

Fraud Risk Management

22 October 2020

Presented by:

Sudhir Upadhyaya (TechnoGS)

Justus Ortlepp

Greg McCormick (Sybrin)



The journey so far...

PI 9

Fraud Risk was selected for further work “To review and classify the typologies to determine which of those strategically fit with Mojaloop’s vision and how to get started building it”.

- The development of a strategic assessment framework
- The detailed classification of the risk typologies already identified
- A detailed cross-reference between the risk typologies and the data dictionary already developed

PI 10

Fraud Risk Management was selected as a work-stream for PI10 with the broad objectives to define, investigate and validate a backlog and MVP for a FRM system/service against the APRICOT modelling for existing/prospect operators; and identify partners to build / implement a FRM system / service.

Objectives for PI11 and beyond were identified and prioritized.

PI 11

The Fraud Risk Management workstream had following tasks for this program increment:

- Identify the typologies that are visible to the hub and can be monitored by the hub
- Identify additional typologies related specifically to fraud “at the hub”
- Consider the feasibility of an Open Source Software Fraud Risk Management solution

As a result 39 new typologies were identified. These typologies are core fraud risks that a hub faces and have to be mitigated at hub level.

Contents

Updated Fraud Typologies from an internal Mojaloop Hub perspective – Sudhir Upadhyaya (TechnoGS)

Fraud Risk Management Proof of Concept – Justus Ortlepp

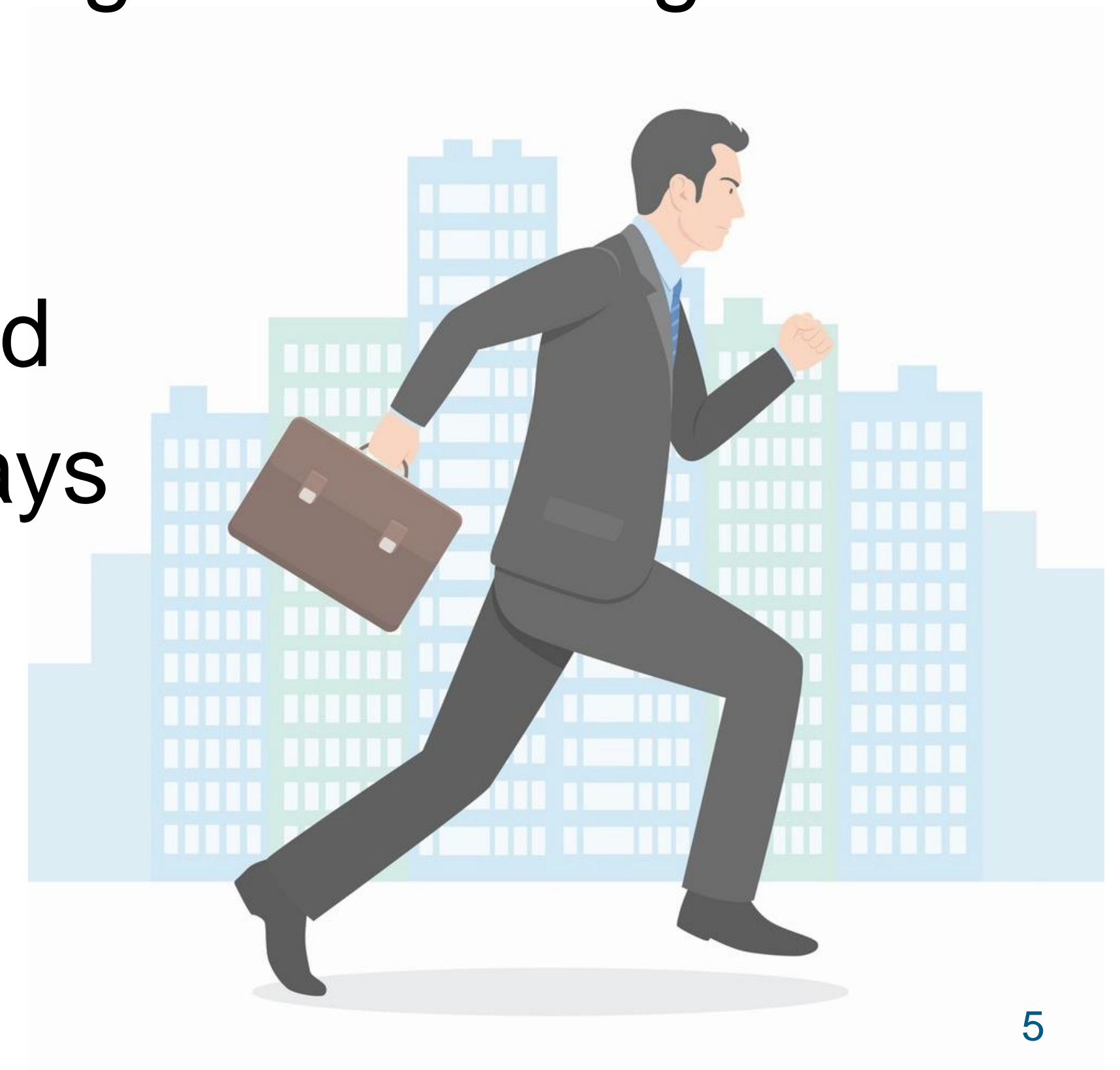
Fraud Risk Management Open Source Software Architecture – Greg McCormick (Sybrin)

Mojaloop Hub Fraud Typologies

Sudhir Upadhyaya
Executive Director
TechnoGS

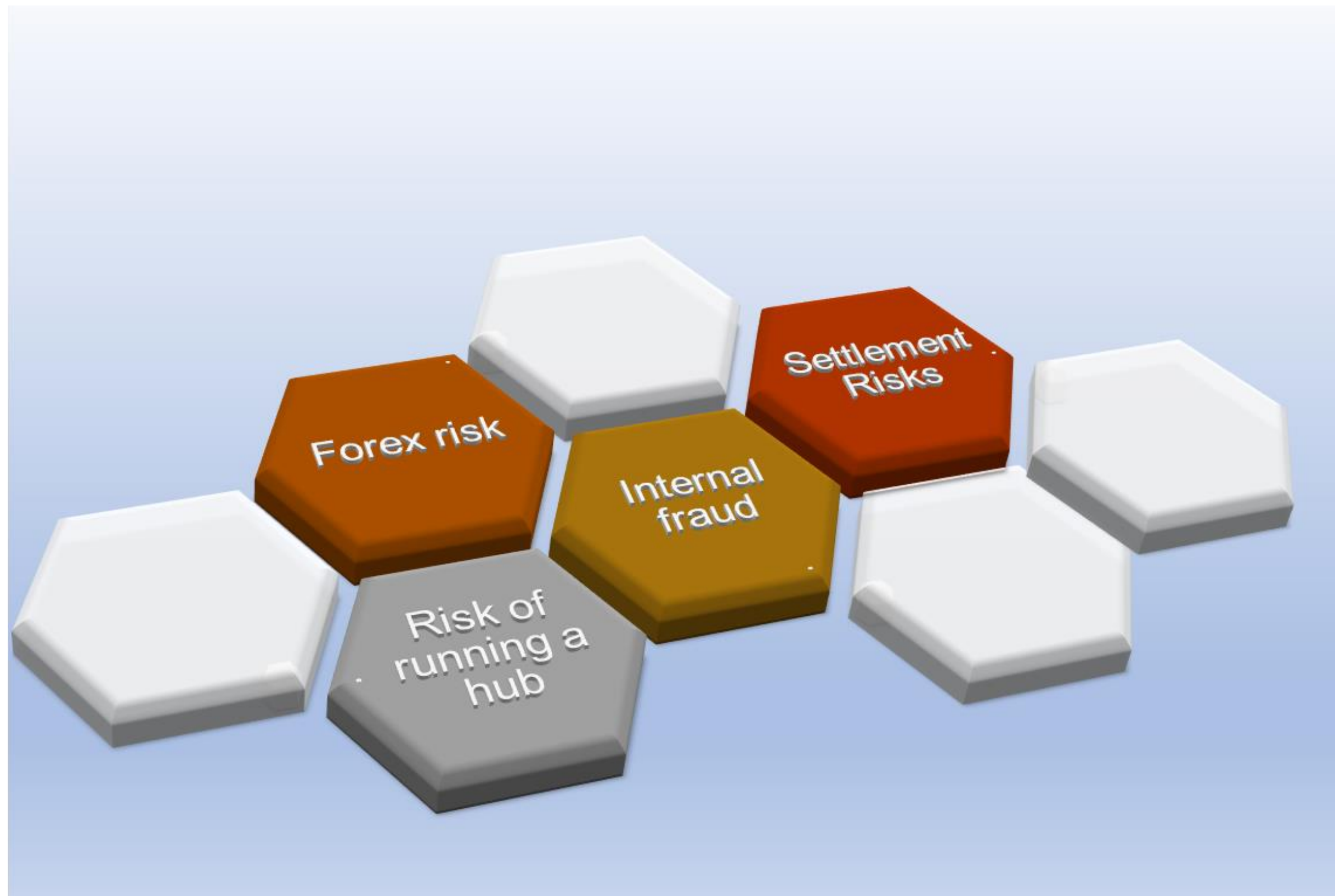
Compliance is the difference between attaining and retaining the commercial growth.

Fraud management is always 2 steps behind the commercial products hence almost always catching up.



