

Open Source in Banking: Multiple Apache Projects Used for Bank Solution

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FinTech Track



Halifax, NS
October 6-10, 2023



Intro



Entrepreneur

Financial Inclusion

Open Source

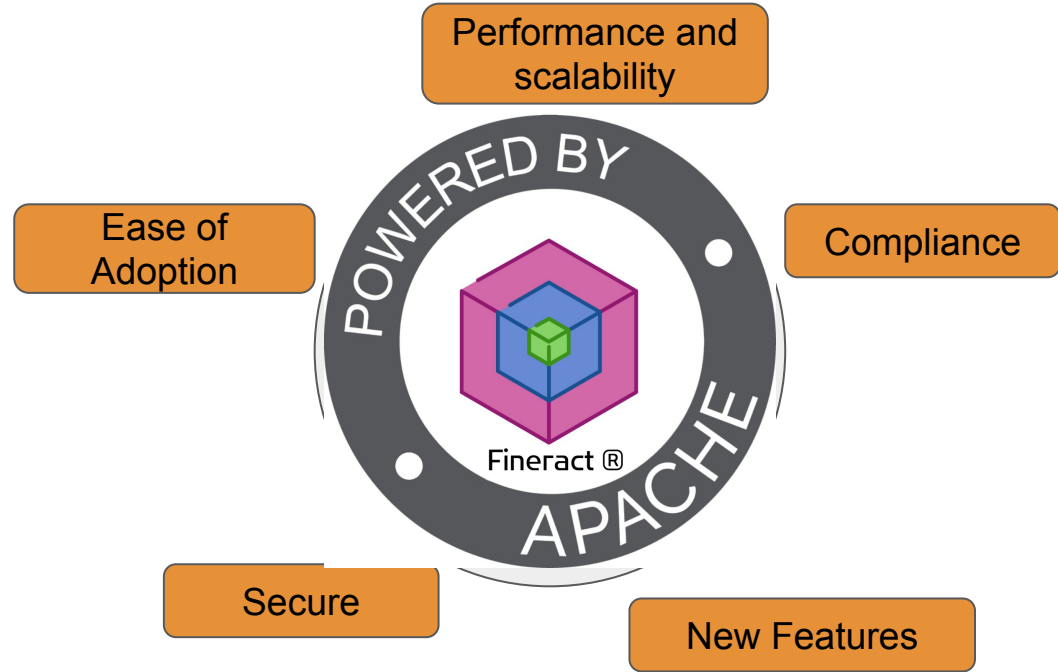
Clean Energy For All

Founder of Mifos

Business model first

Contribute upstream to the open core, build and defend your market position by building defensible services and functionality.

Customer pitch, control and cost.



Functional Requirements

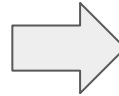


Digital First Bank

Customer Onboarding	External Validation Checks	Authentication	Instant Payments
KYB / KYC data collection	Financial Analytics	Customer Statements	Standing Payments
Biometric validations	Dual signing for business accounts	Signed transactions	Bulk Payments
AML checks	Customer Notifications	Self-Service	Product Configuration
Customer Record	Accounts	Lending	Portfolio
Ledger Transactions	Reports	Audit Trails	Fraud Detection

“Self Service?”

Traditionally, Banks are built on the basis of Teller Actions.



But we have these.

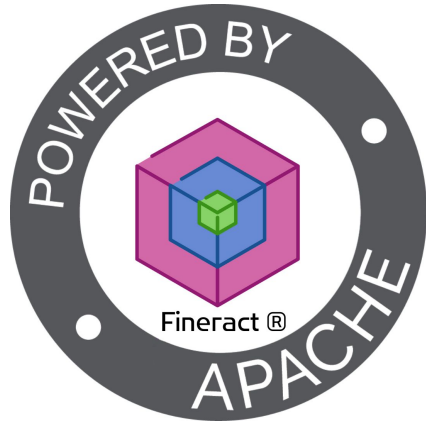


“The future is already here
– it's just not evenly
distributed.

William Gibson, Author

Our Starting Point

Mifos Back
Office UI



PaymentHUB



+

Cloud Expertise

Scalability Design

Banking Compliance

What's the gap



Digital First Bank

Customer Onboarding	External Validation Checks	Authentication	Instant Payments
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More Gaps

Scalability

Performance

Downstream Systems

Business Date

Batch Processing/ EoD



See other presentations
during this track on these
topics.

