

Pivoting Open Source  
Fintech Solutions For Big  
Players: Enterprise Ready  
CBS based on Apache  
Fineract.

ROBERT JAKECH



**fiter**

# ABOUT ME: ROBERT JAKECH



# LEVERAGING OPEN SOURCE:FINERACT



I have experienced how limited availability of services such as financial accessibility can spur on innovation & creativity.



But have also seen how this can be a huge drainage & frustrations for many others.

# Conversation with Liz

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- Future of Fintech
  - Big Players have to pay attention
  - Innovation revolutions coming
  - Open Source will rule.
- 
- NO WAY! Liz says.



# Opensource: The Misconceptions

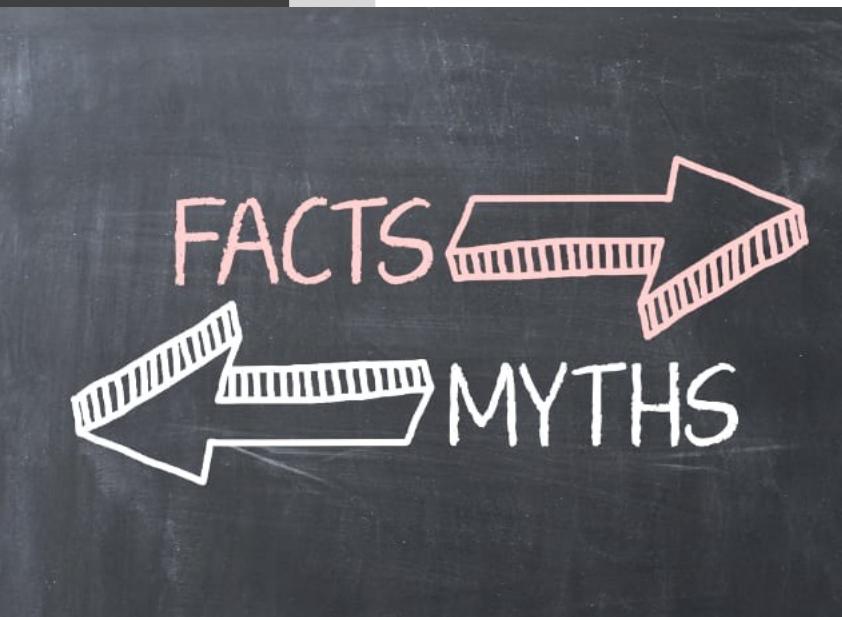
Regulations (This is beyond my control)

Security (Is it secure?)

Ownership (Who do I blame when things go wrong?)

I have huge Operations, will this support my business? Can it scale?

I am skeptical about all this Open source thing. I don't trust it.



# How Do you package the Information?

## Regulations (This is beyond my control)

- ❖ Packaging is very key. How we present to the regulatory body is every important.
- ❖ What do they care about?
- ❖ How do they want it?
- ❖ Who is behind it?
- ❖ What are the numbers / stats to support it?



**SECURITY**

# Vulnerabilities

## Security (Is it secure?)

- Third party security experts (Pen testing, vulnerability scans etc)
- Leverage the tools like spring security
- Getting involved in the DevSecOps not just providing the CBS (Fineract)
- Showing them numbers / stats
- Remediation fixes

Who Do I blame?



## Ownership

- As they say, “No one gets fired for hiring Oracle!”
- Emphasis on Power of Many (Community)
- Emphasis on fast growth and adoption around the World(Stats)



Not only Cats are  
curious!

I am skeptical about all this Open source  
thing. I don't trust it.

- Let's spike this. Let's try this out with a product. Let's have external audit / review
- Finlab would be a great place.

I need something  
Robust, Scalable



I have huge Operations, will this support my business? Can it scale?