New typologies focus area

Four new domains were explored and 39 new typologies were identified as a result.



Key process for mobile money

Methodology



Money Creation



Money Movement



Liquidation of money



Integration



Syndicate Frauds

APRICOT recap



A	P	R	I	C	O	T
Approach	Products / Services	Regulatory Impact	Involved Parties	Channel	Organisational Scope	Transactions
<ul style="list-style-type: none">• Defines the process and behavioural attributes that are utilised as part of the typology• Examples:<ul style="list-style-type: none">• Unauthorised access• Suspect transactions	<ul style="list-style-type: none">• Defines whether the typology is limited to specific products or services• Examples:<ul style="list-style-type: none">• Current / mobile money account• Loans	<ul style="list-style-type: none">• Defines whether the typology is a result of / circumvention of regulatory thresholds or controls• Examples:<ul style="list-style-type: none">• Limits• Regional regulatory differences	<ul style="list-style-type: none">• Defines the actors / participants that are involved in the typology• Examples:<ul style="list-style-type: none">• End-user/customer• Agent	<ul style="list-style-type: none">• Defines the channel through which the typology interacts with the DFSP• Examples:<ul style="list-style-type: none">• Agent network• Digital / Online	<ul style="list-style-type: none">• Defines the range and visibility of the typology within the eco-system• Examples:<ul style="list-style-type: none">• DFSP only• Payer to Hub	<ul style="list-style-type: none">• Defines the transactional attributes that are utilised to perform the typology• Examples:<ul style="list-style-type: none">• Cash payments• Offshore payee

Review of Selected Typologies #1

One of the syndicate keep on snooping to get customer information of all DFSP to get the customer data that would be used as a pre-requisite for fraud / social engineering fraud

Snooping to Get personal details



Send money to random series of mobile number (quotes)

Collect Name of Person from DFSPs

Name and Mobile number combine can act as pre-requisite for social engg fraud



mojaloop

Put Query

Fire the Query

Declined after getting the name



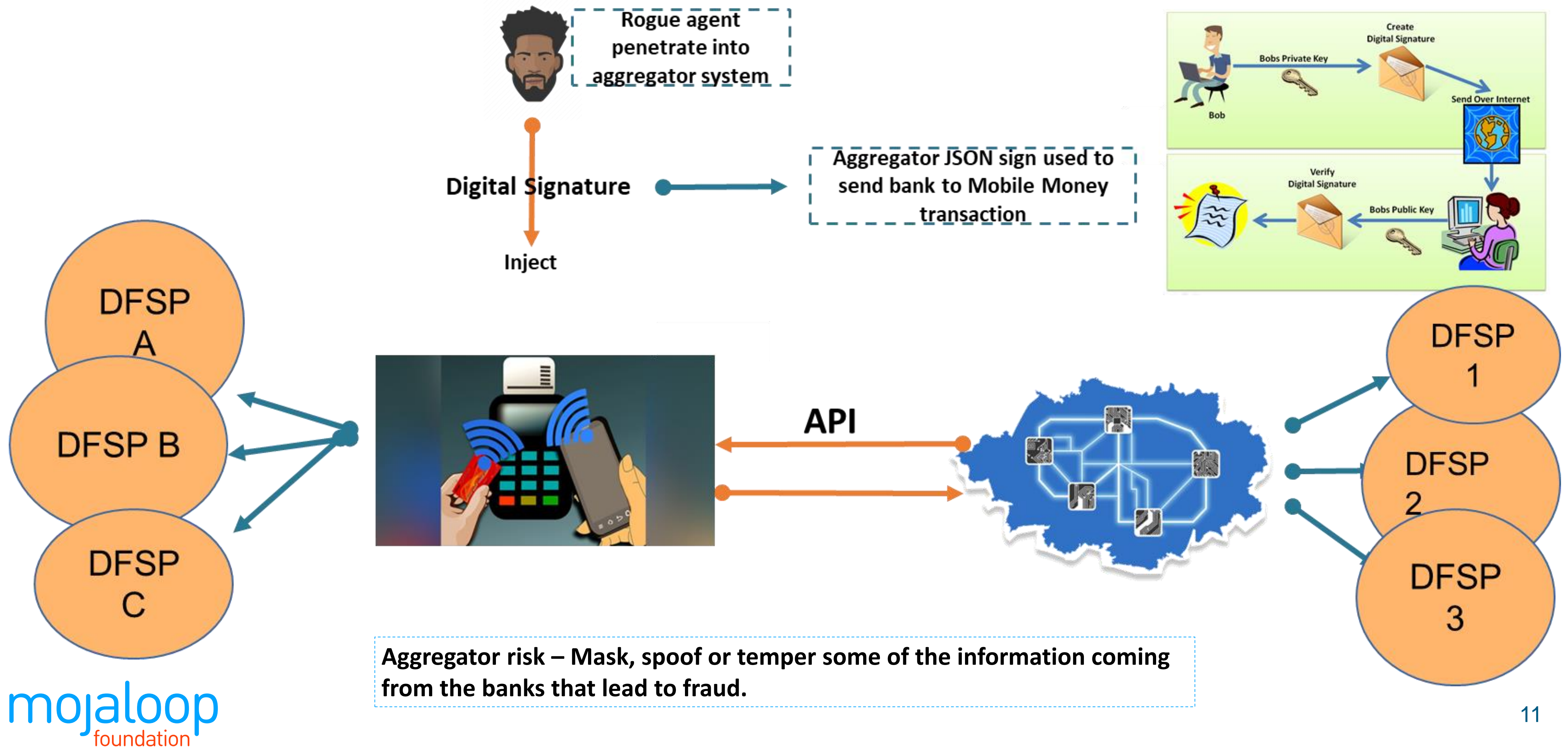
mojaloop

Review of Selected Typologies #1

One of the syndicate keep on snooping to get customer information of all DFSP to get the customer data that would be used as a pre-requisite for fraud / social engineering fraud

A	P	R	I	C	O	T
Approach	Products / Services	Regulatory Impact	Involved Parties	Channel	Organisational Scope	Transactions
<ul style="list-style-type: none">• Suspect transaction/s• Transactional	<p>Services:</p> <ul style="list-style-type: none">• Send Money• Inter-operatable txn	<ul style="list-style-type: none">• Trail of the failed transaction from single source / agent	<ul style="list-style-type: none">• Individual user• Institution user• Agent• DFSP	<ul style="list-style-type: none">• Any channel/s	<ul style="list-style-type: none">• Both on us & off us• Both DFSP & Switch	<ul style="list-style-type: none">• Remittance• Multiple transactions• Same payer identity

Review of Selected Typologies #2



Review of Selected Typologies #2

Aggregator risk – Mask, spoof or temper some of the information coming from the banks that lead to fraud.

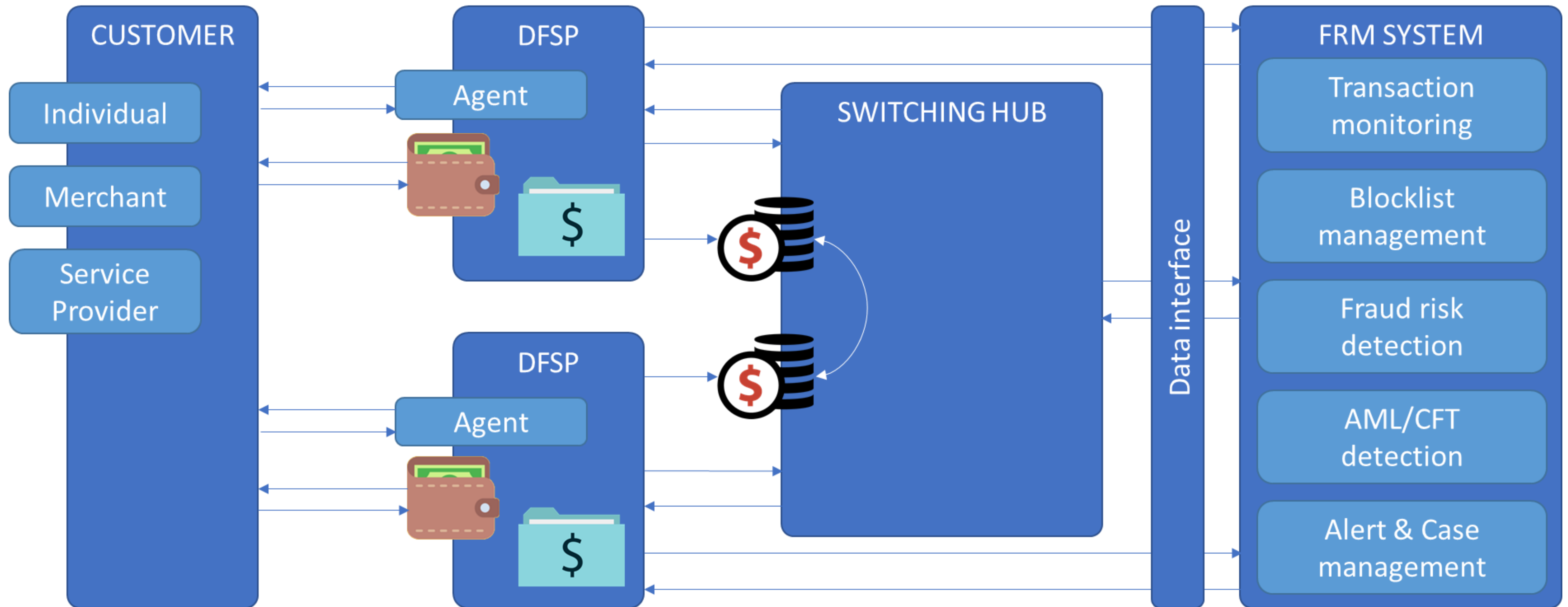
A	P	R	I	C	O	T
Approach	Products / Services	Regulatory Impact	Involved Parties	Channel	Organisational Scope	Transactions
<ul style="list-style-type: none">• Suspect transaction/s• Transactional	<p>Services:</p> <ul style="list-style-type: none">• Send Money• Inter-operatable txn	<ul style="list-style-type: none">• Trail of the failed transaction from single source / agent	<ul style="list-style-type: none">• Individual user• Institution user• Agent• DFSP	<ul style="list-style-type: none">• USSD• Web	<ul style="list-style-type: none">• Both on us & off us• Both DFSP & Switch	<ul style="list-style-type: none">• Remittance• P2P• B2P

Asante sana!

