

# FETEK

Delivering Excellence Data  
& Software Services



FETEK



# About Our SOFTWARE DEVELOPMENT

We are a dynamic, innovative company dedicated to providing top-notch software development services tailored to meet the unique needs of our clients. With a team of highly skilled professionals, we specialize in delivering cutting-edge solutions that drive business growth and efficiency.



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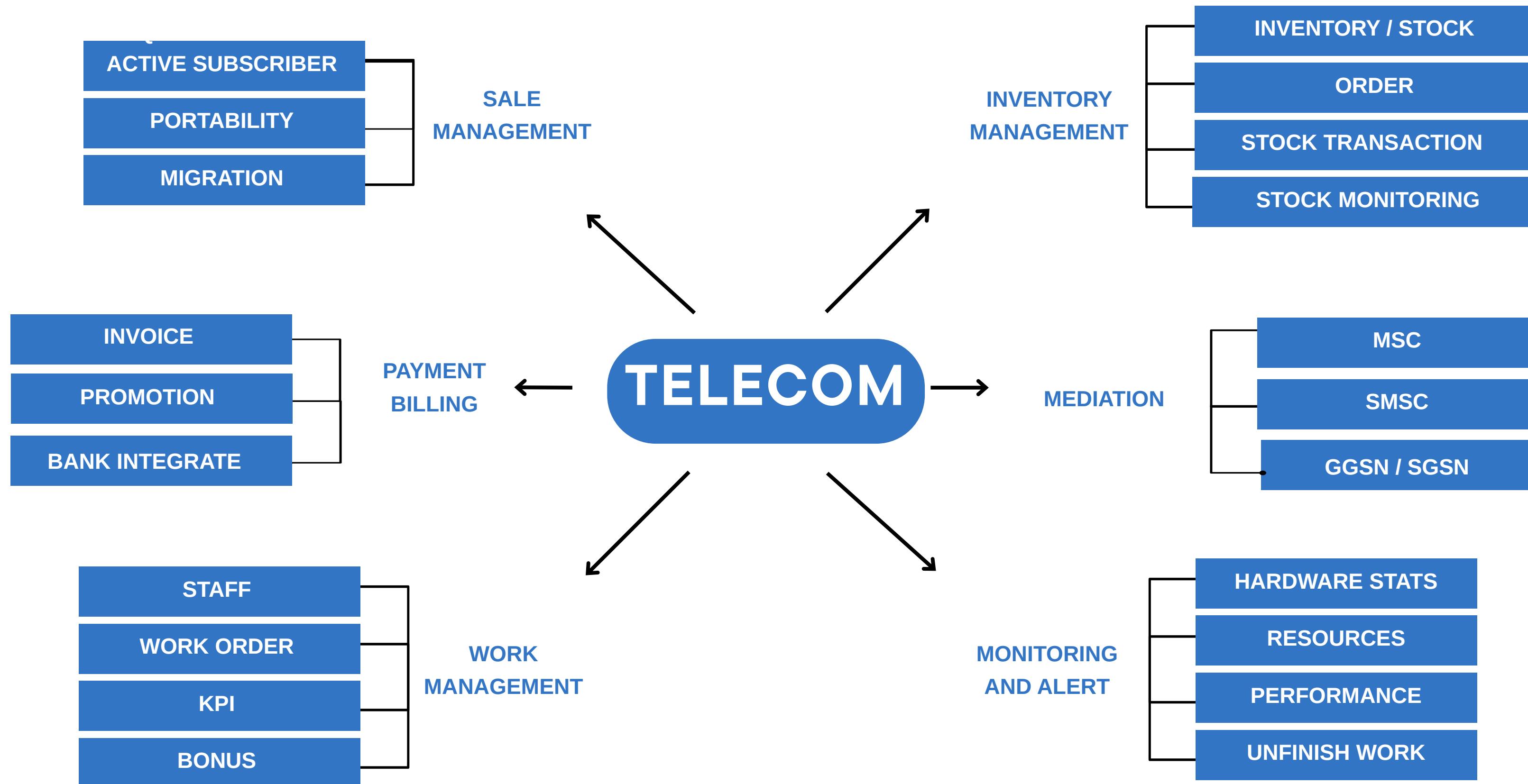
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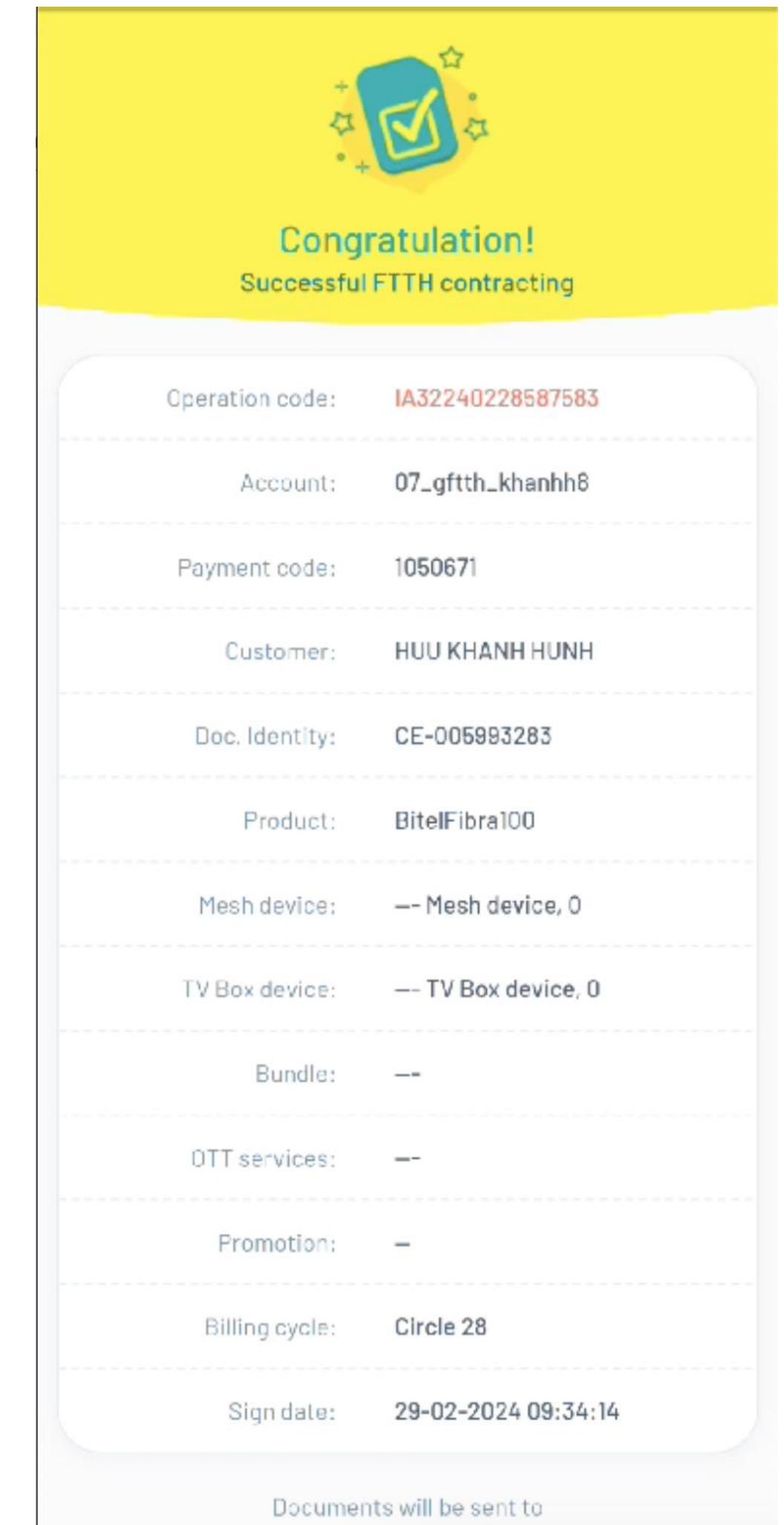
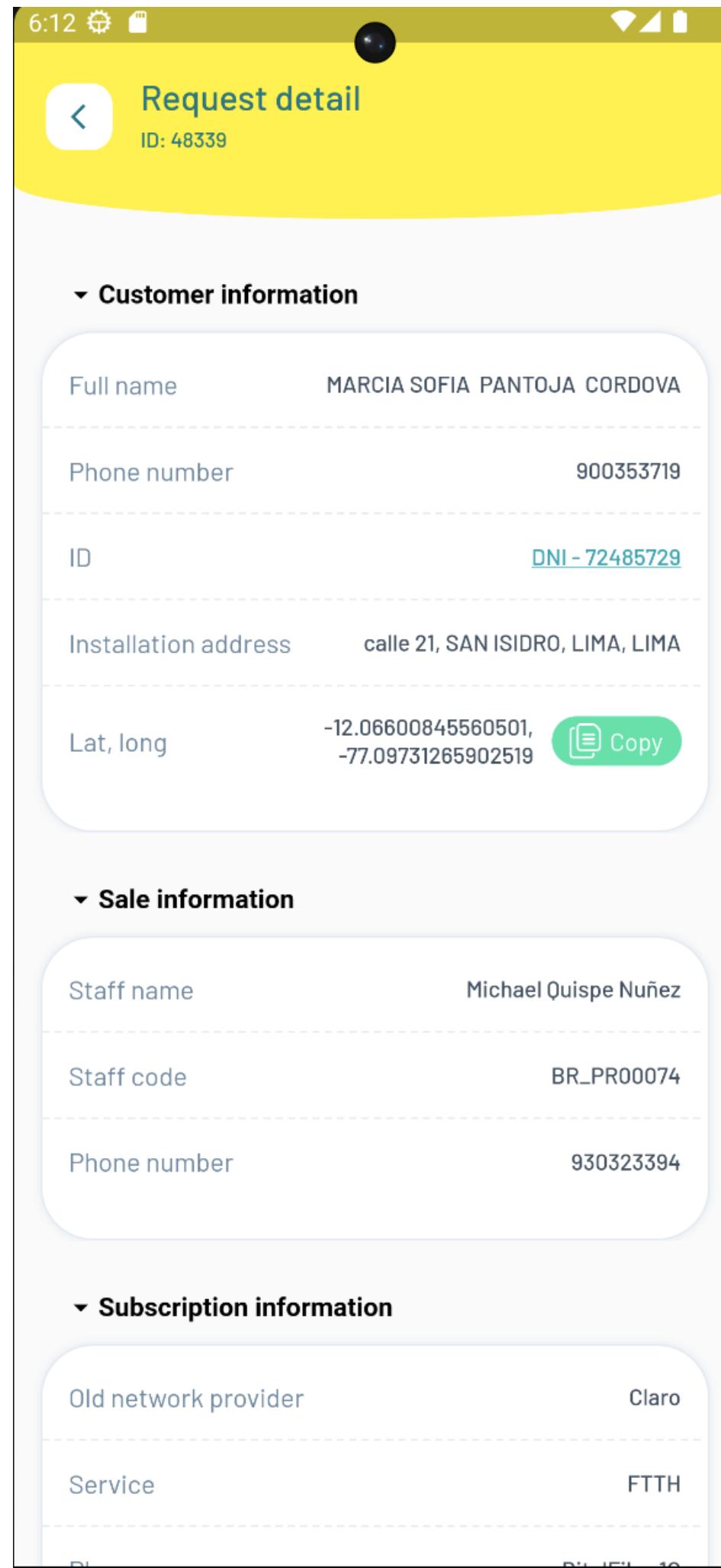
# 1. BCCS SYSTEM FOR TELECOMMUNICATION