- Let's perfect the wheel. Where's the biggest bottleneck? Can we refactor? Can we rewrite?
- What's your deployment (DevSecOps) strategy?
- Revisit the architecture and make changes to fit
- Multitenancy scaling

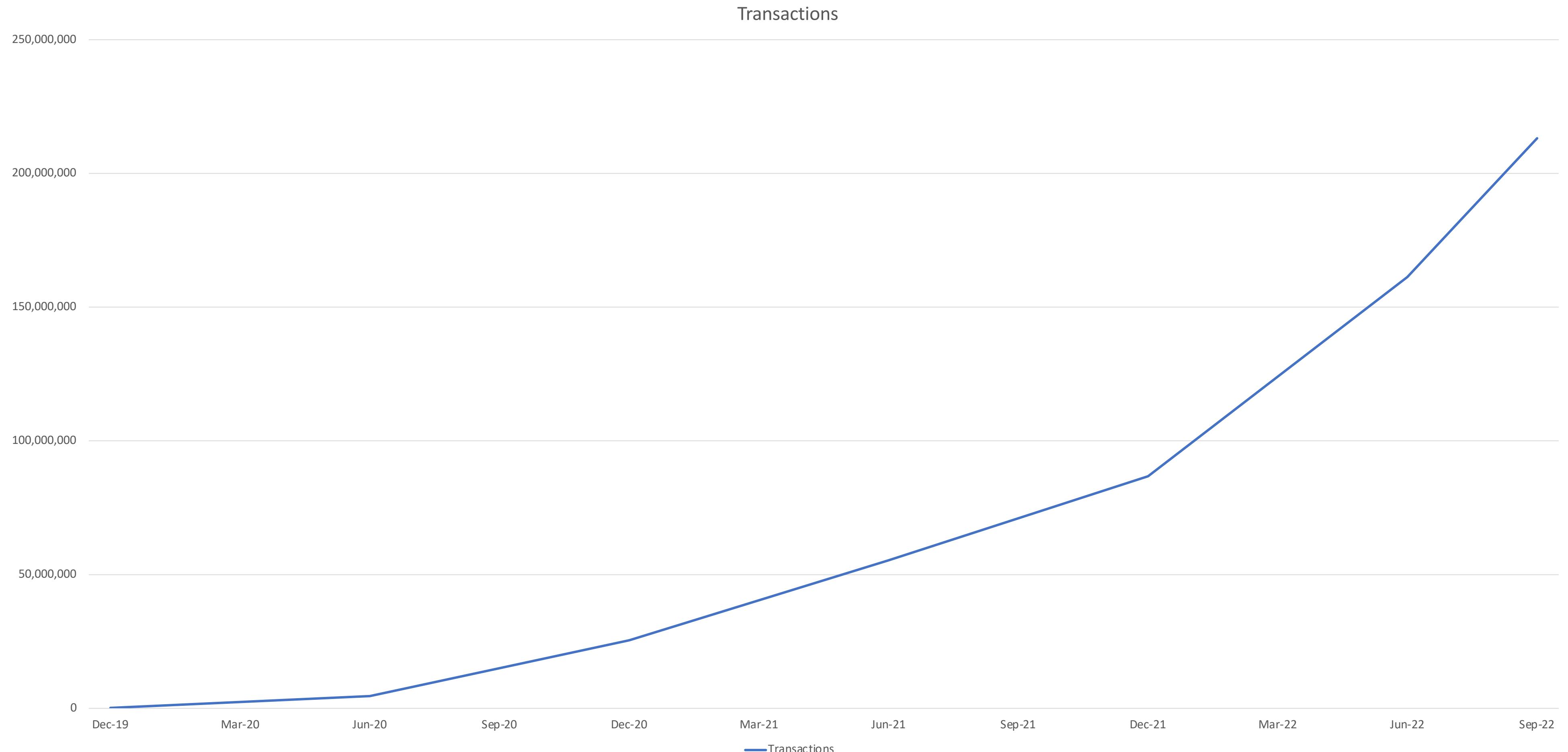
**Client** is a fully operational Bank, providing Fineract As A service for their customers which includes Merchants, Traders, Sports Companies, Wallets etc.



