yet contain the printed cardholder details.

Your card manufacturer will confirm how long it will take before your base plastics are ready to be personalised and printed.

Set up on Production

Once all production readiness activities are complete, let Thredd known that you are ready to migrate to the Production environment and start pavement testing.

Thredd provides you with production credentials and generates a limited number of PAN stock, as approved by your card issuer.

Additional end-to-end transaction testing is required at this stage. In particular:

- Create card tokens for automated card production. Thredd will send a file to the card manufacturer via sFTP. The card manufacturer prints live physical cards containing the personalised cardholder data and despatches to the relevant parties for testing (Thredd, Programme Manager and Card Schemes).
- Thredd can provide you with a test script to run tests that cover aspects you should test. Below are examples of what you should test:
  - Test traffic through the BIN tables.[4]
  - Test the card chip profile is working in line with how it has been configured (for example, if the card is enabled to draw out money at ATMs and charges a fee for ATM withdrawals, check this works as expected).
  - Test to ensure usage groups and velocity limits set up for your products work as expected and return the expected results.
  - Validate how you process and handle card scheme authorisation and financial messages which Thredd sends to your external host.
  - If you are using an EHI mode where you authorise the transaction, then check how long it takes to respond to an EHI authorisation request on a live production transaction.
  - Test the end-to-end cardholder experience and confirm that the card and account are operating as expected.

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[2]Thredd will need to enable access to CTS based on your IP address.

[3]White test plastics are required for testing new Chip profiles, which need to be signed off by the card scheme. They are typically printed in bulk quantities. Live Chip keys should never be used on test card plastics since these cards lack some security elements.

[4]Visa and Mastercard send out a daily file to all acquirers with details of new BINs. Acquirers must add these BINs to their BIN tables to enable transactions on these BINs; this can take up to 2 weeks.

1.2.5 Step 5: Go Live

When ready to go live with your service, check that your Thredd contracts are signed and payments are up to date, and then let your onboarding manager know you are ready to go live.

Thredd pavement testing approval is required in addition to any Issuer sign-off before we can switch your products to *Active* and generate full production PAN stock.

Thredd will provide you with access to JIRA (for raising issues) and to Smart Client (for viewing and managing cards and transactions). Thredd can add up to 5 users for each service; additional users require purchasing additional licenses.

Handover to Operations and Account Management

Once you are live, your onboarding manager will arrange a handover session with the relevant customer care representative and/or appropriate heads of department (e.g., Head of Operations or Global VP of Customer Success)

- The Thredd Operations teams will be available for post-live product support and program maintenance.
- Thredd will provide you with a dedicated account manager for ongoing requests and queries.

The figure below summarises how Thredd supports you through the different phases of your project.

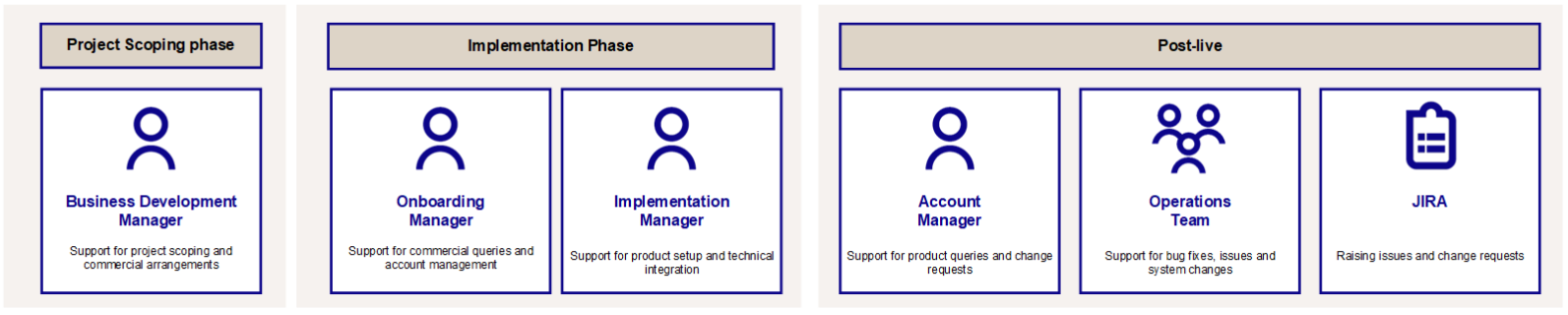

Figure 3: Thredd support during your project

2 Managing Change

Your integration journey does not stop once you go live. You will need to provide resources to handle issues, manage system changes and enhancements, and add new features and services to your card program.

2.1 Dealing with Issues

For clarification of system functionality or information provided to you during the implementation phase, please contact your Thredd implementation manager.