# SALE MANAGEMENT

## Active subscriber

- Approach customer
- Present and create customer request
- Sign customer contract
- Active subscriber for customer telecommunication
- Close deal



# SALE MANAGEMENT

## Portability

- Approach customer from other mobile network operators
- Present product plan to customer
- Sign portability contract
- Active new subscriber with customer ISDN

Importar marcadores... Comenzar a usar Firefox Nueva pestaña

Management fixed subscriber

BUI QUANG LONG

Search subscriber

Account	<b>15_gftth_paolaa17</b>	Customer code		Doc. Identity (DNI/RUC...)		Business license	
Contract number		Contact number		Deployment address			
Customer name							

[+]  
Customer Details

Account	Subscriber name	Status
<b>15_gftth_paolaa17</b>	ALEXANDRA PAOLA TELLO GUTIERREZ	Normal

Product information

Account	<b>15_gftth_paolaa17</b>	Contract number	35750246170924	Subscriber name	<b>ALEXANDRA PAOLA</b>	
Product	<b>BitelFibra400</b>	Position		Subscriber type	<b>NORM -- NORMAL</b>	
Connecting reason	<b>094577 -- FTTH with installatio</b>	Promotion		Sign Date	<b>17/09/2024</b>	
Block status	<b>Normal</b>	Debit status	<b>No</b>	Start date		
Contact number	<b>928544963</b>	Shop code		Staff code		
Team	<b>LIM_FTTH_TGI</b>	Developer employee shop code	<b>BR_BC07</b>	Developer employee code	<b>BR_PR00082</b>	
Deposit		Limit		Limit total		
Infrastructure	<b>GPON --</b>			customer used	<b>0.0</b>	
Deployment address	<b>Lima , LIMA - LIMA - LIMA, LIMA - LIMA - LIMA</b>					

# SALE MANAGEMENT

# Migration

- Receive migration plan request from customer
  - Let customer choose new plan and payment method
  - Sign migration contract
  - Perform update subscriber info on switchboards

# WORK MANAGEMENT

## STAFF / WORK ORDER

- Each work order is assigned to a staff
- Staff has access to system to view their work and do it in priority
- Work order has KPI of processing and can be tracked by status
- The result of work order will be used to calculate bonus for staff

17:10 52%

### Công việc

Người thực hiện: thaoltk (Lưu Thị...)

Loại công việc: Account/Số điện thoại/Mã/Tên công việc

Thời gian: 02/12 - 01/03

Thứ Tư, 28 tháng 2 2024

**14\_gftth\_test167**

Deploy, account:14\_gftth\_test167, service: FTTH

TEST, 930323394, bolívar, LAMBAYEQUE - LAMBAYEQUE - LAMBAYEQUE, AMA1234-GN01-SN03-SP01

Xem toàn bộ

-83d 11h 41m Giao cho nhân viên

Lưu Thị Kim Thảo

Thứ Ba, 27 tháng 2 2024

**08\_l3ll\_test\_ftth\_43**

Deploy, account:08\_l3ll\_test\_ftth\_43, service: Internet Leased Line

19/19

Trang chủ Công việc Biểu đồ Thông báo Menu

17:11 52%

### ← Chi tiết công việc

Tổng quan Khác Cần thực hiện Nhật ký

Bắt đầu thực hiện công việc

#### Dịch vụ cần khảo sát

**Dịch vụ**: Internet Leased Line

Kết quả: Triển khai được

#### Thông tin hạ tầng

Mã trạm \*: -- Lựa chọn --

Lớp mạng \*: -- Lựa chọn --

Mã thiết bị \*:

Port: +

CẬP NHẬT

# WORK MANAGEMENT

## KPI / BONUS

- Manager can create plan and KPI for sub-ordinate staff
- Staff can view and receive KPI status notification in real-time
- The result of KPI calculation is the bonus commission granted to staff



<b>Sales plan</b>	
⌚ 28/08/2023 07:30 - V1.1	👤 GUADALUPECC-LI4
<input type="text"/> Search	▼
<b>CREATE SALES PLAN</b>	
<b>View sales plan</b>	
Date	19/08/23, hh:mm:ss
Sale code	LIIPR07065, Gabriella
Shop code	LIIBC14
Branch	Lima 4
Main activity	Sell FTTH
Zone code	SMP_Z11
Date	18/08/23, hh:mm:ss
Sale code	LIIPR07065, Gabriella
Shop code	LIIBC14
Branch	Lima 4
Main activity	Sell FTTH
Zone code	SMP_Z11

# INVENTORY MANAGEMENT

## STOCK

Stock management system maintain inventory for each staff and shop:

- Detail amount of material in stock
- Detail serial of devices in stock
- Maintain tracking status of material and device in every stock

**View information of Staff's Stock**

Código de almacén	LIT_BROKERS	LIT_BROKERS	Tipo de sujeto (*)	Personal
Código de agente (*)	OSCARMB_LI1	MEZA BLAS OSCAR HUMBERTO	Artículo	
Ver por productos	Todo			
<a href="#">Ver en almacén</a> <a href="#">Exportar report</a>				

