

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.

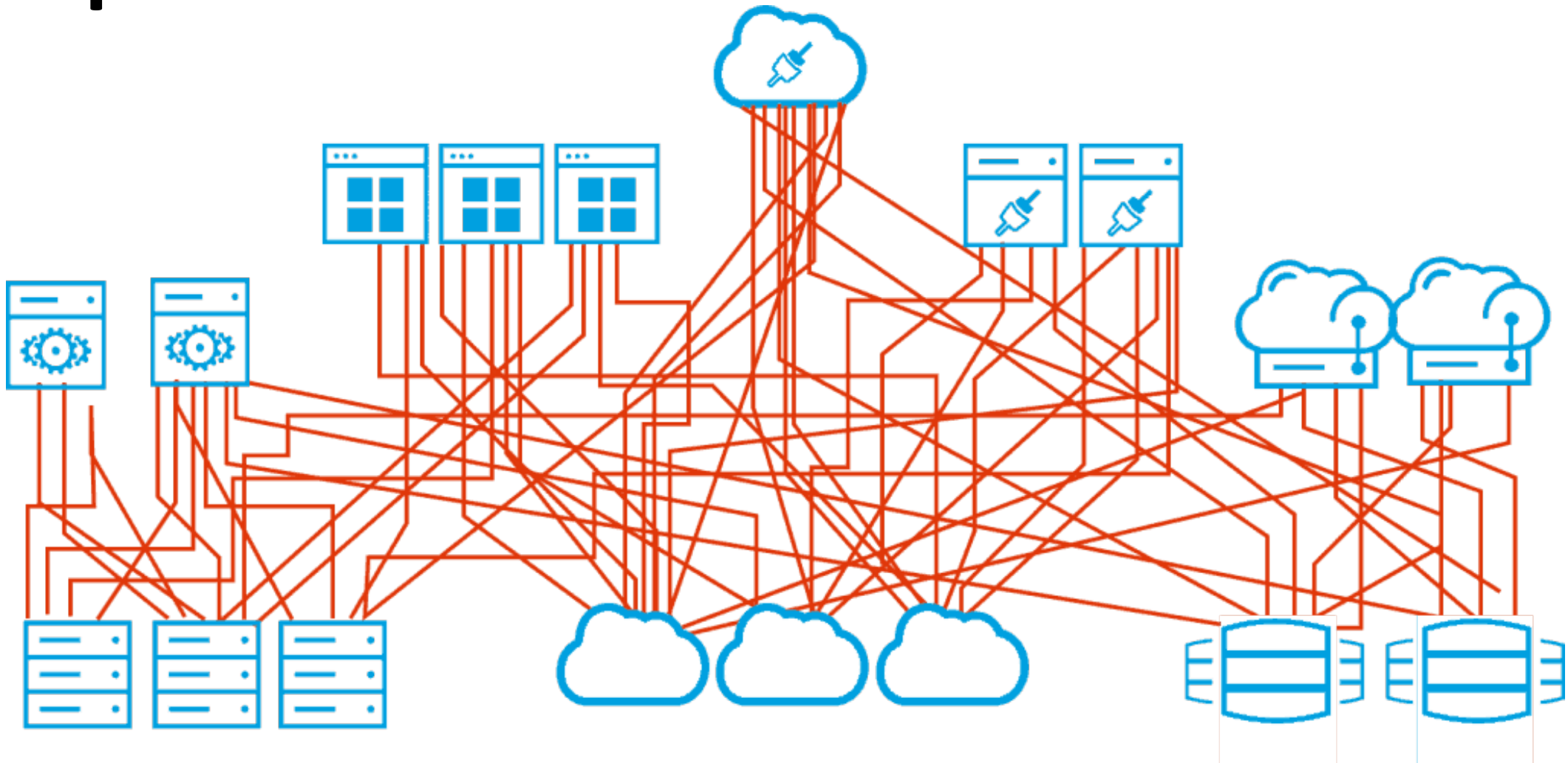
Web APIs

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.

Open API?



