flinks

NBC

Innovation Competition

Documentation V1.4

Table of Contents

Mission

Flinks is a data company that empowers businesses to provide better financial services to consumers, by connecting users bank accounts, providing financial insights and credit risk intelligence. Driven by the belief that data should belong to consumers, Flinks connects to over 250 million financial accounts.

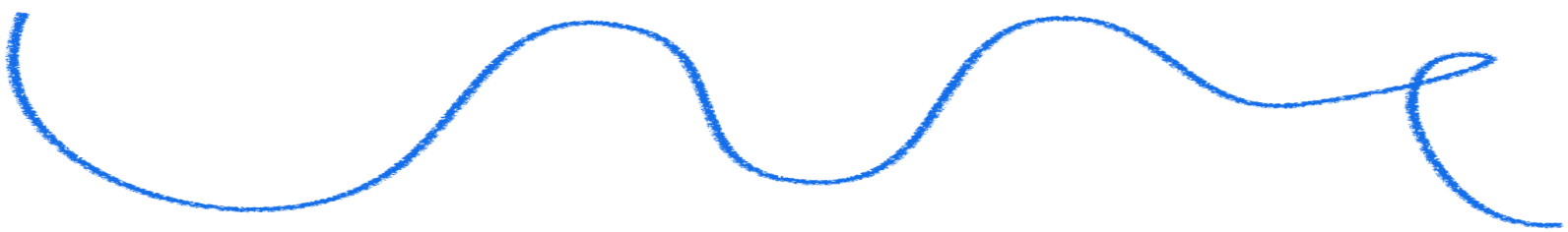
Trusted by hundreds of world-class companies, Flinks helps them digitize their processes, improve their user experience and reduce delinquency.

Culture

Flinks was created the moment we decided to stop wondering what the future of finance would look like — and decided to start building it.

At Flinks, we work to create the future with passion, ambition and at times a bit of an obsession. We are not a family, we are an assertive team of impact-driven pioneers, one that believes that drive and traction can change the world. We see ourselves as builders in an industry in dire need of change, enablers making deliberate choices together, and pathfinders taking the risks we deem necessary.

In the end it comes down to 4 core values: Audacity, Autonomy, Learning, Profitability.



FLINKS PRODUCT

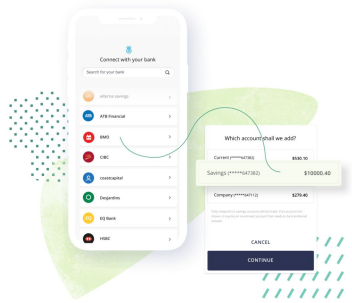
Hey there 👋

Here you will find all the resources you need to learn about, quickly integrate, and get started using Flinks for the NBC Innovation Competition.

Our Wealth Contest solution provides you with the toolbox and data you need to build the future of finance — enabling you to create the product you'll need to win the contest. We've made it easy for you to connect to sandboxed end users' wealth accounts in order to collect, analyze and build on top of that data.