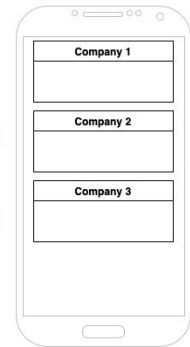
High Level Architecture

Work In Progress: 2023.06.22.
Version: 0.1.3

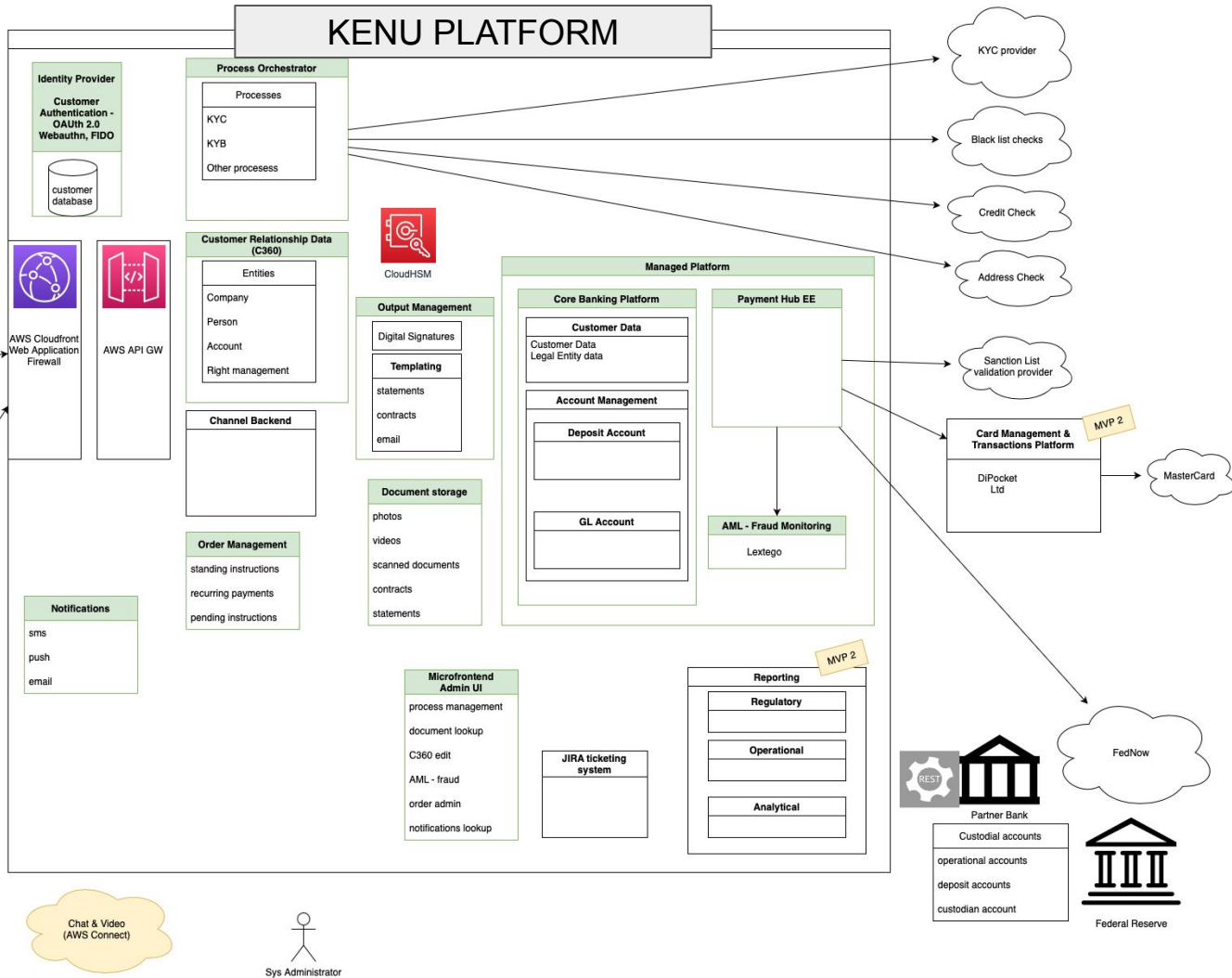
Apps



- Registration
- Transaction creation & signing



Transaction creation -



No Humans

If you don't have to have humans touch it, then many of the regulations, and all of the SOC2 assessments are simplified.