FRM Proof of Concept

Justus Ortlepp
Business Analyst

FRM – Solution Context



FRM – Conceptual Overview



GitHub Repository

https://github.com/mojaloop/fraud_risk_management



mojaloop / fraud_risk_management / fraud_risk_management

generated from mojaloop/template-repo-public

Code Issues 85 Pull requests ZenHub Actions Projects Wiki Security Insights Settings

fraud_risk_management

Repos (1/1) Labels Milestones Assignees Epics Releases Estimates Authors

Find Issues (f+i) New Issue +

Board Reports Roadmap Workflows New Create... Edit Workspace Invite View Tutorials Shortcuts Open in web app Support and training Changelog

75 Issues - 0 Story Points New Issues

- fraud_risk_management #5 [USER STORY] Add a user to a blocklist [FEATURE] Manage a customer's ... User Story
- fraud_risk_management #6 [USER STORY] Manually remove a user from a blocklist [FEATURE] Manage a customer's ... User Story
- fraud_risk_management #7 [USER STORY] Automatically remove a limited period user from a blocklist when the period expires [FEATURE] Manage a customer's ... User Story
- fraud_risk_management #8 [FEATURE] Selection of language preferences Feature
- fraud_risk_management #9 [ENABLER] Register of system messages Enabler Story
- fraud_risk_management #10

9 Issues - 0 Story Points Product Backlog - Epics

- fraud_risk_management #11 [EPIC] Create a performant data pipeline to ingest transactional data into the Mojaloop FRM platform Filter by Epic Issues
- fraud_risk_management #12 [EPIC] Implement a rules engine to evaluate transactions for fraud risk Filter by Epic Issues
- fraud_risk_management #13 [EPIC] Implement a case management solution and associated workflow to handle fraud risk alerts Filter by Epic Issues
- fraud_risk_management #4 [FEATURE] Manage a customer's ability to transact through blocklists Filter by Epic Issues

0 Issues - 0 Story Points Product Backlog

Product Backlog

All issues in the product that are not Epics.

1 Issue - 0 Story Points PI Backlog - Epics

- fraud_risk_management #3 [EPIC] Demonstrate the feasibility of a mojaloop fraud risk management solution using only open source components Filter by Epic Issues

0 Issues - 0 Story Points PI Backlog

PI Backlog

Backlog for current (or immediate) PI stories

0 Issues - 0 Story Points Sprint Backlog

Sprint Backlog

Add description +

0 Issues - 0 Story Points Blocked Stories

Blocked Stories

Add description +

JustusOrtlepp JustusOrtlepp

FRM Proof of Concept

[EPIC] Demonstrate the feasibility of a mojaloop fraud risk management solution using only open source components #3

Edit

New issue

Open

Epic

JustusOrtlepp opened this issue on Sep 18 · 0 comments



JustusOrtlepp commented on Sep 18 · edited

Collaborator



Description

For a Mojaloop FRM solution to adhere to the same guiding principles as the Mojaloop platform, Mojaloop FRM must be constructed using open source software (OSS) components to minimise the implementation and operational cost of the platform. There are many potentially suitable OSS components available to meet the requirements of an FRM solution. The purpose of this epic is to design an FRM architecture out of OSS components and to evaluate the architecture against the FRM requirements as a Proof of Concept, before proceeding with the development of an FRM MVP for deployment.

For Mojaloop Hub Operators
who perform the switching of transactions between DFSPs
the Mojaloop Fraud Risk Management solution
is a discrete extension to the Mojaloop switching platform
that evaluates every transaction passing through the switch for fraud and money-laundering behaviour
unlike current commercially available solutions
our solution will be composed exclusively out of open source software components and made available to Mojaloop Hub Operators under an Apache 2.0 software license

Initiative / goal

Pipelines

F fraud_risk_management
PI Backlog - Epics



Click the pin icon to assign high priority status. Once pinned, a high priority badge is applied in the Issue and it's placed at the top of the pipeline in the Board.