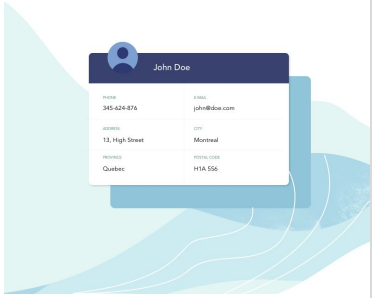
Sample use-cases. 💡

🔗Account Verification



🔗Account Aggregation

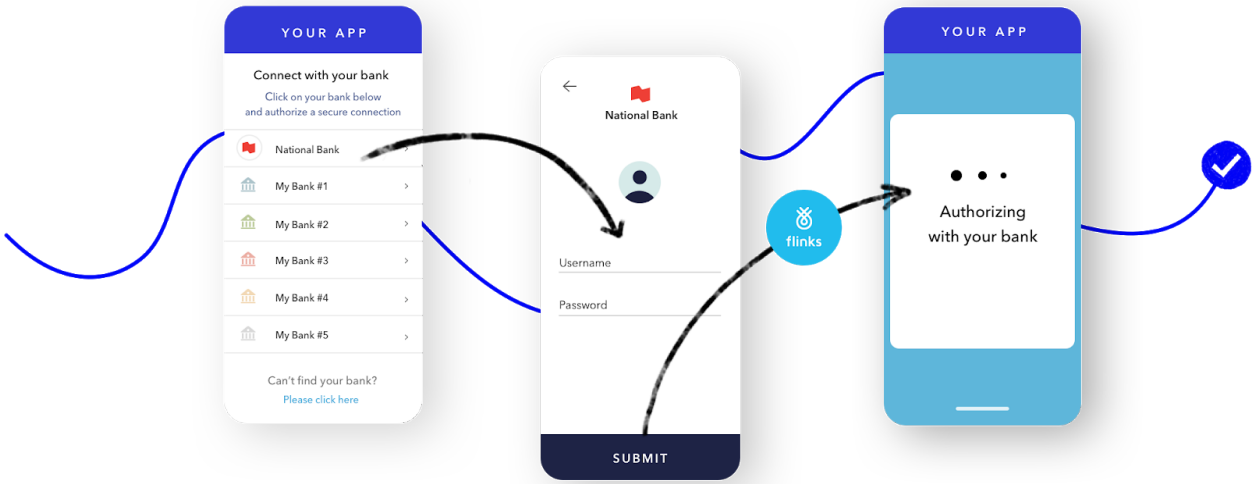
🔗Digital Onboarding



Overview. 👀

Customers use Flinks to power their business. Their integration requires both a client-side (front-end) and a server-side (back-end) components.

The first piece is an iframe we call **Flinks Connect**. It is a **plug and play widget** that lives within your front-end application and allows your end users to provide explicit and informed consent to authorize a secure link to their bank account.



Financial Data Connectivity

The following connections allow you to easily create a holistic picture of your end users' financial lives, enabling you to build products on top of rich and highly usable data to delight and serve them better.

Banking Connection.

The `/Banking/Contest/BankingUser1` endpoint gives you the power to retrieve simulated user-permissioned banking data.

This allows you to access information from these three datasets:

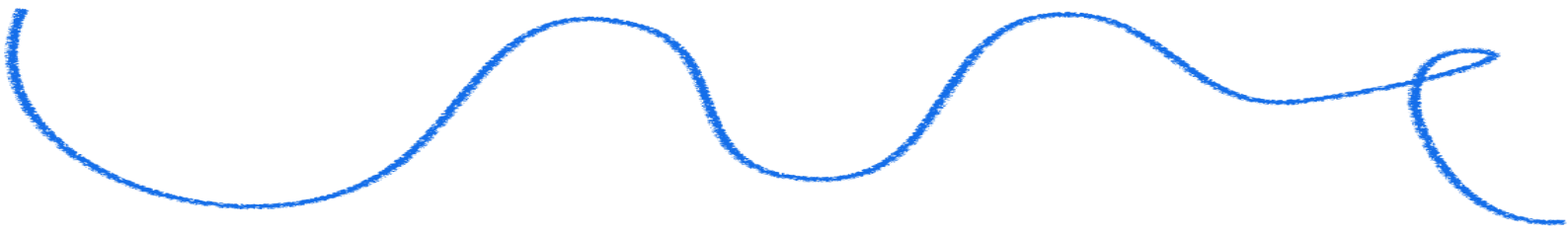
- Personal Information — information about the account holder themselves
- Account Information — information about the various accounts in that bank
- Transaction History — transactional activities that occured in those accounts

Investment Connection.

The `/Investments/Contest/InvestmentsUser1` endpoint gives you the power to retrieve user-permissioned data on the wealth or investment holdings of your users.

Here are some of the main concepts in action, which will all be explored in depth later in this guide:

- Institution is the financial institution where the investment accounts exist
- Accounts are the places where investment activity occurs
- Positions are a point-in-time snapshot of the investment portfolio
- Securities are the details of the investment assets within the positions
- Transactions are the historical activities that built the current portfolio



TECHNICAL DOC

Our team worked with NBC in order to provide the best experience possible.