CI/CD pipelines can solve compliance questions in Financial Services.



Open Source Projects Used in..



Core Banking System
of Record
Fineract

Payments Orchestration
PaymentHUB

Other Components

Cloud Deployment

CI/CD/Testing

Dev Tooling

APACHE PDFBox



Bank Statements



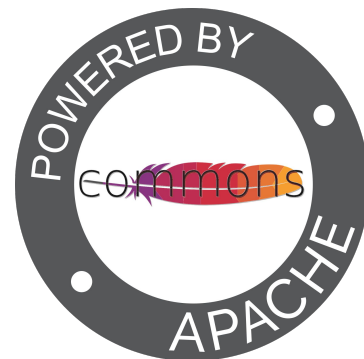
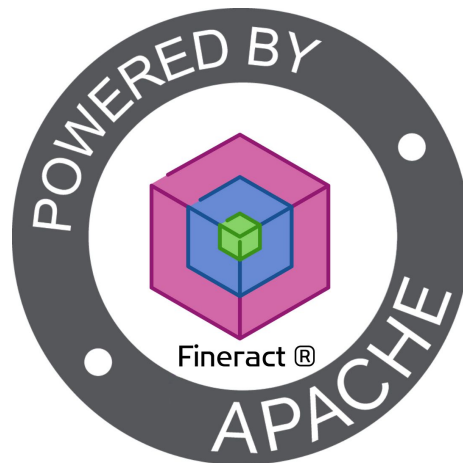
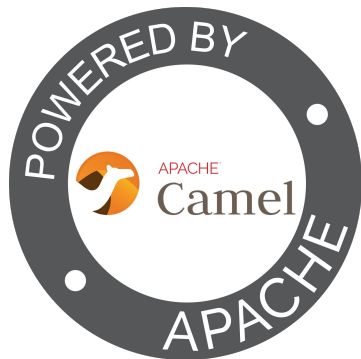
Event mechanism



Apache
Airflow

Scheduling

camunda

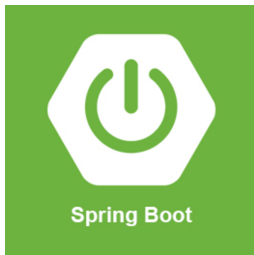


Used by Fineract

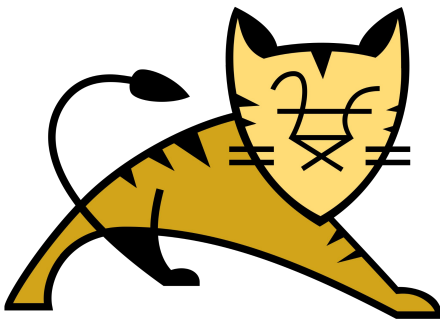
eclipse**link**



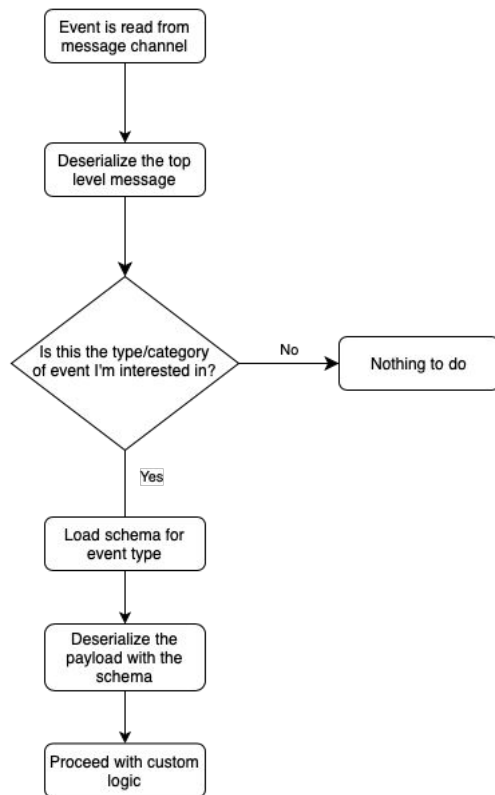
RESTful Web Services in Java.



