FinTech:
Shaping the Financial World

April 8, 2020
Class 4: Overview

• Application Program Interface
• Finance Customer Interface
• Open API & Open Banking
• Data Aggregators
• Financial Data Exchange
• Robotic Process Automation
• Assignments
Class 4: Readings

• 'Report on open banking and application programming interfaces'
  Bank of International Settlement

• 'Fintechs next decade will look radically different' Nik Milanovic

• 'RPA in Banking Use-cases, Benefits and Steps' Maruti Techlabs
Class 4: Study Questions

• What are some major trends affecting marketing channels & customer processes for financial services?

• How are Open API initiatives influencing these trends?

• What is robotic process automation (RPA) and screen scraping? How is it being used in the financial sector and does it relate to open API technologies?
The three basic types of APIs

APIs take three basic forms: local, web-like and program-like. Here's a look at each type.

**Local APIs**

The original API, created to provide operating system or middleware services to application programs.

**Web APIs**

Designed to represent widely used resources like HTML pages and are accessed using a simple HTTP protocol. Often called REST APIs or RESTful APIs.

**Program APIs**

Based on RPC technology that makes a remote program component appear to be local to the rest of the software.
API Service Providers – Non-Finance

• Authentication: Auth0 (2013)
• Customer Data: Salesforce (1999), Scale (2016), Segment (2011)
• Email: Mailgun (2010), SendGrid (2009)
• Employment: Checkr (2014)
• Package Shipping: Shippo (2013)
Finance
Customer Interface

Banking - Tents, Temples, Bricks & Mortar (4th – 1st millennium BCE) >

Electronic Payments (1870s), Wires (1910s), ACH (1970s) & Direct Deposits (1970s) >

Mortgage Brokerage (1890s) & Automobile Indirect Lenders (1910s) >

Credit Cards (1940 – 50s) & Point of Sale Systems (1980s) >

Automatic Teller Machines (1970s) >

Internet (1990s) & On-line Banking (1990s - 2000s) >

Mobile Payments (2000s) & Wallets (2008) >

Contactless & Cardless Systems (2000s) >

Open APIs (2000s) & Open Banking (2015) >

Chatbots, CI & Voice Assistants (2010s)
Open API & Open Banking

• Open Application Program Interfaces (Open API) allow outside Developers access to and an ability to Integrate Permissioned Customer Data into Third Party Applications

• Open Banking initiatives facilitates or mandates Open API for Non-banks to Share Permissioned Bank Customer Data
Open API & Open Banking

• Policy Trade-offs of Promoting Competition & Innovation, Limiting Cybersecurity Risks, and Maintaining Privacy & Consumer Protections

• EU Payment System Directive (PSD2), UK Open Banking Initiative, etc.

• Alternatives: Screen Scraping, Reverse Engineering & Robotic Process Automation
Comparison of open banking frameworks

Types of banking data and activities

© Bank of International Settlements. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/

1 EU: perimeter depicted in this figure represents the scope of the EU’s PSD2, which only applies to payment services. Individual jurisdictions within the EU may choose to broaden the scope of their open banking frameworks beyond the requirements of PSD2 (e.g. FR and UK).

Third Party Banking APIs - Data Aggregators

Envestnet (Yodlee)
Finicity
Fiserv (CashEdge)
Galileo
Instantor
Marqeta
MX
Plaid (& Quovo)
SaltEdge
SynapsePay
Tink

Competitive Landscape
• Analytics
• Coverage
• Developer Service
• Price
• Reliability
• Security
• User Experience
Third Party Banking APIs - Account Aggregators

Afterbanks (Spain, Portugal and Mexico), Bankin (Europe), Basiq (Australia), Bud (UK), Budget Insight (Europe), Canopy (Singapore), CreditSense (Australia and New Zealand), DirectID (UK), Eurobits (Spain), eWise (Australia, Asia & Europe), figo.io (Germany and Austria), FinApi (Germany, Austria, Czech Republic and Slovenia), Finicity (US), FintecSystems (Germany and Austria), FormFree (US), Fractal (UK SMEs), Instantor (Europe, Brazil & Mexico), Klarna (Europe), Kontomatik (Europe, Brazil & Mexico), Moneyhub (UK), Moneytree (Japan and Australia), Nordic API Gateway (Scandinavia), Plaid (US), Proviso (Australia and New Zealand), Quovo (US), SaltEdge (55 Countries), SynapsePay (US), Tink (Europe), Topicus Finance (Netherlands), Token.io (Europe), Yodlee (US, UK, Spain, Australia, India and New Zealand)

Source: ‘List of all banking APIs’, Nordigen Medium Post (3/2/17)
Plaid

- Founded 2013
- $5.3B Merger announced with Visa (January 2020)
- 450 Employees
- Estimated $109M Revenues

Sources: ‘Visa’s Acquisition of Plaid’, Visa (1/13/20); & ‘What’s Visa Going To Do With Plaid?’, Forbes (1/20/20) for Plaid Rev. Est.
Financial Data Exchange

• “Standards for financial data sharing
• Standards for secure authentication and authorization
• A certification program and standards body
• User experience, consent guidelines and best practices”
Robotic Process Automation

• Account Opening & Onboarding
• Loan Processing
• Report Generation
• Screen Scraping
Assignments

• Group Research Paper (3000 – 3600 words due 5/11)
  • Recommended business and technology strategy within a particular sector
  • To CEO of B of A, Amazon, or Andreessen Horowitz
  • Teams required to be Formed and Sector Selected by 4/8

• Individual Business Write-up (900 – 1200 words due 4/24)
  • Each student individually addresses 1 of the following:
    • a) overall market analysis, b) technology trend analysis, c) traditional competitor analysis, & d) big tech & fintech disrupter competitive analysis