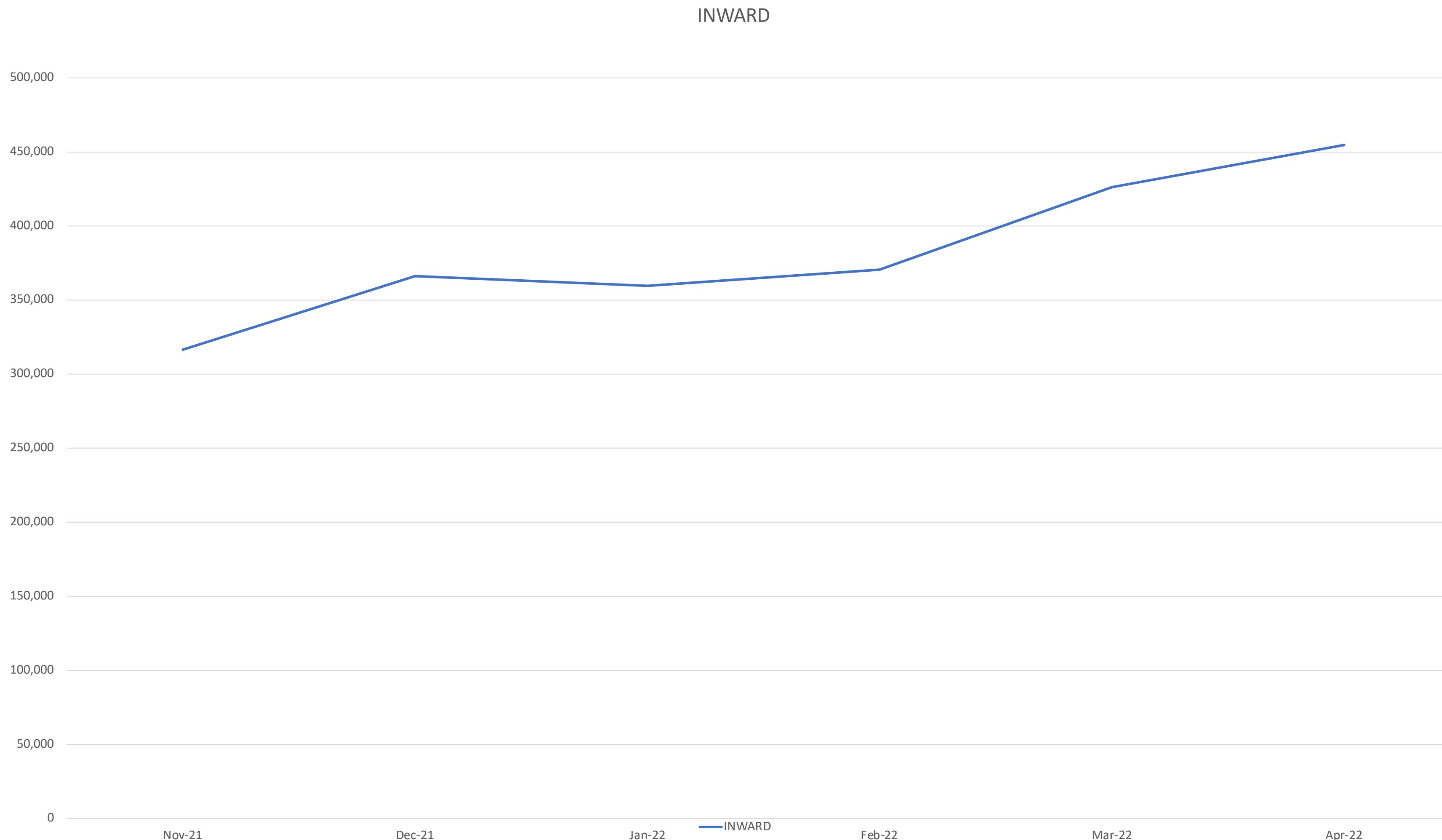
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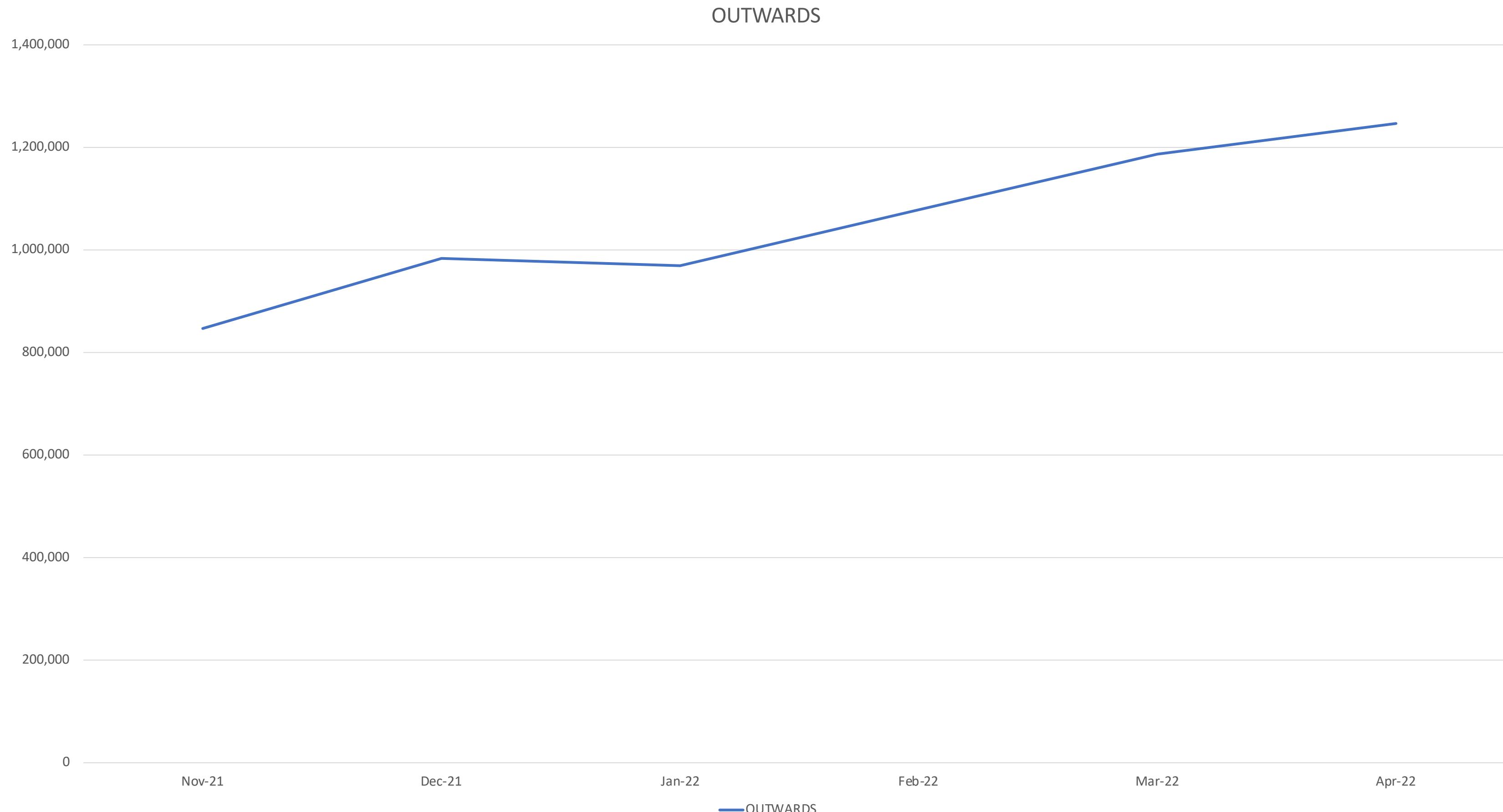
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**Broken down Fineract into modular ‘Macroservice’**