We sat back at the design table and sweat the small stuff to empower your application with the plus value of our solution without the technical challenge of fully integrating our product. In short: we made sure you can get to work faster.

See below what we came up with. 😉

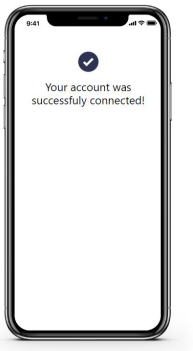
1. Flinks Connect.

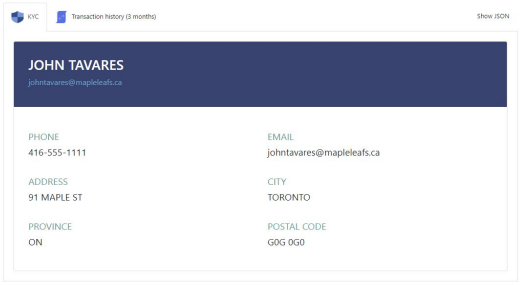
Flinks Connect is what your end users will interact with to link their bank accounts to your product. It will be embedded as an iframe directly into your client-facing application for a seamless user experience.

The fully integrated version of Flinks Connect will automatically handle all of the back and forth with the institutions, as well as deal with edge cases and different types of MFA or authentication used by financial institutions to protect your end users from unauthorized access.

Integrated version.

Curious to see what Flinks Connect looks like? You can play with this fully integrated version: https://contest-demo.flinks.io





1.1. Install Flinks Connect.

Code Snippet (iframe).

To install Flinks Connect iframe, embed the following code snippet into your page, application, or website. This integration uses the NBC contest sandbox environment.

HTML

```
<!-- Flinks Connect -->
<iframe height="760" scrolling="no"
       src="https://contest.flinks.io">
</iframe>
```

Parameters

To enable or disable banking or investment institutions, and to change the name of your company on the consent screen, use the parameters below:

Fields	Required?	Description
enableBanking Boolean	No Default: true	To enable the banking institutions `https://contest.flinks.io/?enableBanking=true`
enableInvestments Boolean	No Default: false	To enable the Investments institutions `https://contest.flinks.io/?enableInvestments=true`
customerName	No Default: Flinks	Customer Name on the Consent Screen `https://contest.flinks.io/?customerName=ABC`

1.1. Events.

Every step of the account connection flow through Flinks Connect returns a specific event listed below. In order to listen to those events, make sure to add this script in your code.

HTML

```
<!-- Flinks Connect -->
<script>
   window.addEventListener('message', function(e) {
   console.log(e.data)
   });
</script>
```

Useful Events.

HTML	
COMPONENT_LOAD_ACCOUNT_SELECTOR	The Flinks iframe loaded successfully
INSTITUTION_SELECTED	An institution have been selected in the list
COMPONENT_LOAD_CREDENTIAL	The form to input the username and password has been loaded
COMPONENT_ACCEPT_CONSENT	The user accepted the consent
COMPONENT_DENY_CONSENT	The user refused to accept the consent page
SUBMIT_CREDENTIAL	The user submitted the form including username and password
REDIRECT	A successful connection was established 😎

2. Make API Calls.

Now that you have Flinks Connect configured and installed, we can start talking about retrieving data from banks or investment accounts.

In the context of the NBC Innovation Competition, every call to any institution will return static data for either banking or investment.

Returned Data.

For now, there is one user available for each group of institutions (Banking and Investment). Any credential you enter with any institution will return the same dataset.

Institutions.

Banking	Investments
TD	WealthSimple
RBC	Questrade
BMO	Fidelity
Scotia Bank	AGF
CIBC	Great-West Live
National Bank	Sunlife Financial
Desjardins	Flinks Investments
Tangerine	
Vancity	
ATB	
Simplii	
Meridian	
Laurentienne	
Cost Capital	
HSBC	
EQ Bank	

2.1. Get The Data.

Once the event "REDIRECT" is returned, you can now call the endpoint to get the data.