Assignees



No one—assign yourself

Labels



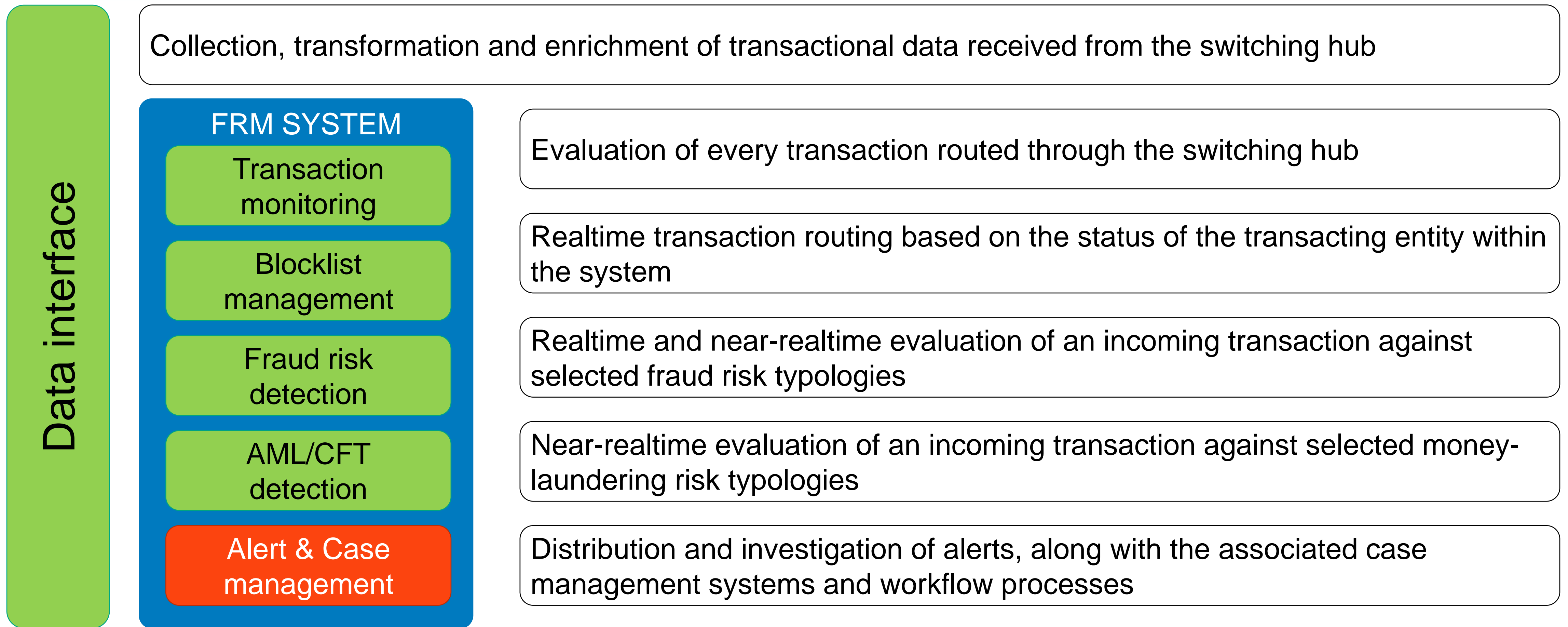
Epic

Projects

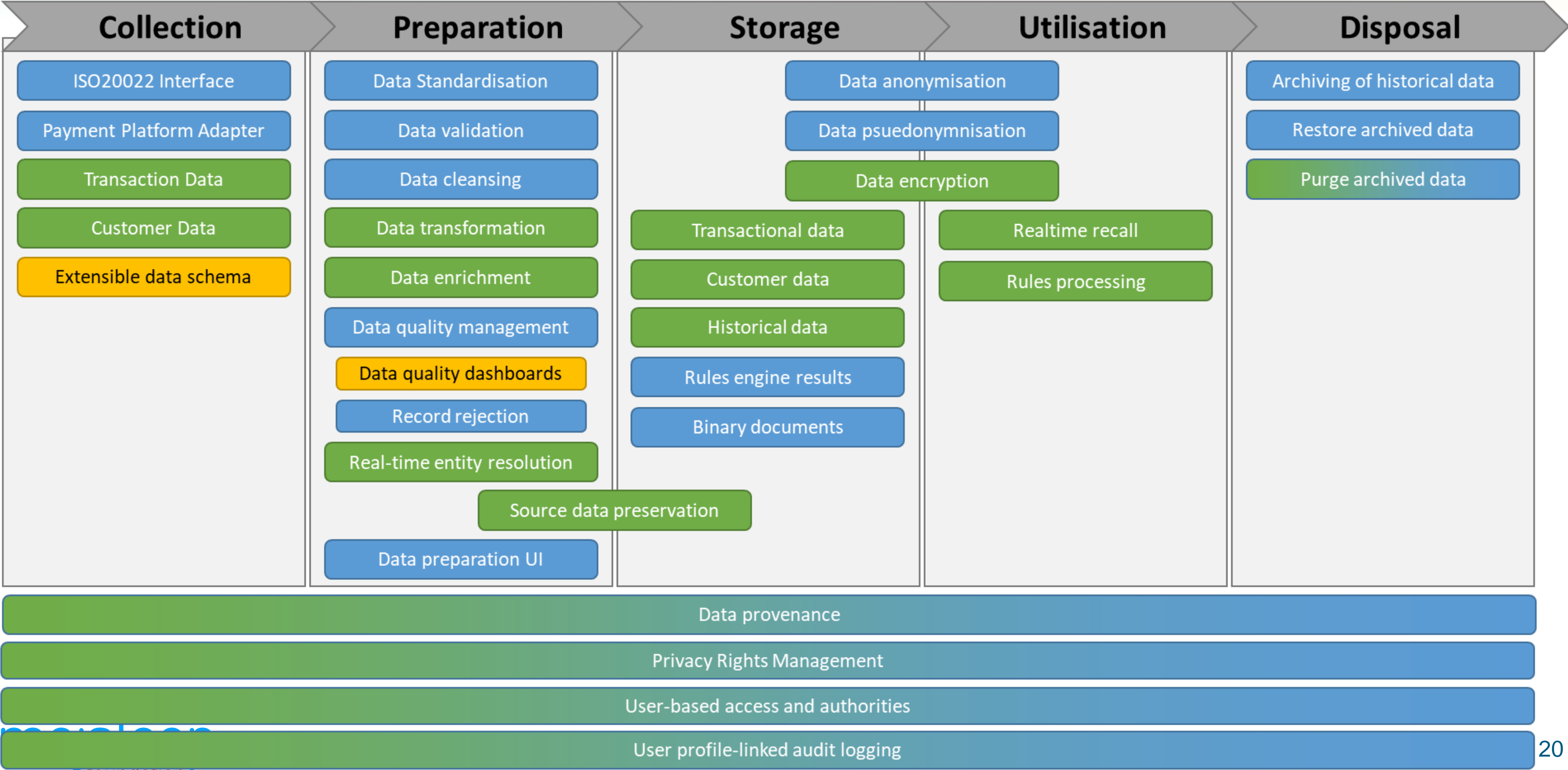


None yet

FRM PoC Scope

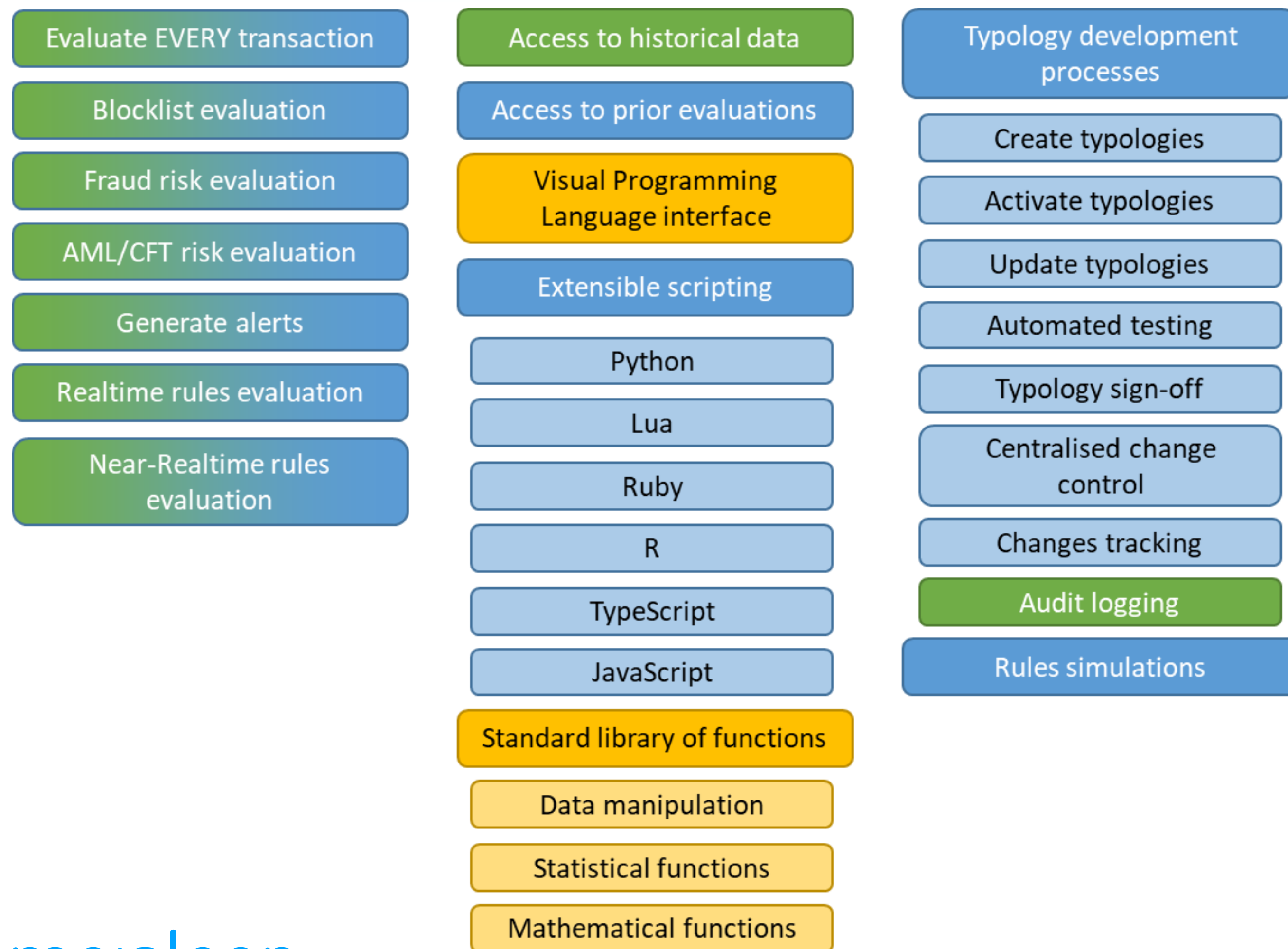


FRM Data pipeline features



- POC
- MVP
- MVP+

FRM Rules engine features

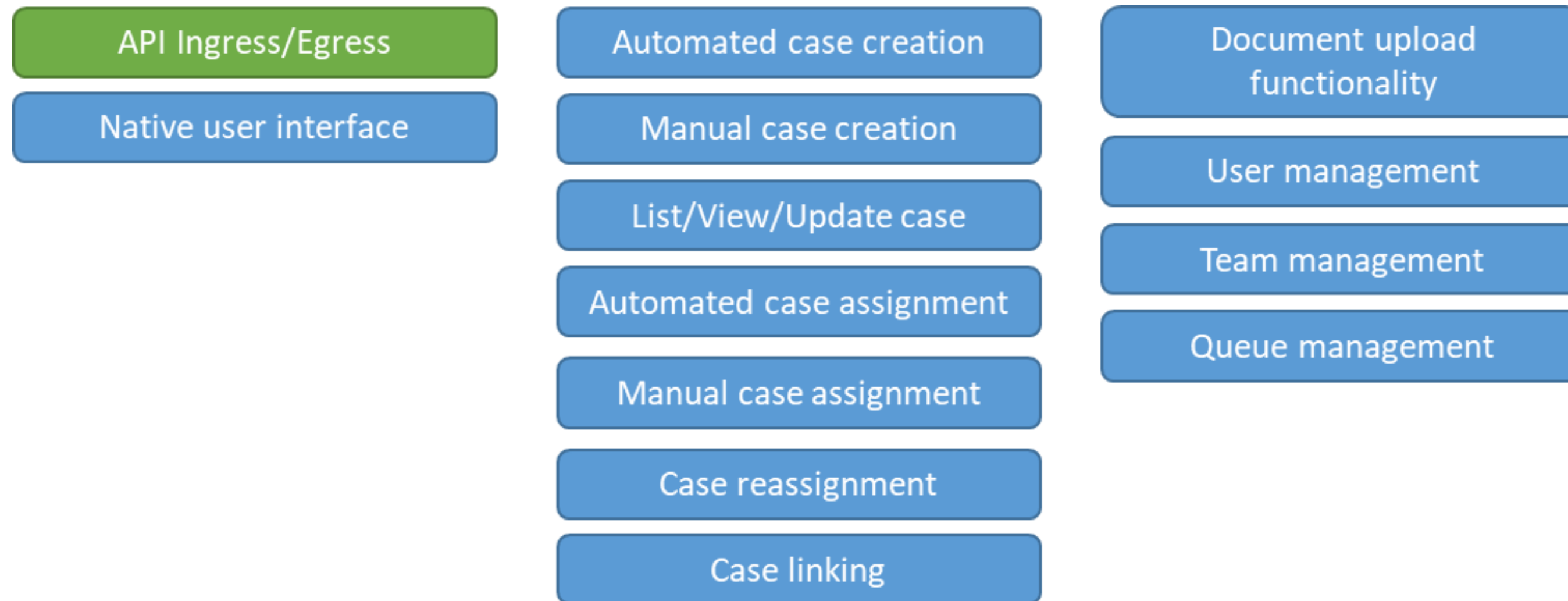


POC

MVP

MVP+

FRM Case management features



POC

MVP

MVP+

Next Steps

- Community Workshop, 3 November 2020 14:00 to 18:00 (UTC)
 - PI planning
 - Backlog grooming
 - Sprint log prioritisation
 - Acceptance criteria
- PoC delivery at the end of PI12 – January 2021!