For persistent issues affecting a live service and for change requests, please raise a JIRA ticket.

2.2 System Changes

Thredd provides Pre-Release Notifications (PRNs) to inform you of any system changes that may affect your service. Advance notification is provided 4-6 weeks in advance.

Depending on the type of change, we may not notify you via the PRN process (e.g., where you do not need to change your systems). For example, External Host Interface (EHI) field value updates.

2.2.1 Regulatory and Scheme Changes

Thredd will implement mandatory financial services regulations and card scheme mandates.

Regulatory changes affecting financial services and payments are region and country specific. For example, the European union issue directives which all financial firms operating in the European Union must follow, such as the Second Payment Services Directive (PSD2). The UK and other countries may enact specific local regulations relating to payment processing in their country. Thredd will endeavour to update our systems where required to comply with these regulations and provide you with advance warning.

Visa and Mastercard operate a 6-month Business Enhancement Release process (with major releases in April and October). Changes are communicated to Thredd and issuers via Mastercard *Announcement Notification (ANs)* and Visa *Articles*.

We will notify you of these changes, where they affect our systems, via our PRN process. Some changes require that you also update your system and processes.

2.2.2 Adding New Features

Thredd adopts an agile development process, with four builds and one planned release per month. These changes include regular patches, fixes and enhancements to our systems, software and infrastructure.

Where a change impacts on your service or requires you to update your systems, we will notify you of these changes via our PRN process.

Best implementation practise

- EHI changes can be implemented without breaking your systems if you program your systems to ignore new fields.
- To support changes to web services fields, your development team should provide a service architecture that supports quick updates.

2.3 Product Upgrades

Thredd recommends that you to start with a basic setup and add additional Thredd products and services after your service is live. Examples of additional products that can be integrated include 3D Secure, Tokenisation (MDES or VDEP), Multi-FX currency and Agency Banking.

2.3.1 Configuration Upgrades

For any configuration changes to your setup post-live, please raise a Jira request or discuss with your Account Manager.

2.3.2 Integrating new Products

If you are interested in integrating additional Thredd products, please contact your Account Manager to discuss.

Your Account Manager will provide details of any related product fees and send you an addendum to your Thredd contract for you to sign.

The new project is assigned to an Implementation Manager, who can set up your product on the Thredd system and provide you with further details of the timescales and integration steps.

2.3.3 EHI Version Upgrades

You can upgrade to the latest version of EHI to receive the latest EHI fields. Upgrades may require some development work on your systems in order to process the new fields. Please contact your Account Manager to discuss.

Glossary

3

3D Secure

3D Secure (3-domain structure), also known as a payer authentication, is a security protocol that helps to prevent fraud in online credit and debit card transactions. This security feature is supported by Visa and Mastercard and is branded as ‘Verified by Visa’ and ‘Master-card SecureCode’ respectively.

A

Acquirer

The merchant acquirer or bank that offers the merchant a trading account, to enable the merchant to take payments in store or online from cardholders.

Authentication

This includes checks to confirm the cardholder identity, such as PIN, CVV2 and CAVV.

Authorisation

Stage where a merchant requests approval for a card payment by sending a request to the card issuer to check that the card is valid, and that the requested authorisation amount is available on the card. At this stage the funds are not deducted from the card.

Automated Fuel Dispenser (AFD)

Automatic fuel dispensers (AFDs) are used at petrol or gas stations for customer self-service fuel payments. Typically the customer inserts their card and enters a PIN number and the AFD authorises a fixed amount (e.g. £99). Once the final payment amount is known, the AFD may reverse the authorisation and/or request a second authorisation.

C

Card Scheme

Card network, such as MasterCard or Visa, responsible for managing transactions over the network and for arbitration of any disputes.

Chargeback

Where a cardholder disputes a transaction on their account and is unable to resolve directly with the merchant, they can raise a chargeback with their card issuer. The chargeback must be for a legitimate reason, such as goods and services not received, faulty goods, or a fraudulent transaction.

Clearing File/Clearing Transaction

Thredd receive batch clearing files from the card networks, containing clearing transactions, such as presentments and network fees. The card issuer transfers the requested settlement amount to the acquirer and 'clears' the amount on the card, reducing the available card balance accordingly.

E

EMV

EMV originally stood for "Europay, Mastercard, and Visa", the three companies which created the standard. EMV cards are smart cards, also called chip cards, integrated circuit cards, or IC cards which store their data on integrated circuit chips, in addition to mag-netic stripes for backward compatibility.

External Host

The external system to which Thredd sends real-time transaction-related data. The URL to this system is configured within Thredd per programme or product. The Program Manager uses their external host system to hold details of the balance on the cards in their pro-gramme and perform transaction-related services, such as payment authorisation, transaction matching and reconciliation.