In the REDIRECT event, you will receive the following information.

JavaScript

```
{
  "step": "REDIRECT",
  "institution": "{Institution}",
  "links": [
    {
      "example":
"https://nbccontest-api.private.fin.ag/v3/96b9f2fb-0d80-47c0-b0aa-508711bc14d7/{href
}/{Username}",
      "href": "Banking/Contest" OR "Investments/Contest",
      "rel": "Banking" OR "Investments"
    }
  ]
}

//  {Username} = BankingUser1 OR InvestmentsUser1
```

You can now make a GET request using the example to obtain the JSON file containing the associated data:

Example of the GET Request

```
let event; // Store event response for redirect

fetch(
   event.links[0].example,
   { method: 'GET' }
 ).then(
   response => response.json()
      .then(data => {
        console.log(data);
      }
    )
);
```

3. Understand The Data Response

In this section, we will explain the structure of the data you will retrieve and dive into what it actually means.

Personal Information

This object contains the personal information of the account holder associated with the account, and is included in both banking and investments endpoints.

Name	Description	Schemax
Name	Name of the holder.	string
Civic Address	An object containing the holder address information	string
E-Mail	Email address of the holder.	string
Telephone Number	Phone number of the holder.	string

3.1. Banking Data.

Data Schema.

Here's the high level data schema you can expect to receive:

JSON

```
{
    "HttpStatusCode": 200,
    "Accounts": [
        {
            "Transactions": [
                 {...},
                 {...},
             ],
            {...},
            "Balance": {...},
            "Holder": {...},
        },
        {...},
        {...},
    ],
    "Login": {
        {...}
    },

  ]
}
```

Sample Response.

And here's how that same data schema looks populated with some sample data:

JSON

```
{
    "HttpStatusCode": 200,
    "Accounts": [
        {
            "Transactions": [
                {
```

```
                "Date": "2019-04-22",
                "Code": null,
                "Description": "TrxChe@De12.08",
                "Debit": 12.08,
                "Credit": null,
                "Balance": 49993.96,
                "Id": "633b976e-c713-4b59-9717-3ec407bdde8b"
            },
            {
                "Date": "2019-04-21",
                "Code": null,
                "Description": "TrxChe@Cr12.07",
                "Debit": null,
                "Credit": 12.07,
                "Balance": 50006.04,
                "Id": "ac25ab22-2828-4174-9653-23bb8918b7c4"
            },
            {
                "Date": "2019-04-20",
                "Code": null,
                "Description": "TrxChe@De12.06",
                "Debit": 12.06,
                "Credit": null,
                "Balance": 49993.97,
                "Id": "1adfde25-832f-4acb-a683-4163bcb4182a"
            }
        ],
        "TransitNumber": "77777",
        "InstitutionNumber": "777",
        "Title": "Chequing CAD",
        "AccountNumber": "1111000",
        "Balance": {
            "Available": null,
            "Current": 49993.96,
            "Limit": null
        },
        "Category": "Operations",
        "Type": "Chequing",
        "Currency": "CAD",
        "Holder": {
            "Name": "John Doe",
            "Address": {
                "CivicAddress": "1275 avenue des Canadiens-de-Montréal",
                "City": "Montréal",
                "Province": "QC",
                "PostalCode": "H3B 5E8",
```

```
                    "POBox": null,
                    "Country": "CA"
                },
                "Email": "johndoe@flinks.io",
                "PhoneNumber": "(514) 333-7777"
            },
            "Id": "ae1dac72-70da-4626-fed8-08d682e1ff4a"
        },
        {...}
    ],
    "Login": {
        "Username": "Greatday_nomfa",
        "IsScheduledRefresh": false,
        "LastRefresh": "2019-04-22T14:13:09.5801384",
        "Type": "Personal",
        "Id": "34c85a5d-f278-467b-29ed-08d682e1fef5"
    },
    "Institution": "FlinksCapital",
    "RequestId": "1df20baf-65d5-40ee-9be0-8058c13042e3"
}
```


Banking Response Fields.