Used in Deployment



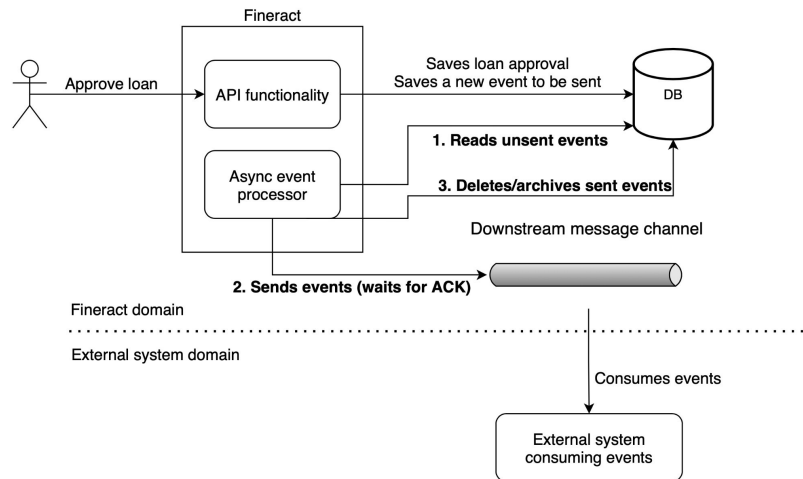
Avro used for...



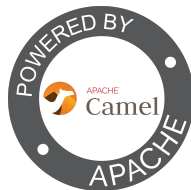
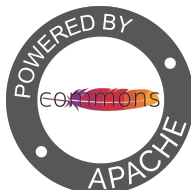
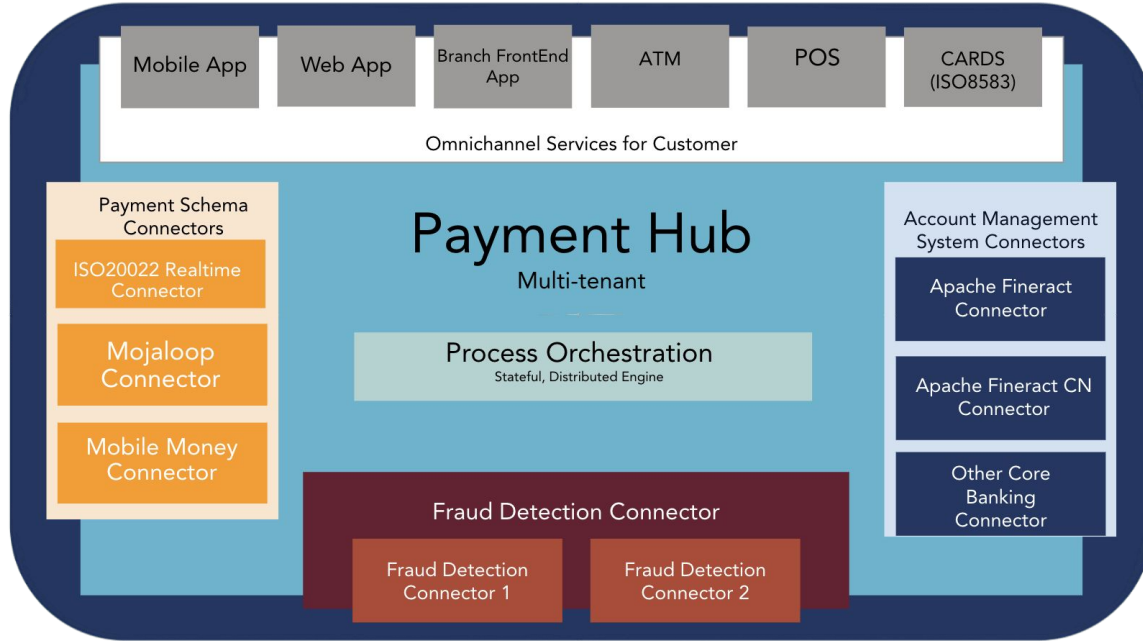
High Level

- Reading the saved events from the database
- Sending them into the downstream message channels

Executing with Spring Batch, scheduled, optional.



PaymentHUB



Productizing

Ease of Adoption

Onboarding process, migration

Performance and scalability

Scaling to 100s M accounts and billions of transactions.

Compliance

Checking the boxes with regulators

Secure

Bringing cloud security practices.