API Service Providers – Non-Finance

- Authentication: Auth0 (2013)
- Customer Data: Salesforce (1999), Scale (2016), Segment (2011)
- Email: Mailgun (2010), SendGrid (2009)
- Employment: Checkr (2014)
- Monitoring: Datadog (2010), Dynatrace (2005), Splunk (2003)
- Package Shipping: Shippo (2013)
- Messaging, Video & Voice: MessageBird (2011), Twilio (2008)

Finance Customer Interface

Chatbots, CI & Voice Assistants (2010s)

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

Contactless & Cardless Systems (2000s) >

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

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

Automatic Teller Machines (1970s) >

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

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

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

Checks (800s), Negotiable Checks (1500s), & Preprinted Checks (1760s) >

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

Open API & Open Banking

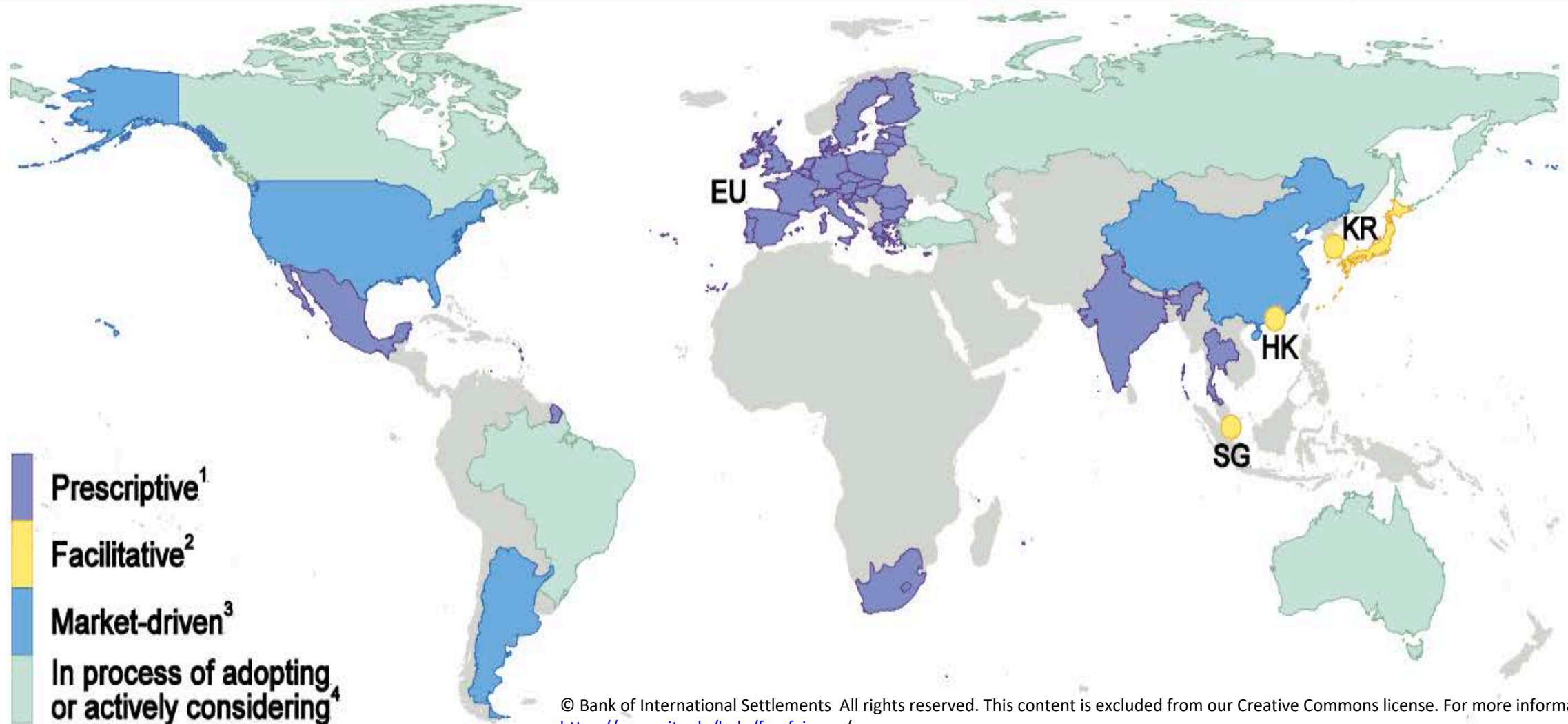
- Open Application Program Interfaces (Open API) allow outside Developers access to and an ability to Integrate Permissioned Customer Data into Third Party Applications
- Open Banking initiatives facilitates or mandates Open API for Non-banks to Share Permissioned Bank Customer Data