The `/Banking/Contest/{Username}` endpoint returns the following information:

Account Information

The account information of the user associated with the account.

Name	Description	Schemax
Title	Title of the account.	string (ex: Checking, Investment…)
Balance	The current balance information including the limit, the current balance and the available balance.	decimal
Type	The account type	string
Transit Number	A series of five numbers that identifies a specific bank branch.	string

Institution Number	Every financial institution has its own unique 3-digit number.	string
Account number	The number that's used to refer to a unique bank account.	
Category	Where we categorize the account.	string (operations, credits, products, other)
Transactions	*See Below*	

Transaction history

This object includes the transactions occurring on a particular account for a specified range of time.

Name	Description	Schemax
Date	Date of the transaction.	string
Code	*Legacy field.*	*string*
Description	The description as seen on the bank statement.	string
Debit	Money goes out from the account.	decimal
Credit	Money goes in the account.	decimal
Balance	The balance of the bank account after a specific transaction.	decimal
Id	Flinks-generated id.	string

3.2. Investment Data.

Data Schema.

Here's the high level data schema you can expect to receive:

JSON

```
{
    "HttpStatusCode": 200,
    "Investments": {
       {...},
       "Holder": {...},
       "Accounts": [
           {
              ...,
              "Positions": [
                  {...},
                  {...},
              ],
              "Transactions": [
                  {...},
                  {...},
                  ],
          }
       ],
    },
    "Login": {...},
}
```

Sample Response.

And here's how that same data schema looks populated with some sample data:

JSON

```
{
    "HttpStatusCode": 200,
    "Investments": {
        "Value": 100000.00,
        "Cash": 50000.00,
        "Holder": {
```

```
            "Name": "JOHN TAVARES",
            "Address": {
                "CivicAddress": "91 MAPLE ST",
                "City": "TORONTO",
                "Province": "ON",
                "PostalCode": "G0G 0G0",
                "POBox": null,
                "Country": "CA"
            },
            "Email": "johntavares@mapleleafs.ca",
            "PhoneNumber": "416-555-1111"
        },
        "Accounts": [
            {
                "Id": "0eed82ff-71e3-4481-b055-204ceb552e7f",
                "Name": "987654321 - TFSA:cad",
                "Type": "TFSA",
                "Registered": true,
                "Currency": "CAD",
                "Cash": 20000.00,
                "AccountValue": 30000.00,
                "CurrencyValue": 30000.00,
                "Positions": [
                    {
                        "Category": "Canadian Stocks",
                        "Class": "Equity",
                        "BookValue": 1200.00,
                        "Quantity": 10,
                        "MarketValue": 1000.00,
                        "GainAmount": -200.00,
                        "GainCurrencyAmount": -200.00,
                        "GainPercent": -0.0167,
                        "Currency": "CAD",
                        "Security": {
                            "Id": "4e7c55bc-62aa-445c-9d3e-d10f16a9ffcd",
                            "Name": "Arbitrary Business Company",
                            "Symbol": "ABC",
                            "Type": "Equity",
                            "Price": 100.00,
                            "Date": "2019-10-11T03:05:55.518Z",
                            "Aliases": [
                                "ABC",
                                "ABC INC"
                            ]
                        }
                    },
```

```
                {...},
            ],
            "Transactions": [
                {
                    "Id": "0c6bd20b-2916-4c96-a309-b3b0cf3c9b33",
                    "Security": {
                        "Id": "86598626-be75-4015-8682-1d2b283b3e0c",
                        "Currency": "CAD",
                        "Symbol": "ABC",
                        "Name": "ABC INC"
                    },
                    "Date": "2019-02-04T00:00:00.000Z",
                    "Type": "Buy",
                    "Description": "ABC INC-CL",
                    "Quantity": 100,
                    "Fee": 10,
                    "Amount": -1200.00
                },
                {
                    "Id": "8234bad3-70fe-4d32-b74f-688db72e0b0f",
                    "Date": "2019-02-04T00:00:00.000Z",
                    "Type": "FXT",
                    "Description": "CONVERSION - CAD/USD",
                    "Quantity": 0,
                    "Fee": 0,
                    "Amount": -4000
                },
                {...},
            ]
        }
    ],
    "Login": {
        "Username": "InvestmentsUser1",
        "IsScheduledRefresh": false,
        "LastRefresh": "2019-10-16T20:02:16.1973476",
        "Id": "d86a7578-8c74-4642-88a7-d6d9aa25515d"
    }
  }
}
```

Investments Response Fields.