**Introduced Apache Camel as Command Processor as ESB**

**Parallel executions (Multithreading)**

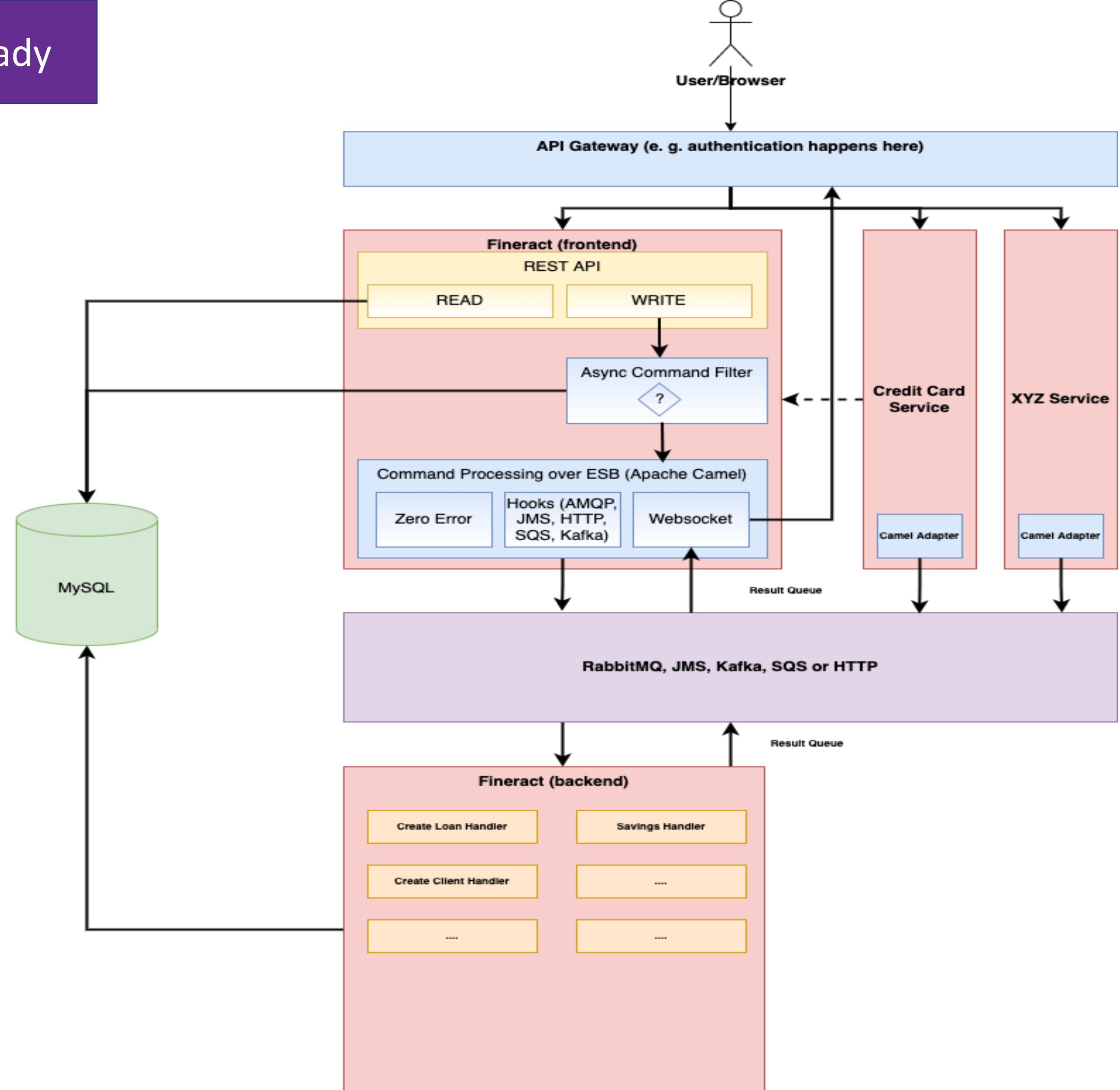
**ElasticSearch Logging & Kibana - ELK**