New Features

Adding defensible features

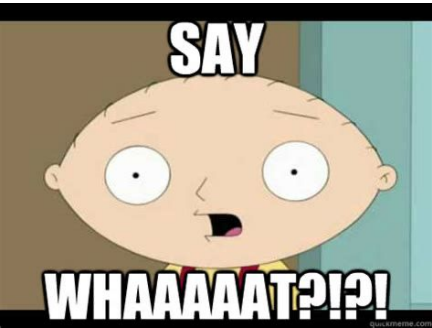
Approved for
SEPA Payments
Instance

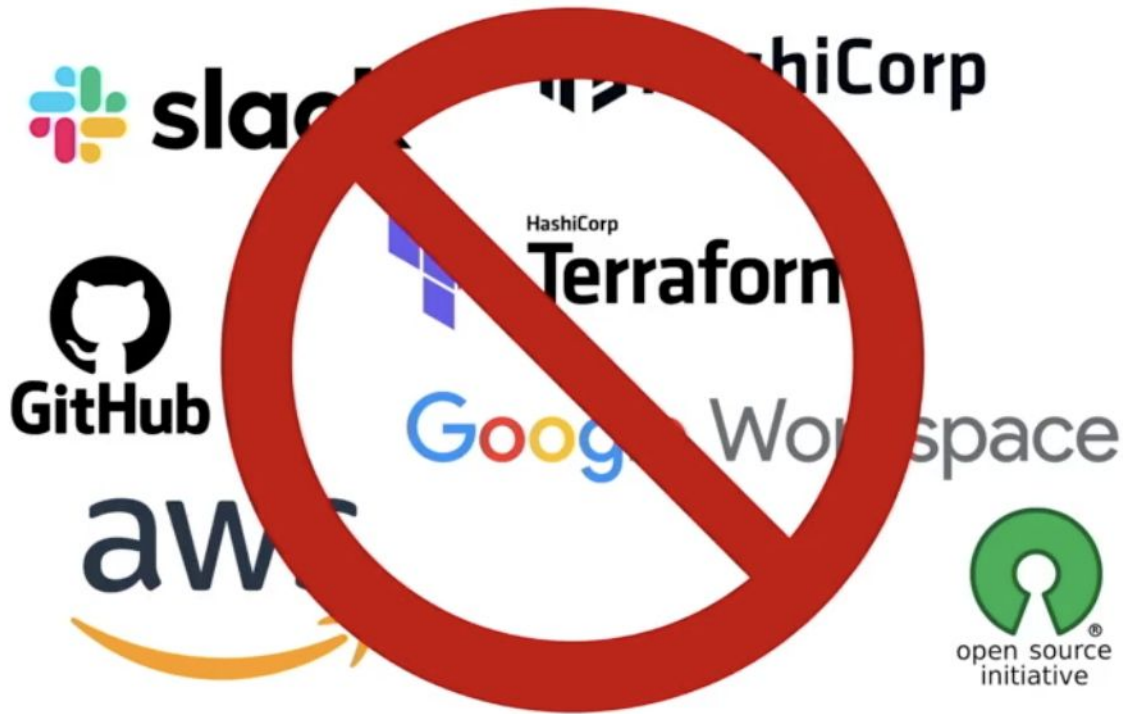


Where is Banking going?

*All US Dollars settle on systems that were
built before the internet.* (Ben Metz, Chief
Digital Officer, Jack Henry Inc)