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

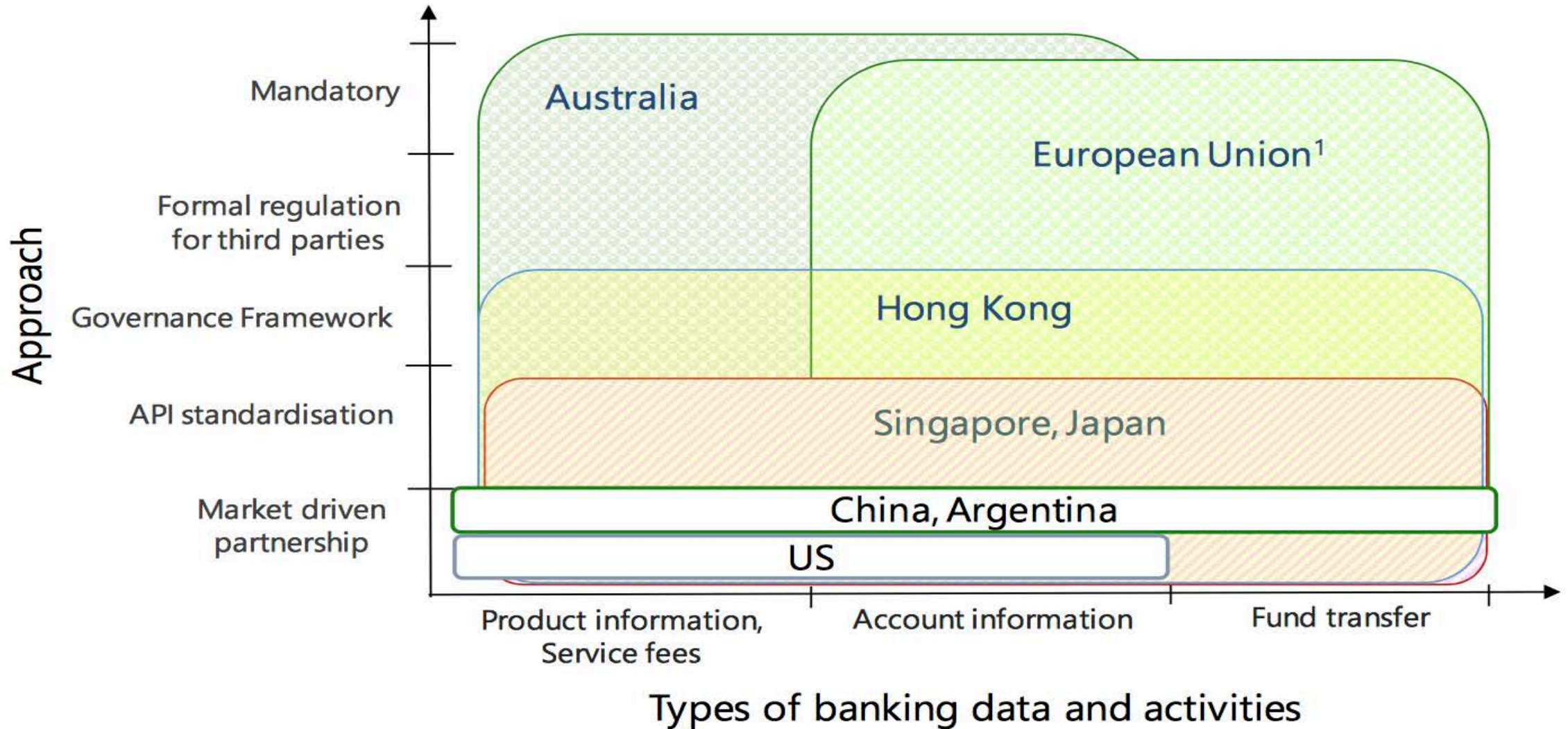
Global view of open banking developments

Figure 1



¹ Requires data sharing, ² Encourages data sharing, ³ No explicit rule/guidance requiring data sharing, ⁴ In process of adopting or actively considering adopting.

Source: 'Report on open banking and application programming interfaces', Bank of International Settlement (November 2019)



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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 (eg FR and UK).