**Lista de bienes**

Nombre de bienes	Estado	Unidad	Cantidad requerida	Total de respuesta	Cantidad real	Detalles de serie/IMEI
Equipment No Serial						
Equipment						
110041 - Router ZTE ZXHN F671Y	Nuevo	Unit	0	0	0	<a href="#">Detalle</a>   Detalle según canal
110066 - TV BOX DYNALINK DL-GT36	Nuevo	Unit	0	1	1	<a href="#">Detalle</a>   Detalle según canal
110054 - Ultra Wifi Mesh Router ZTE H196A ZXHN	Nuevo	Unit	0	0	0	<a href="#">Detalle</a>   Detalle según canal

**View serial — Mozilla Firefox**

10.121.4.29:8000/SM/ViewStockDetailAction!viewDetailSerial.do?ownerType=2&ownerId: 1

**View serial**

[Exportar a Excel](#)

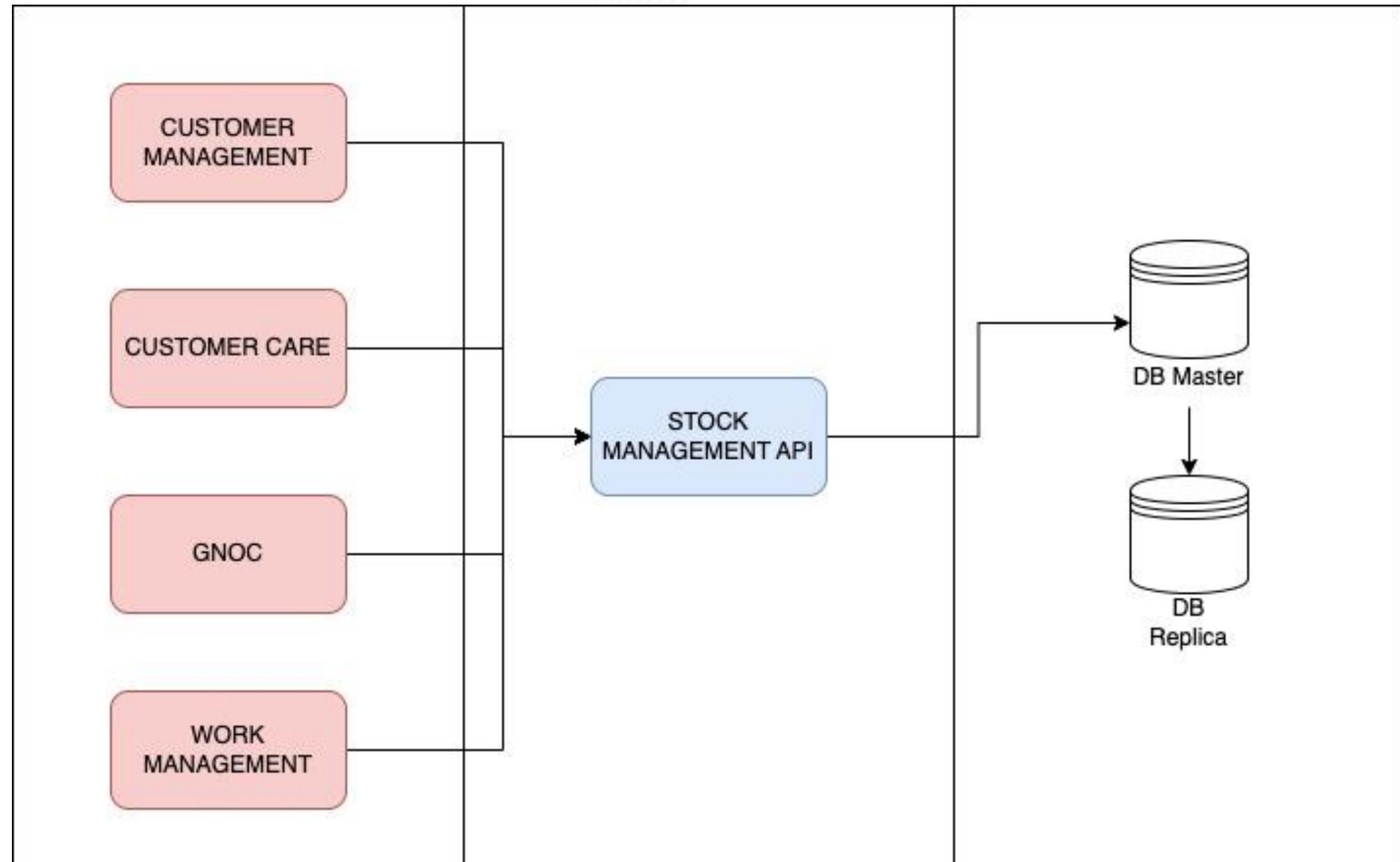
No	Desde el serie/IMEI	Hasta el serie/IMEI	Cantidad	Fecha importada	Días en stock
list null					
			1		