August 2023

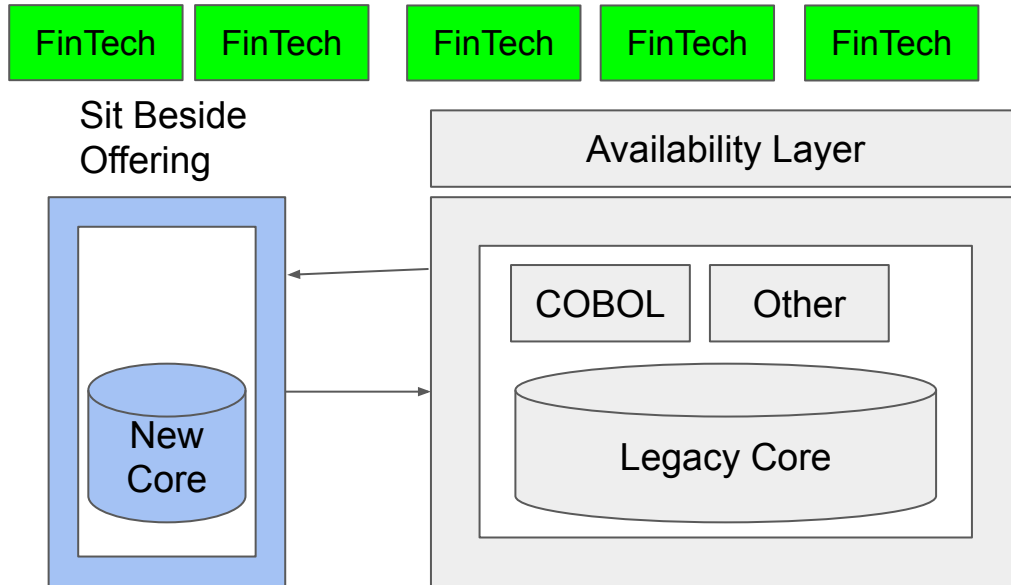




Disallowed in Regulated Banking Core... Not Long Ago

Screenshot of a talk by Chief Digital Officer of Jack Henry Inc

Existing FinTechs



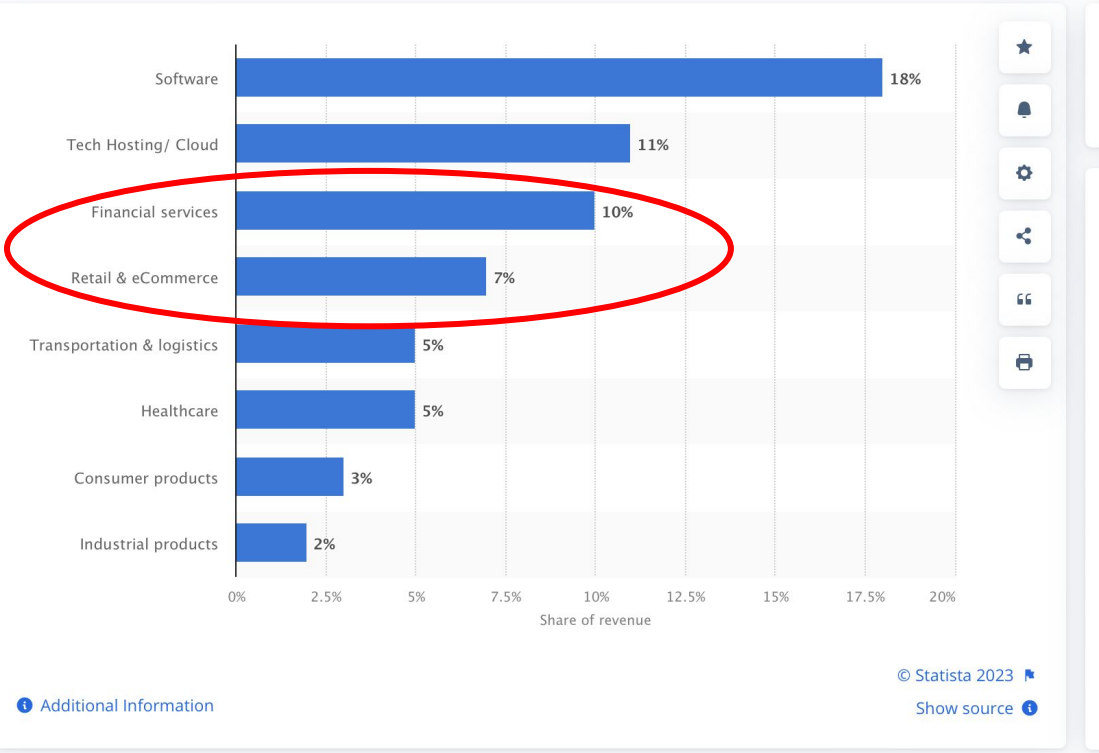
Designed for consumers
on the internet, on their
mobile devices.