FRM OSS Architecture

Greg McCormick
Chief Strategic Business Development Officer
Sybrin

Contents

Architectural Goals

Some Targets

POC Architecture

General

Data pipeline

Rules engine

Case management

Closing and Questions

Architectural Goals

- Leverage existing deployments and design patterns of fraud management services
 - Update to use Open Source components
- With proper effort, a zero-cost solution can be implemented by any organization, with the right skills
 - Affordable and reliable
 - Accountable
- This is a Special Interest Group
 - Works with Mojaloop
 - Works with other platforms
- Code based, no UX so others can innovate with it

Architectural Goals

Innovate

- Innovate via open source
 - Best practices
 - Affordability
 - Ease of integration
 - Effectiveness



- The latest greatest AI / Machine Learning
- Best and earth shatteringly awesome algorithms

- This will be good, and frankly best of breed
- This will be fast
- This will be adaptable
- This will be a framework for innovation

Architectural Goals

Innovate

- Innovate via open source

- Best practices
- Affordability
- Ease of integration
- Effectiveness

= Low Cost



That is not to say, we will not look at these things, we will, but we have a Level 1 Principle goal to achieve as a priority.

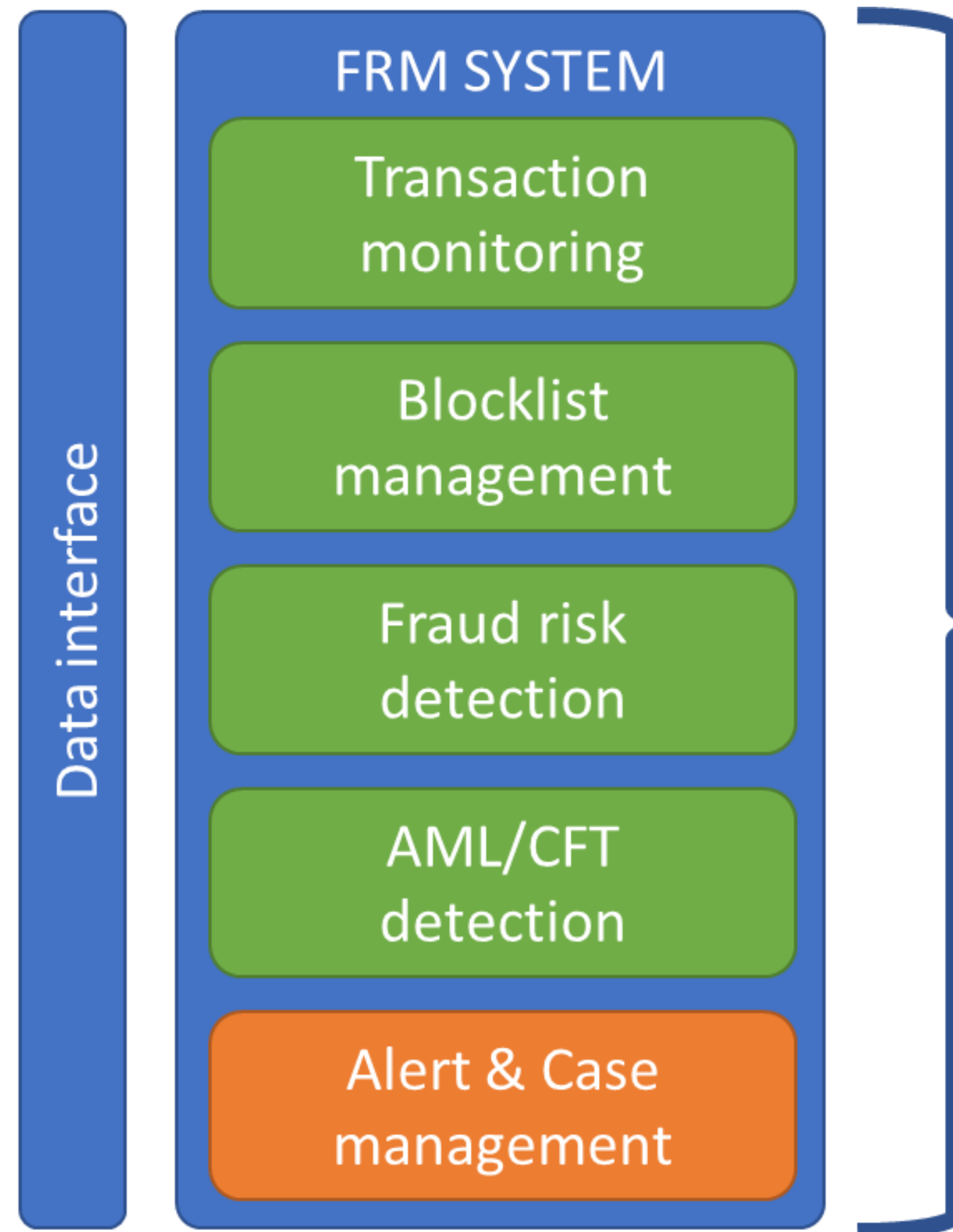


- The latest greatest AI / Machine Learning
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FRM – Some Targets

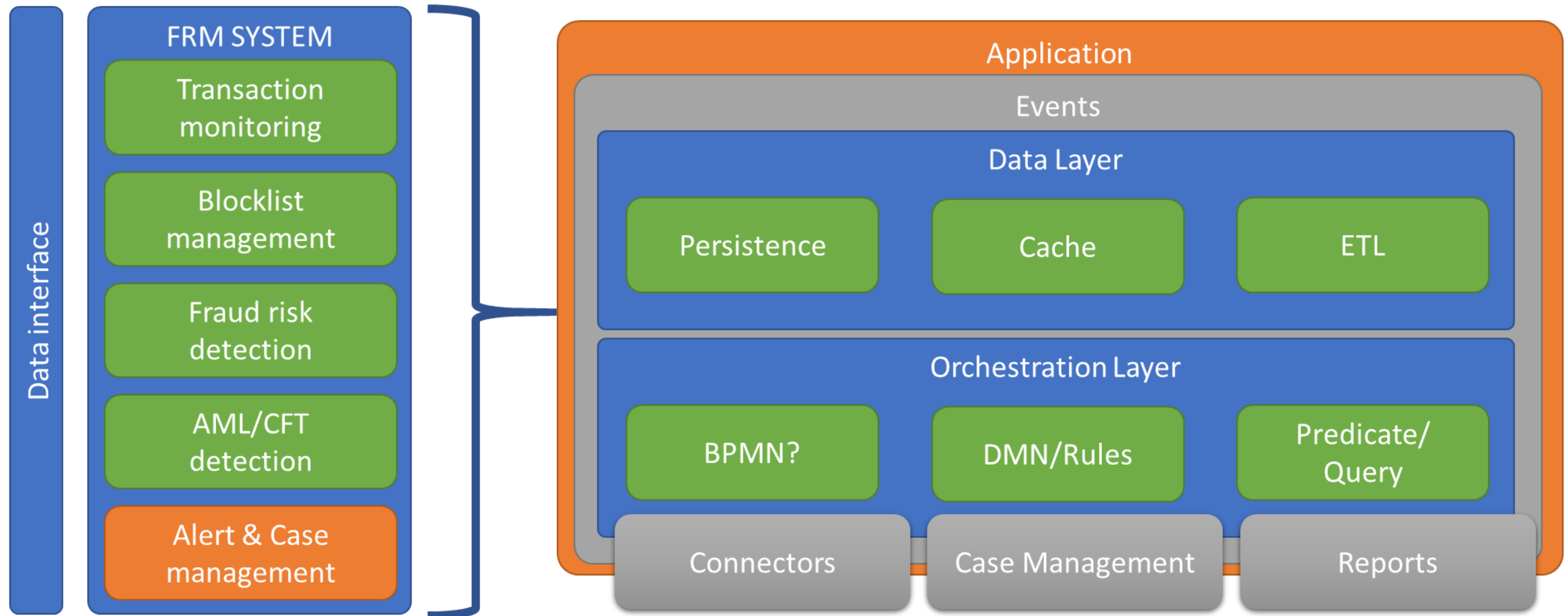
Going back to the POC scope:



- Other goals
 - Low response time (aiming for 35ms total turn-around)
 - Support high volumes of transfers (3000 TPS)
 - False/positive - want below 10% (single digits)₁
 - True positives - catch 95% or better₂
- Hard to do with even unlimited resources ... requires:
 - The right tools
 - The right design
 - And we are adding in open source
 - Products
 - Concepts