# INVENTORY MANAGEMENT

## ORDER / TRANSACTION

Stock management system maintain stock order and history of moving item in / out stock

- Provide interface to receive stock order request from other systems
- Validate stock order request
- Perform stock transaction
- Provide interface to retrieve transaction history of inventory or serial



## PAYMENT & BILLING

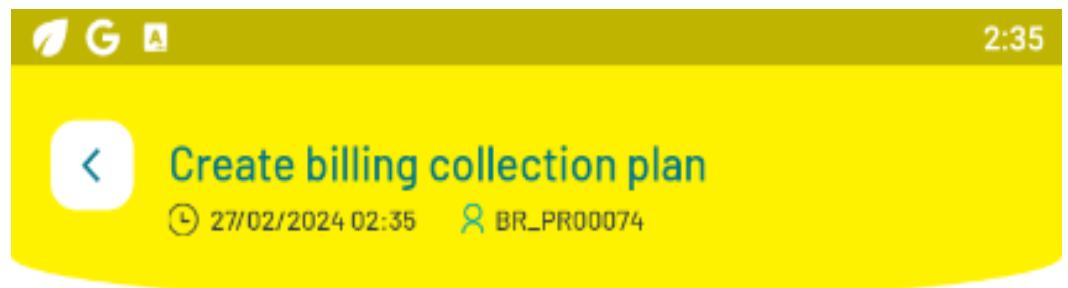
## PROMOTION

System allows create promotion to receive discount:

- Promotion can be money discount or benefit (data, voice...)
- Discount value will be applied directly to customer invoice
- System records all promotion history

## INVOICE

- Calculate fee and generate invoice every month
- Send notification to customer
- Create billing collection plan and assign to staff
- Report bad debt to credit information center (CIC)



# PAYMENT & BILLING

## BANK INTEGRATE

Payment system provide a way for customer to pay their invoice with bank account:

- Provide API for bank to get invoice information
- Callback for bank to notify payment status of the invoice
- Record CDR of bank transaction to reconciliation at the end of cycle
- Generate receipt for customer after paying
- Send notification to customer to inform about the payment

The image shows two screenshots of a mobile application interface for managing pending invoices.

**Screenshot 1 (Left):**

- Header: 3:01, LTE 52%
- Title: Recibos pendientes de
- Bank Logo: Bitel
- Bank Name: Postpago Bitel Soles
- Holder: Titular: Fiorella
- Callout: No te quedes sin pagar tu recibo (Don't stay without paying your bill) - Solicita un crédito al instante aquí. Sujeto a evaluación crediticia.
- Text: Selección un recibo
- Card: Vence: 09 may. 2024, S/ 525.00, N° recibo: 6009296420240501
- Buttons: Yapear servicio (at the bottom)

**Screenshot 2 (Right):**

- Header: 1:38, LTE 69%
- Text: ¡Yapeaste el servicio!
- Text: S/ 85
- Text: 17 feb. 2024 - 01:38 pm
- Text: Servicio: Postpago
- Text: Código de cliente: 1049660
- Text: Titular: Grately Michel
- Text: N° de operación: 00344847
- Text: ¡También puedes yapear otros servicios!
- Logos: Cálidda, enel, DIRECTV, óWow!