Designed for:
Teller Operations
Bank Management
Treasury Management

Created before the
internet



IT spending as share of company revenue in 2022, by industry



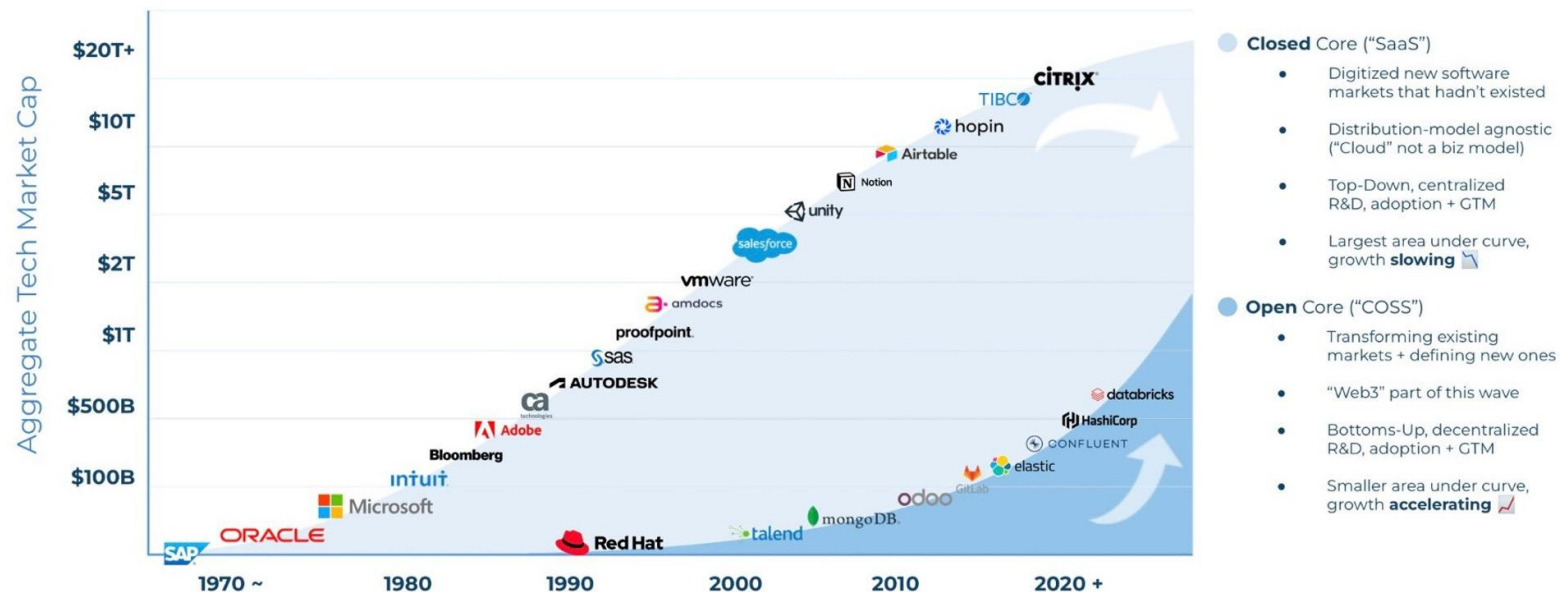


NYC Financial District

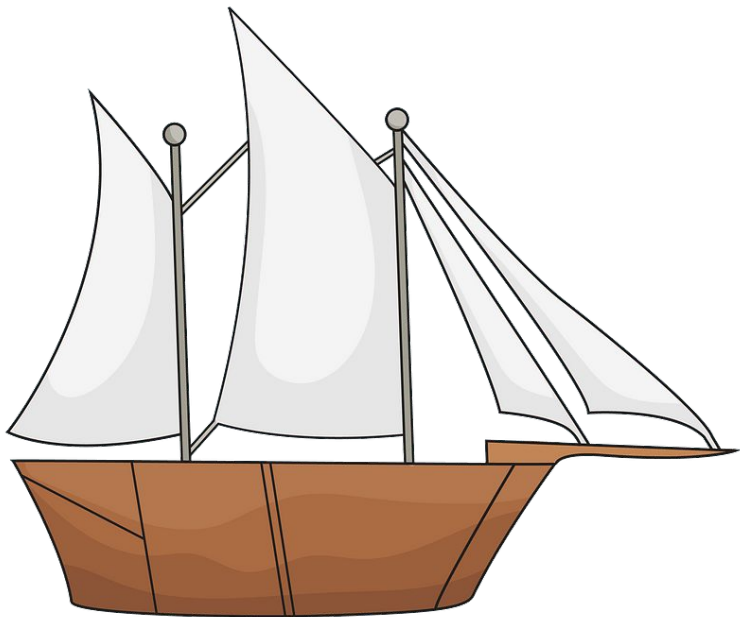
Retail Banking
Commercial Banking
Trading
Brokers
Asset management
Bond Issuance
Treasury Operations

Lots of COBOL

Visualizing: “Open source is eating software faster than software is eating the world”



CONCLUSION?