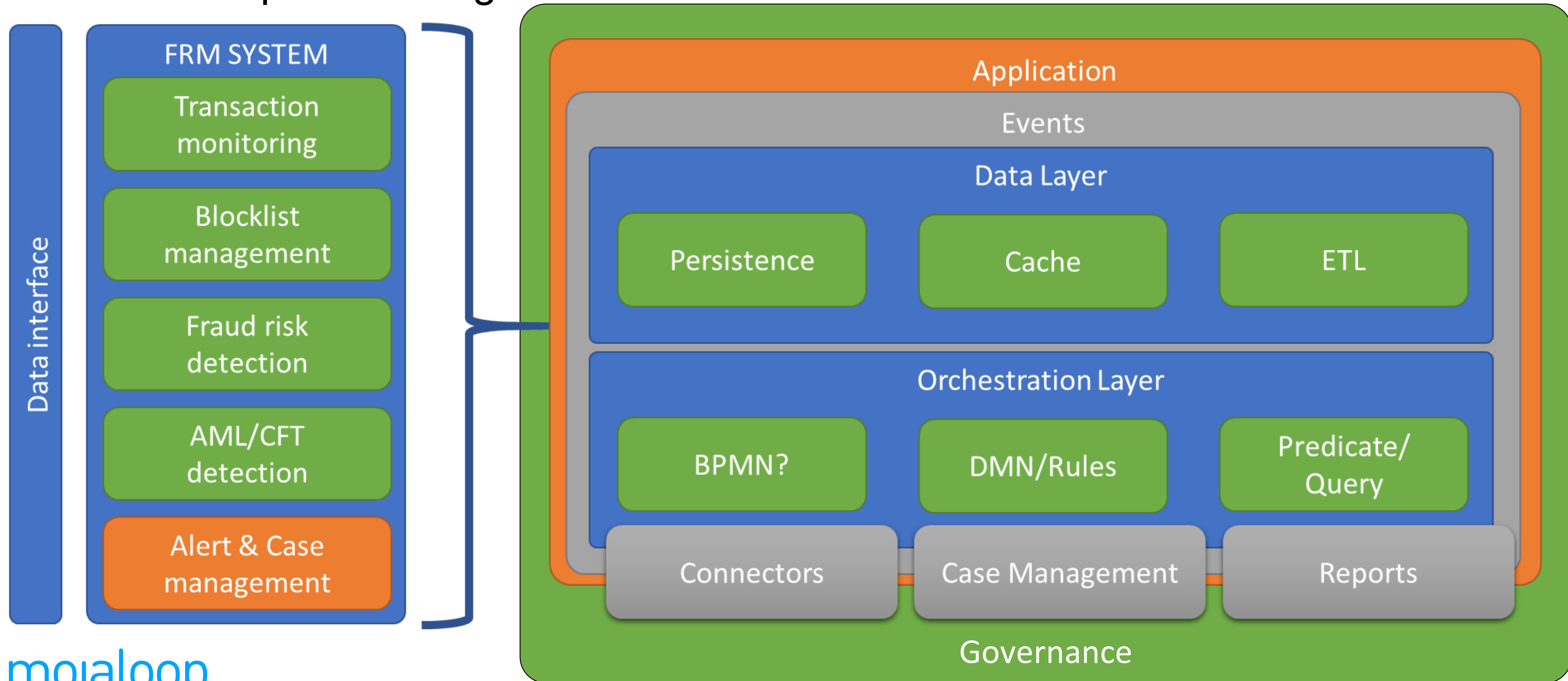
FRM – POC Architecture

Going back to the POC scope ... General Architecture



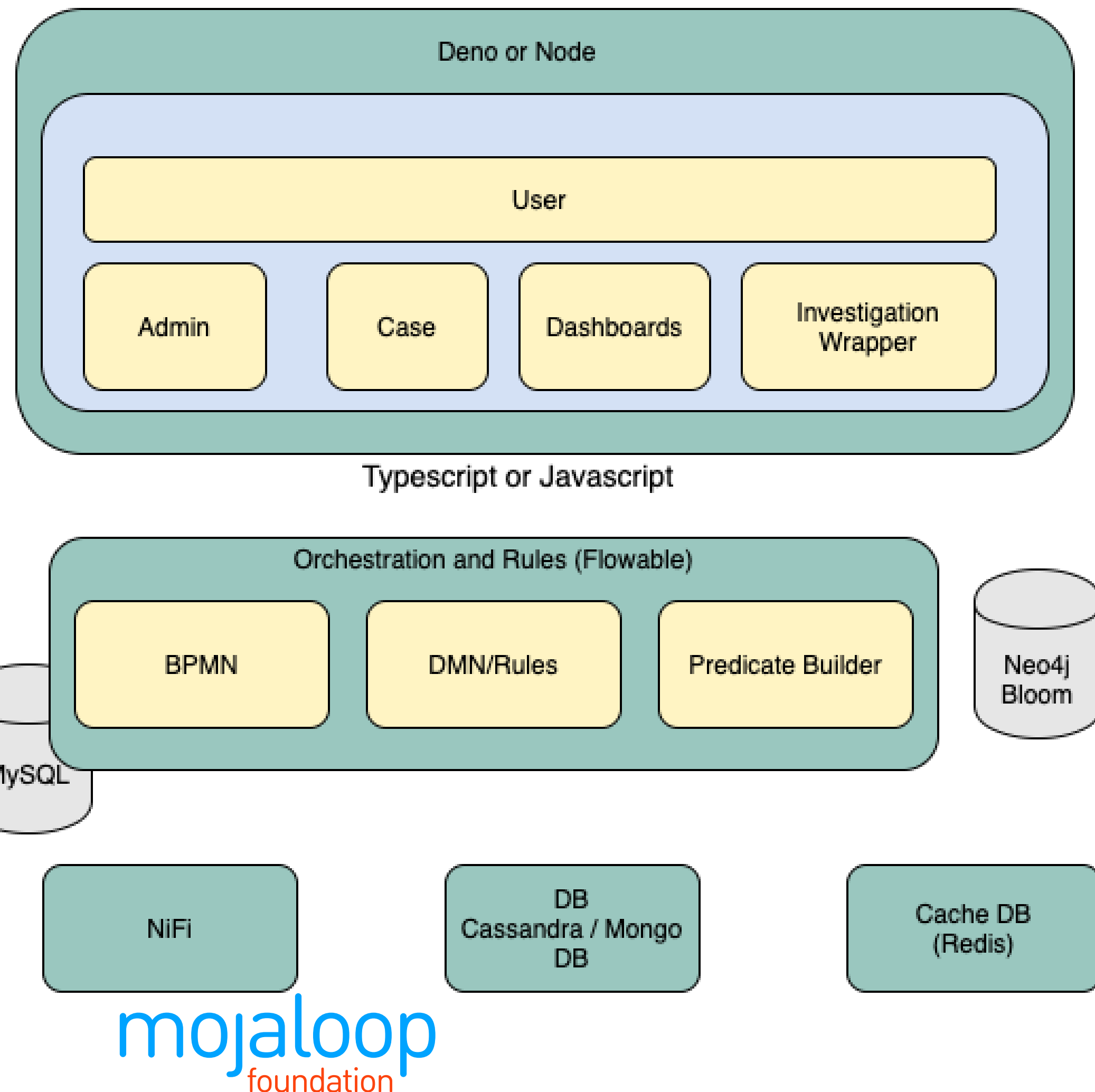
FRM – POC Architecture

One more important thing ...