F

Fee Groups

Groups which control the card transaction authorisation fees, and other fees, such as recurring fees and Thredd web service API fees.

H

Hanging Filter

The period of time during which Thredd waits for an approved authorisation amount to be settled. This is defined at a Thredd product level. A typical default is 7 days for an auth and 10 days for a pre-auth.

I

Incremental Authorisation

A request for an additional amount on a prior authorisation. An incremental authorisation is used when the final amount for a transaction is greater than the amount of the original authorisation. For example, a hotel guest might register for one night, but then decide to extend the reservation for additional night. In that case, an incremental authorisation might be performed in order to get approval for additional charges pertaining to the second night.

Issuer

The card issuer, typically a financial organisation authorised to issue cards. The issuer has a direct relationship with the relevant card scheme.

M

Merchant

The shop or store providing a product or service that the cardholder is purchasing. A merchant must have a merchant account, provided by their acquirer, in order to trade. Physical stores use a terminal or card reader to request authorisation for transactions. Online sites provide an online shopping basket and use a payment service provider to process their payments.

Merchant Category Code (MCC)

A unique identifier of the merchant, to identity the type of account provided to them by their acquirer.

MIP

Mastercard Interface Processor (MIP) The processing hardware and software system that interfaces with Mastercard's Global Payment System communications network.

O

Offline Transaction

This is often used in scenarios where the merchant terminal is not required to request authorisation from the card issuer (for example for certain low risk, small value transactions used by airlines and transport networks). The card CHIP EMV determines if the offline transaction is permitted; if not supported, the terminal declines the transaction. Note: Since the balance on the card balance is not authorised in real-time, there is a risk that the card may not have the amount required to cover the transaction.

P

Partial Amount Approval

Some acquirers support a partial amount approval for Debit or Prepaid payment authorisation requests. The issuer can respond with an approval amount less than the requested amount. The cardholder then needs to pay the remainder using another form of tender.

Program Manager

A Thredd customer who manages a card program. The program manager can create branded cards, load funds and provide other card or banking services to their end customers.

S

sFTP

Secure File Transfer Protocol. File Transfer Protocol FTP) is a popular unencrypted method of transferring files between two remote systems. SFTP (SSH File Transfer Protocol, or Secure File Transfer Protocol) is a separate protocol packaged with SSH that works in a similar way but over a secure connection.

Smart Client

Smart Client is Thredd's user interface for managing your account on the Thredd Apex system. It is also called Smart Processor Thredd. Smart Client is installed as a desktop application and requires a VPN connection to Thredd systems in order to be able to access your account.

SSL Certification

An SSL certificate displays important information for verifying the owner of a website and encrypting web traffic with SSL/TLS, including the public key, the issuer of the certificate, and the associated subdomains.

Stand In Processing (STIP)

The card network (Visa and Mastercard) may perform approve or decline a transaction authorisation request on behalf of the card issuer. Depending on your Thredd mode, Thredd may also provide STIP on your behalf, where your systems are unavailable.

T

TLS

Transport Layer Security (TLS) is a security protocol that provides privacy and data integrity for Internet communications. Implementing TLS is a standard practice for building secure web apps.

Triple DES

Triple DES (3DES or TDES), is a symmetric-key block cipher, which applies the DES cipher algorithm three times to each data block to produce a more secure encryption.

V

Validation

Checks to confirm the card is valid, such as CHIP cryptograms, mag-stripe data (if available) and expiry date

VROL System

Visa Dispute Resolution Online system, provided by Visa for managing transaction disputes.

Document History

This section provides details of what has changed since the previous document release.

Version	Date	Description	Who
1.5	27/04/2023	Guide rebrand to new company name and brand identity.	WS
1.4	01/12/2022	Updated the Copyright Statement.	MW
1.3	10/11/2022	Removal of Letter of Commercial Agreement (LOCA)	MW
1.2	28/10/2022	Removal of timescales from project stages	WS
	17/08/2022	Updated PDF page layout	MW
	28/07/2022	Removed the Table of Contents from the PDF	MW
	20/07/2022	Layout and Table of Contents updates	MW
1.1	11/03/2022	Minor updates to fix layout and typos	WS
1.0	31/08/2021	First version	WS

Contact Us

Please contact us if you have queries relating to this document. Our contact details are provided below.

Thredd Ltd.

Support Email: ops24@globalprocessing.com

Support Phone: +442037409682

Our Head Office

6th Floor,

Victoria House,

Bloomsbury Square,

London,

WC1B 4DA

Telephone: +44 (0)330 088 8761

Technical Publications

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