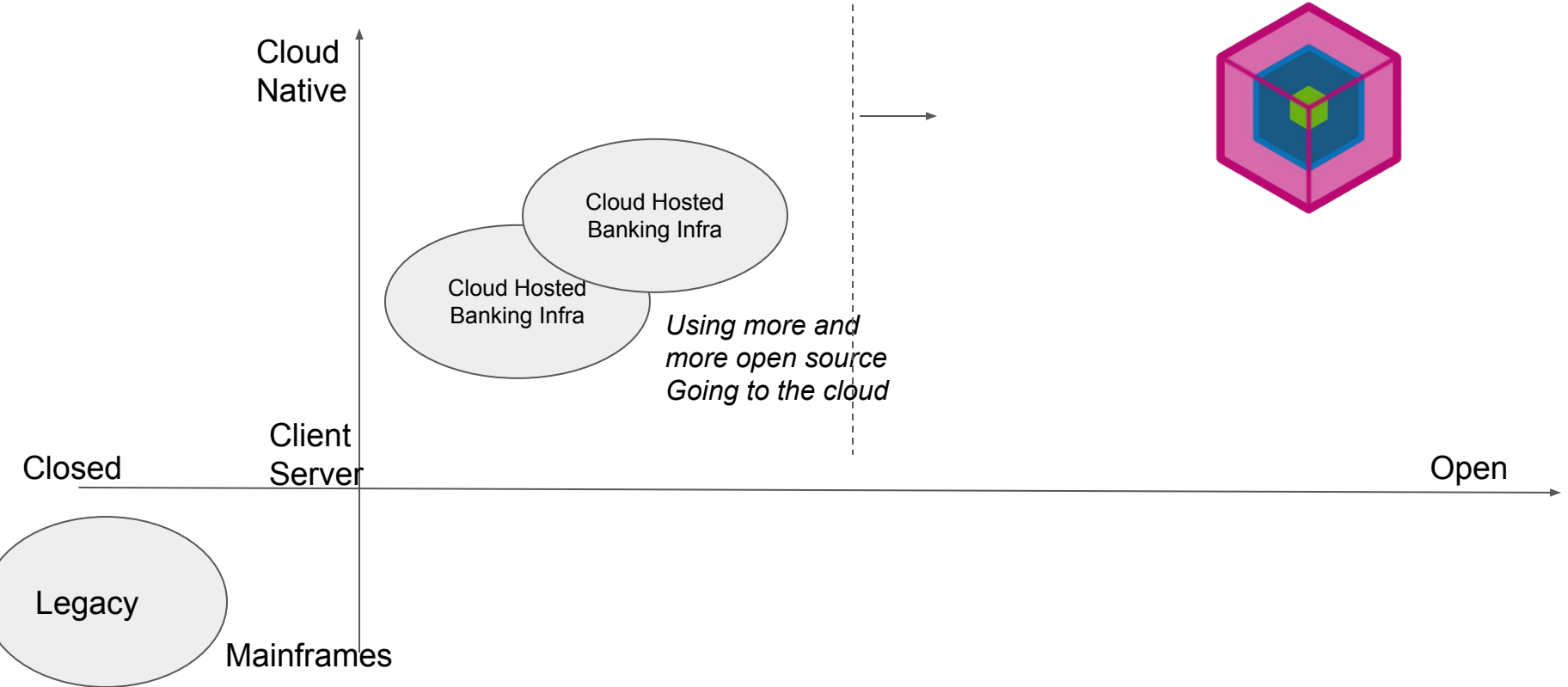


Uses growing number of open source projects.

Uses a lot of sister Apache Projects

: High Density of Open Source
belowdecks of Fineract

A Convergence



AI will accelerate the change

Forcing function - synthetic ID, detection systems

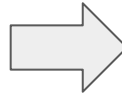
Forcing function - AML

Testing - coverage made easier

Discovery - what does the COBOL code do?

Rewriting - do what the COBOL code does

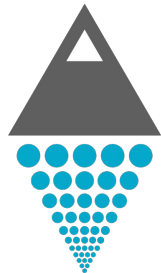
Interfaces with customers will Evolve



Thank you

James Dailey

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To learn more about
BaaSFlow and our upstream
contributions.

www.baasflow.com