Source: 'Report on open banking and application programming interfaces', Bank of International Settlement (November 2019)

Third Party Banking APIs - Data Aggregators

Investnet (Yodlee)

Finicity

Fiserv (CashEdge)

Galileo

Instantor

Marqeta

MX

Plaid (& Quovo)

SaltEdge

SynapsePay

Tink

Competitive Landscape

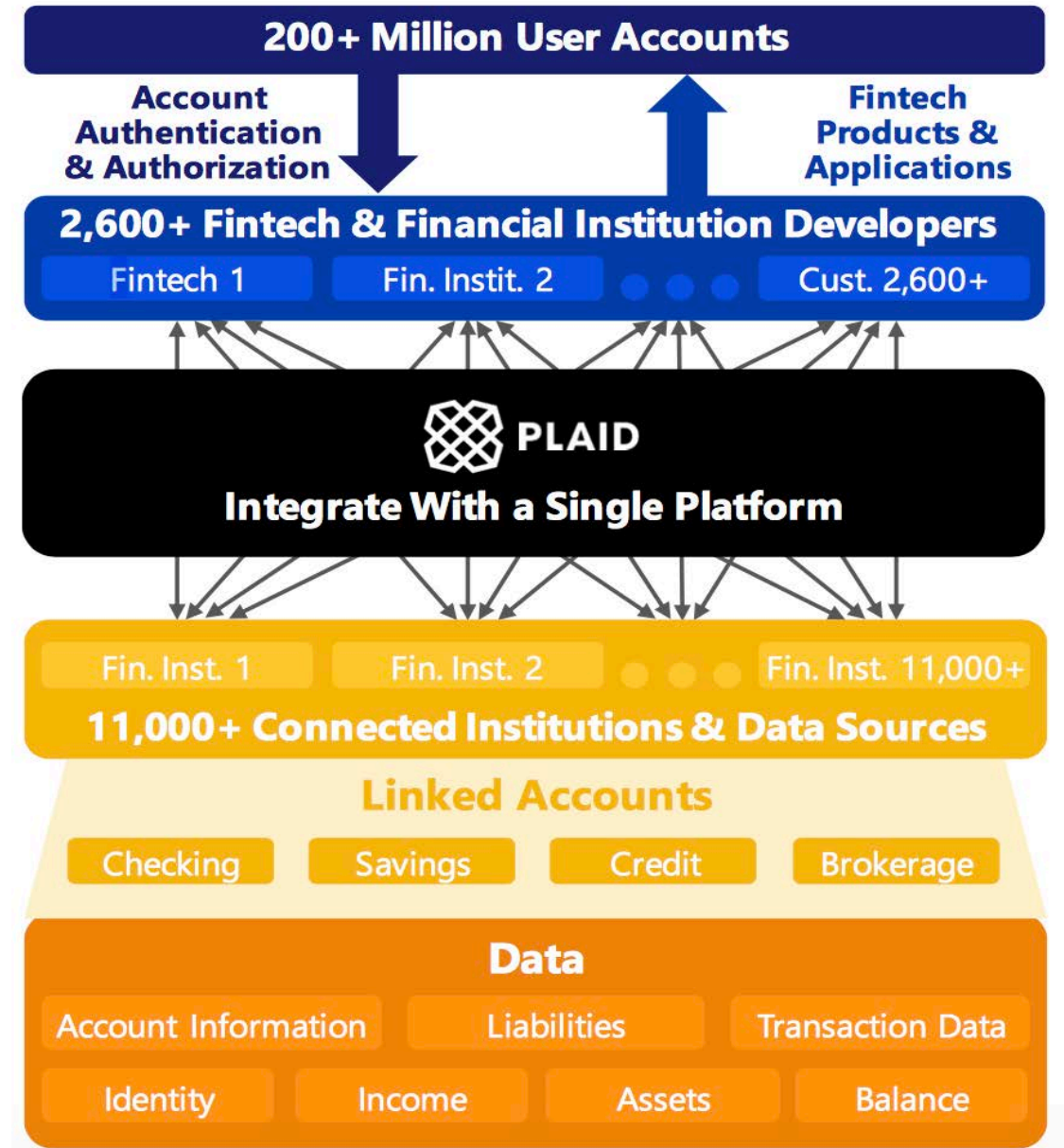
- **Analytics**
- **Coverage**
- **Developer Service**
- **Price**
- **Reliability**
- **Security**
- **User Experience**

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)

Plaid

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



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”



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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

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