FRM – POC Architecture

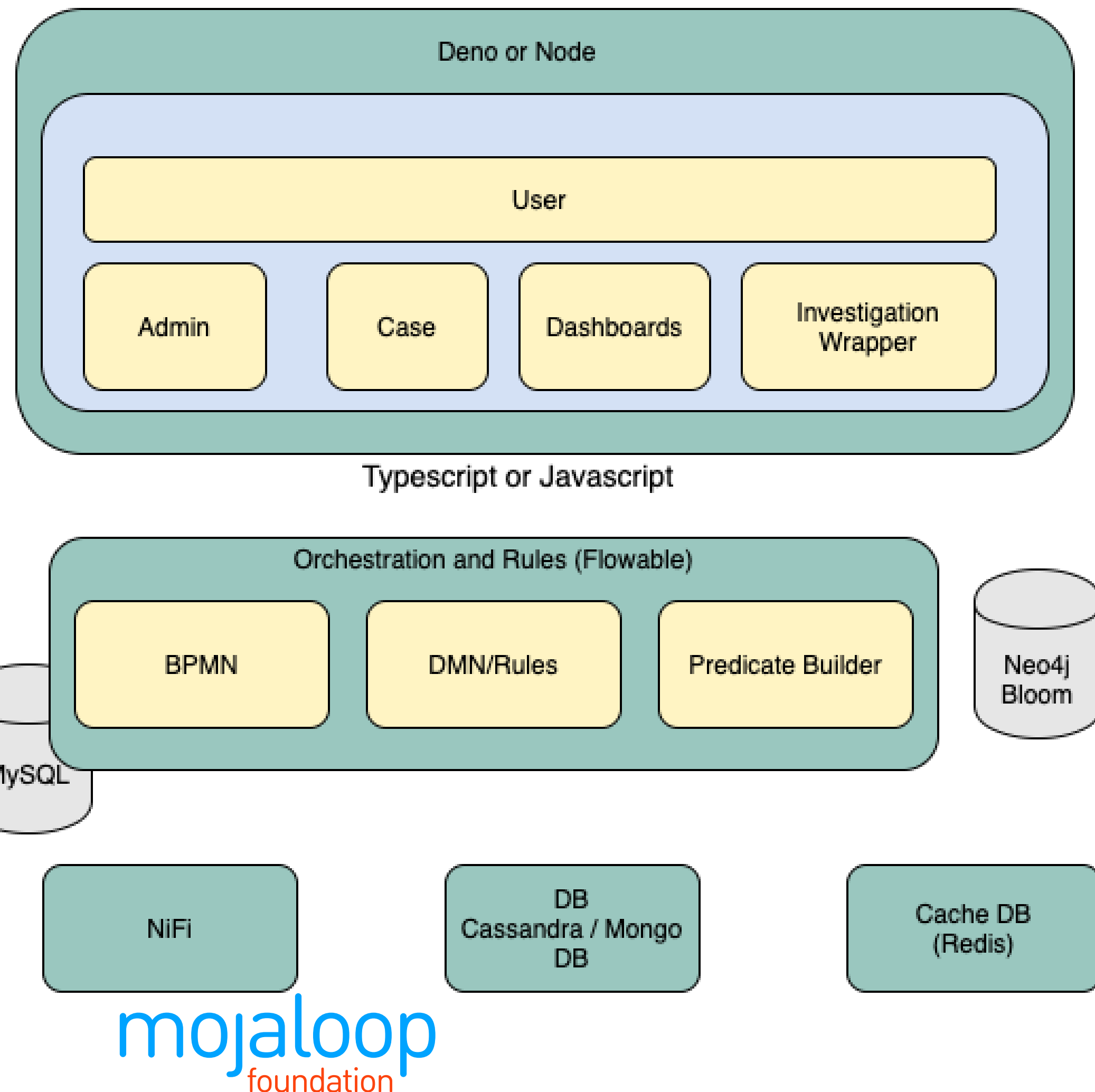
It could look like this ...



- Typescript and JavaScript – yes
 - Deno or Node – sure
 - The rest? Maybe? Lots of options.
- Database and Clustering Technologies
 - Apache Casandra
 - TinkerPop₃
 - Apache Druid
 - Apache Spark₄
 - Apache storm
 - ETL Tool
 - Talend
 - Pentaho
 - Nifi
 - Tremor.rs
 - Caching Technology
 - Apache Arrow
 - Redis
 - Rules Engines
 - Many
 - Custom?
 - Scripting Languages
 - Python
 - JavaScript
 - ...
 - Libraries
 - Modular

FRM – POC Architecture

It could look like this ...

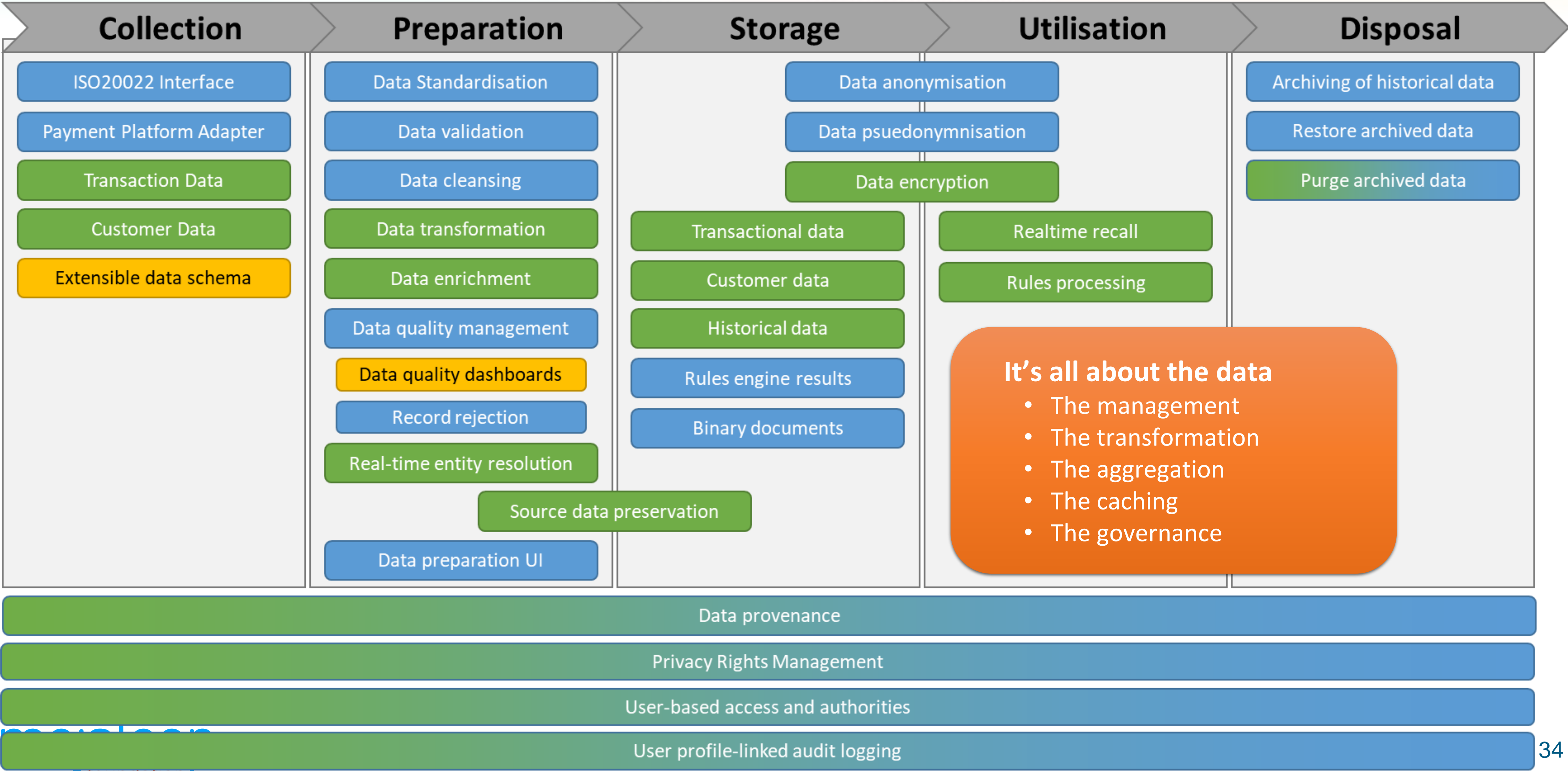


- Typescript and JavaScript
- Deno or Node – sure
- The rest? Maybe? Lots of options.

A lot of interchangeable options.

- Database and Clustering Technologies
 - Apache Casandra
 - TinkerPop₃
 - Apache Druid
 - Apache Spark₄
 - Apache storm
- Caching Technology
 - Apache Arrow
 - Redis
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FRM Data pipeline features