**Introduced Async Command Filter to split Write & Read**

**Message Queue Mechanism**

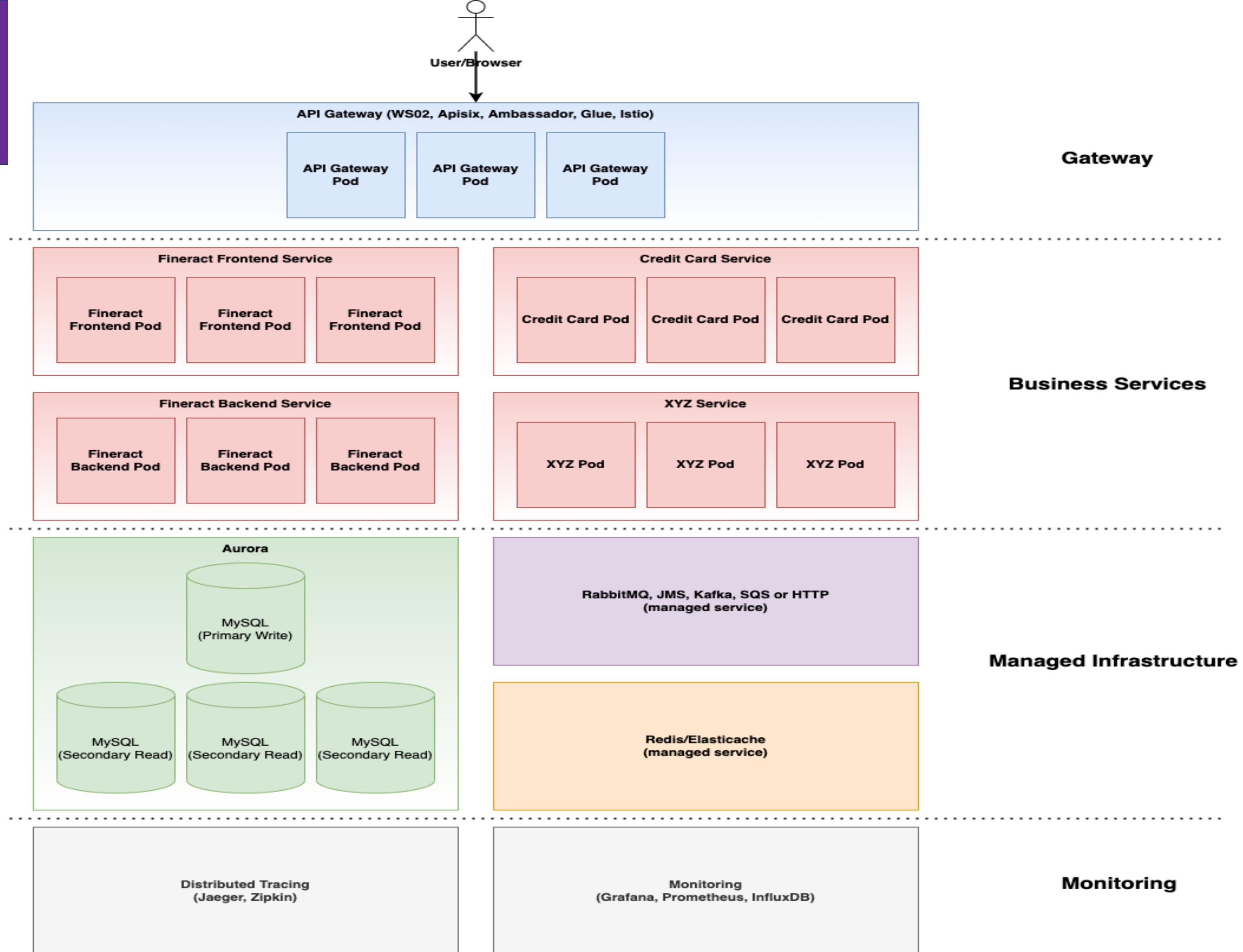
**Cluster deployment (Kubernetes)**

**Microservices for integrations**



# Use Case

## Fineract Enterprise Ready



# Improvements

## Rigorous Refactoring

- Transactions Processing
- Jobs

## Garbage collection improvement (HikariCP)

Azul JDK

## Cluster Deployments

ELK

## Async Transaction processing

Load Testing

Pen Testing

## Parallel Transaction Processing

WSO2

## Custom Decisioning Intelligence

Business Intelligence

Debezium / Kafka

Based on 500-  
10,000 Concurrent  
users over running  
over a period of at  
least 5mins  
onwards.

MVP	TPS	MACHINE SPECS	Status
1	6-15	16GB RAM, 4Xcores vCPU	Prod
2	55-100	32GB RAM, 8 Cores vCPU	Prod
3	300-700	32GB RAM,8 Cores vCPU	Beta
4	1000-10,000	64GB RAM,8+ Cores	In Dev

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"If you can't measure it then how do you know the growth?" \_ Javier, CEO, FITER.

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THANK YOU