The `/Investments/Contest/InvestmentsUser1` endpoint returns five sets of data: Institution, Accounts, Positions, Security and Transactions.

Institution

The identifying information of the institution that you're connecting to in order to get all of that investment data.

Name	Description	Schema
Name	Name of the institution.	string
Id	Unique identifier for the institution within the Flinks system.	string
Accounts	*See Below*	

Account

A single institution may have one or many accounts attached to it. The fields within this object give an understanding of the overall state of that particular account at a given period of time.

Name	Description	Schema
Id	GUID for the investment account within the Flinks system.	string
Name	Name of the investment. Example: "Flinks Investments"	string
Type	The investment account type. An investment may be reported as type "unknown" for some special investments accounts offered by the institution, or when the institution doesn't provide sufficient	enum (cash, chequing, tfsa, rrsp, resp, rdsp, margin, short, long, lira, lrsp, rlsp, rrif, lif, lrif, prif, rpp, ipp,

	information for the type to be reliably determined.	dpsp, spp, ndcp, nrsp, epsp, espp, esop, vrsp, unknown)
Registered	Whether or not this is a registered account.	boolean
Currency	The investment account settlement currency.	enum (aud, btc, cad, chf, cny, dkk, eur, gbp, hkd, inr, jpy, mxn, nok, nzd, sek, sgd, twd, usd, vnd)
Cash	The amount of cash in the investment account, in the account settlement currency.	decimal
AccountValue	The value of the account including the cash and securities at market value.	decimal
CurrencyValue	The value of the account in the account $ including the cash and securities at market value.	
Positions	*See Below*	
Transactions	*See Below*	

Positions

The positions show the composition of the individual securities (types of investment products) within each account and how those securities have changed in value over time.

Name	Description	Schema
Category	The position category.	string
Class	The position class.	enum (equity, fixed_income, cash_equivalent, tangible_asset, other)
BookValue	The book value of the position (the acquisition price).	decimal

Quantity	The quantity of the security in the position.	decimal
MarketValue	The market value of the position, in the security's currency.	decimal
GainAmount	The current gain amount of the position, in the security's currency.	decimal
GainCurrencyAmount	The current gain amount in the account $ of the position, in the security's currency.	decimal
GainPercent	The current gain percent of the position.	decimal
Currency	The investment account currency.	string
Security	*See below*	

Transactions

The transactions object contains a series of actions and events that occurred in order to construct the portfolio. You can think of this as an activity log or the story of how your end user got to where they are today.

Name	Description	Schema
Id	ID of the transaction within the Flinks system.	string
Date	The date when the transaction occurred.	Timestamp
Type	The transaction type. (deposit, withdrawal, transfer, interest, dividend, distribution, roc, reinvest, tax, fee, sell, buy, income, unknown)	enum
Description	The transaction description. This is taken from the institution's website.	string
Amount	The transaction amount, converted to the account settlement currency.	decimal
Quantity	The quantity of securities involved in the transaction.	decimal
Security	*Related Security Object.*	

Security

Name	Description	Schema
Price and Date	The open last price and date.	decimal and date
Type	The security type.	string
Symbol	Ticker of the security.	string

Don’t be shy, we want to hear from you!

Say hi to Michael 👋

He’s our Product Manager leading the charge on our investment product development.

He loves hearing from his users almost as much as he loves whitewater rafting — which, as you can see, is clearly a lot.

Send him your thoughts, concerns, memes, and ideas here: mboutin@flinks.io

🚀 We’re looking forward to seeing the wonderful products you build! 🚀