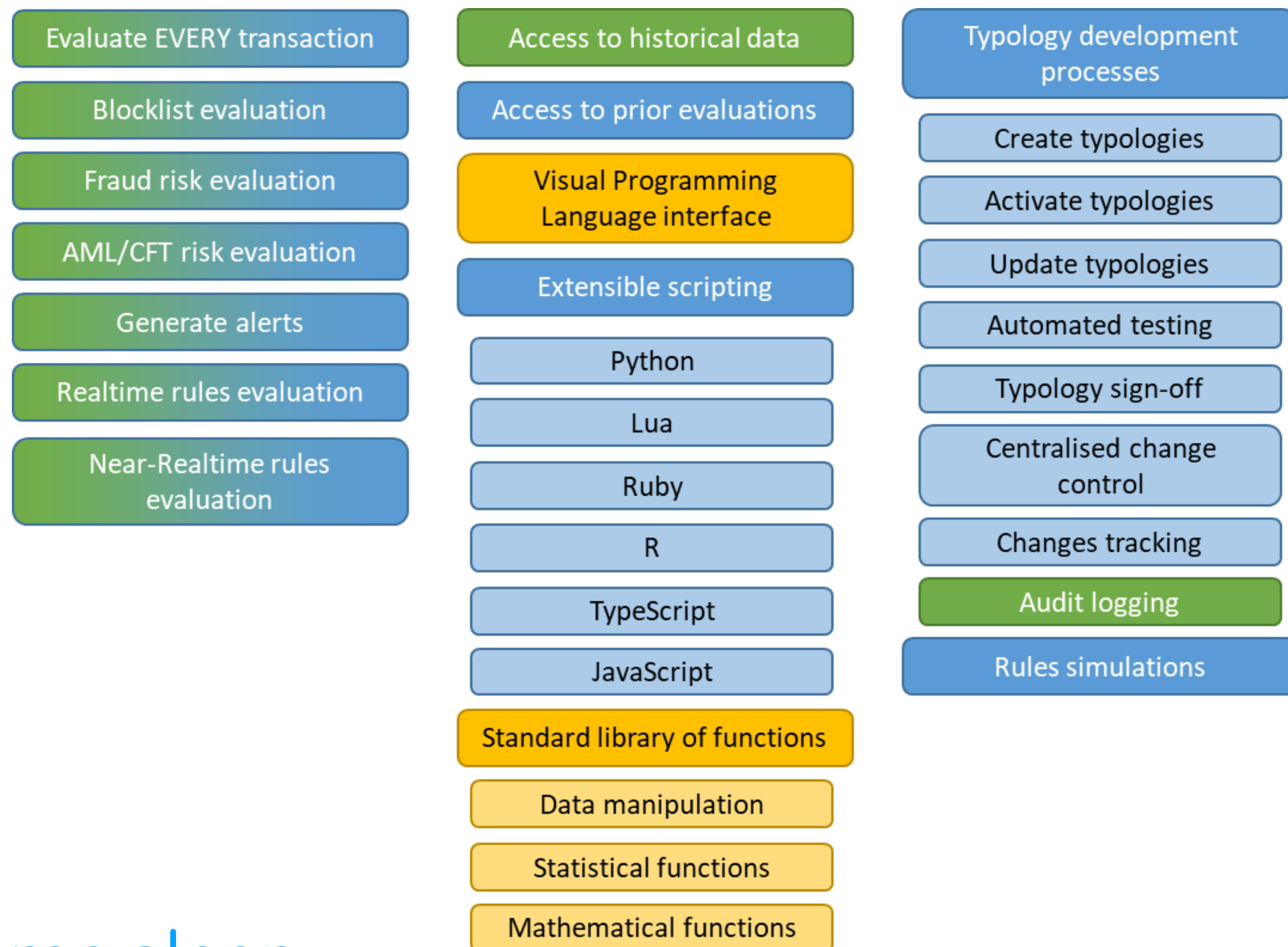


POC

MVP

MVP+

FRM Rules engine features



Then the rules engine...

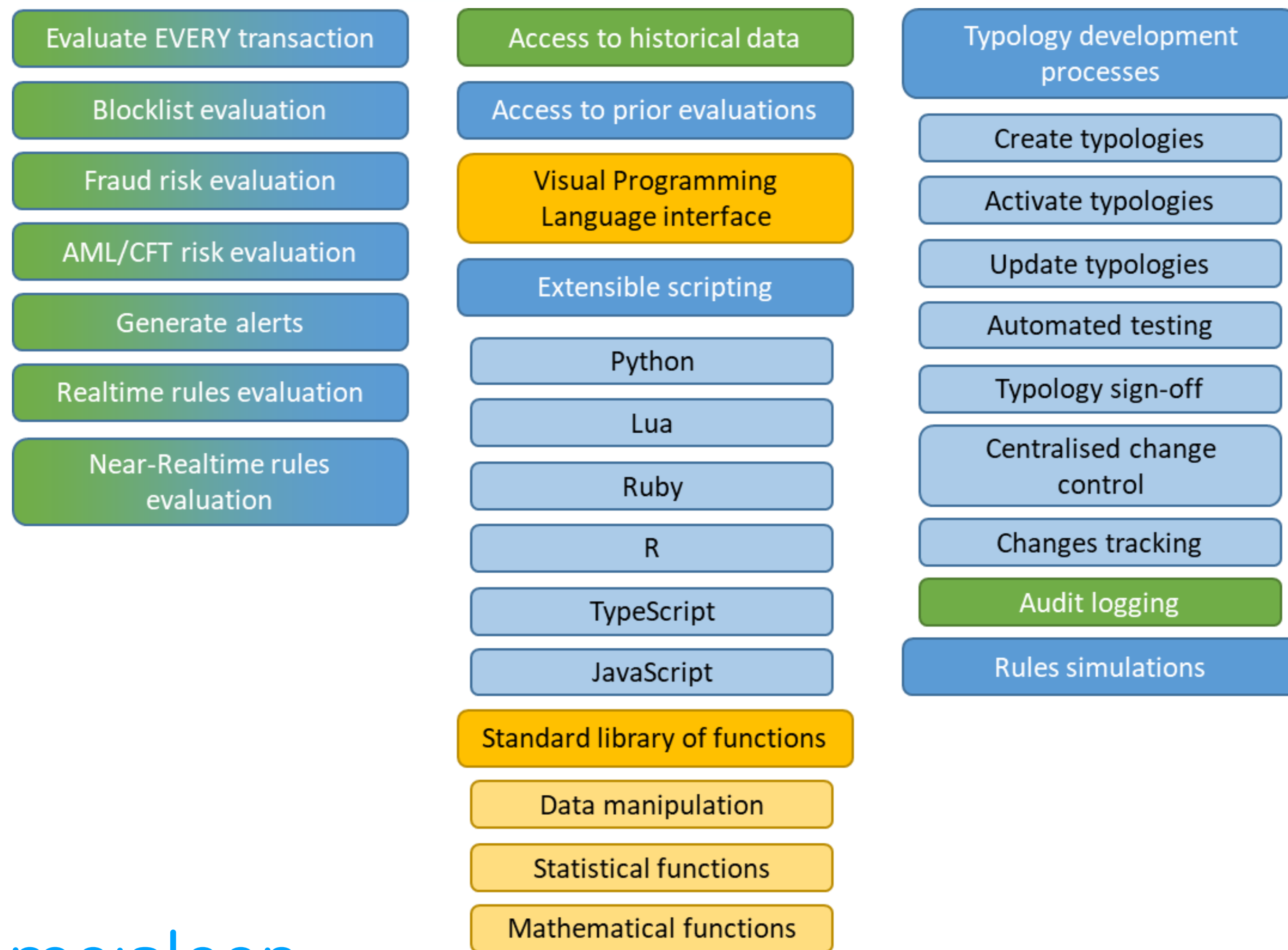
- Fit for purpose
- Speed (when needed)
- Configurability
- Flexibility (when needed)
- Version control
- Governance
- Access Control
 - Events
 - Data
- Scripting
- Libraries

POC

MVP

MVP+

FRM Rules engine features



Then the rules engine...

- Fit for purpose
- Speed (when needed)
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POC

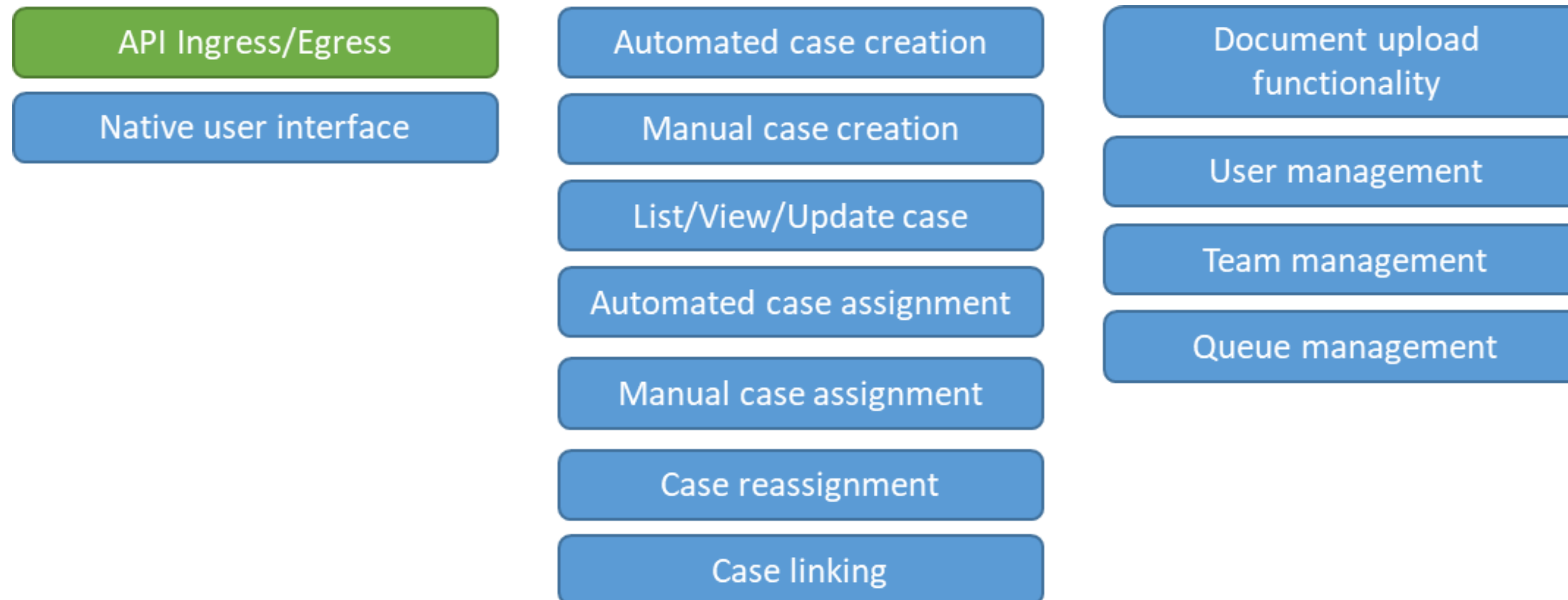
MVP

MVP+

Should there be just one?

Fit for purpose ...

FRM Case management features



Most mature in the market. Do we do or embed our own?

- Lots of options
- Do you want a minimal or complete solution?
- Or something in between?
- We will account for integrations from the start ...
- How much is built in the long run?

POC

MVP

MVP+

Conclusion

Hopefully you have more answers than questions ...

- The purpose of a proof of concept is just that
 - To prove concepts
- We have a mission, goals, good technology to choose from, a lot of experience

And we have a Miller!

- Seriously, this will be a lot of work, and a lot of fun

Questions? Answers?