# MEDIATION

## Mediation system

Mediation system process raw data from switch board to serve as **backbone data** for whole telecommunication system

Convert:

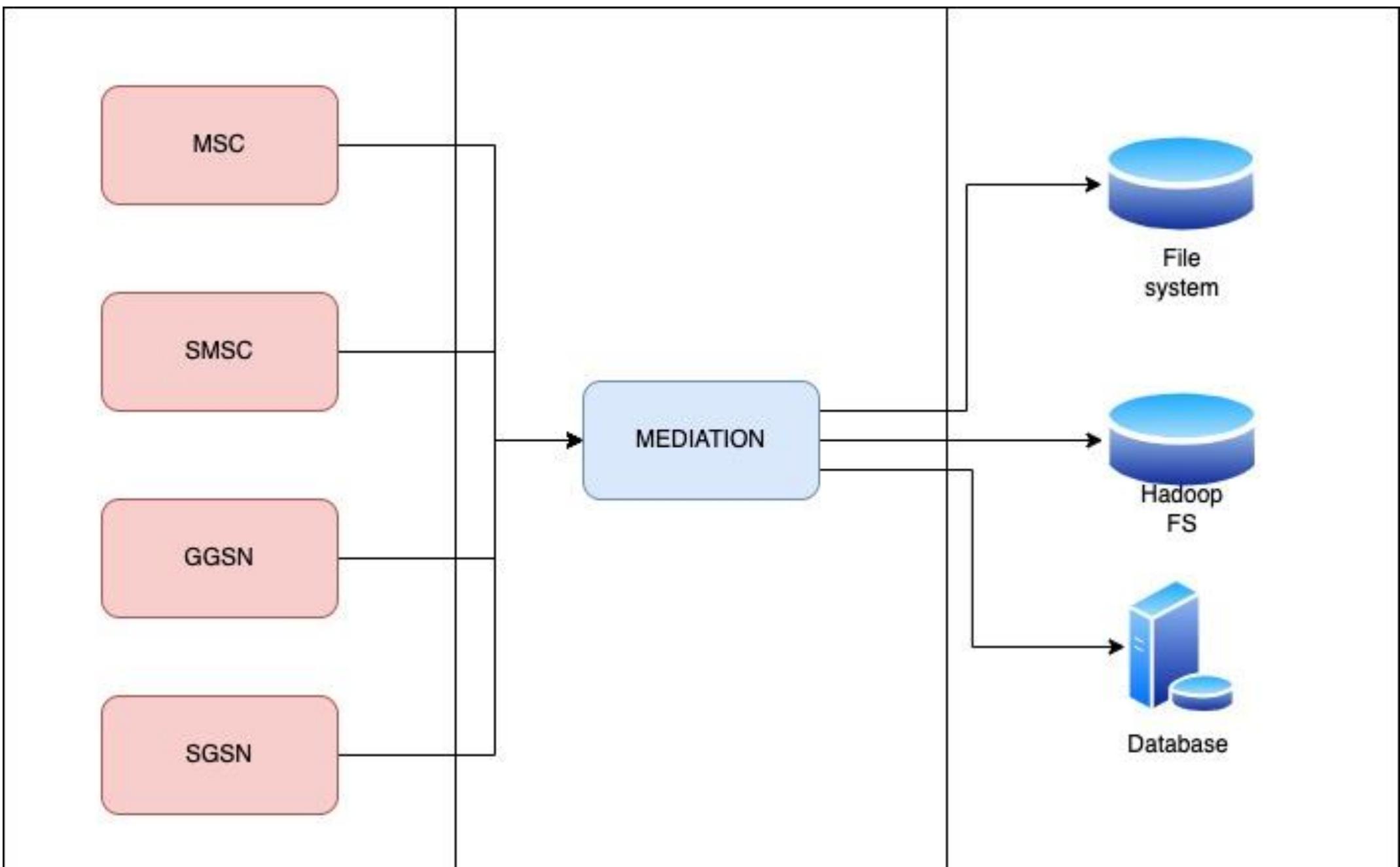
- MSC, SMSC CDR from binary to CSV format
- GGSN, SGSN CDR from binary to CSV format

Extract:

- Apply rules to filter data by purpose
- Take only meaningful data fields to reduce output size and maintain readable

Load:

- Output and load data into target system



## 2. DOOR TO DOOR SALE APP

### Key Objectives



# DOOR TO DOOR SALE APP

## Door to door sale app

Objectives of the app is to provide a better way for staff to sale and connect with customer

### Sale processes:

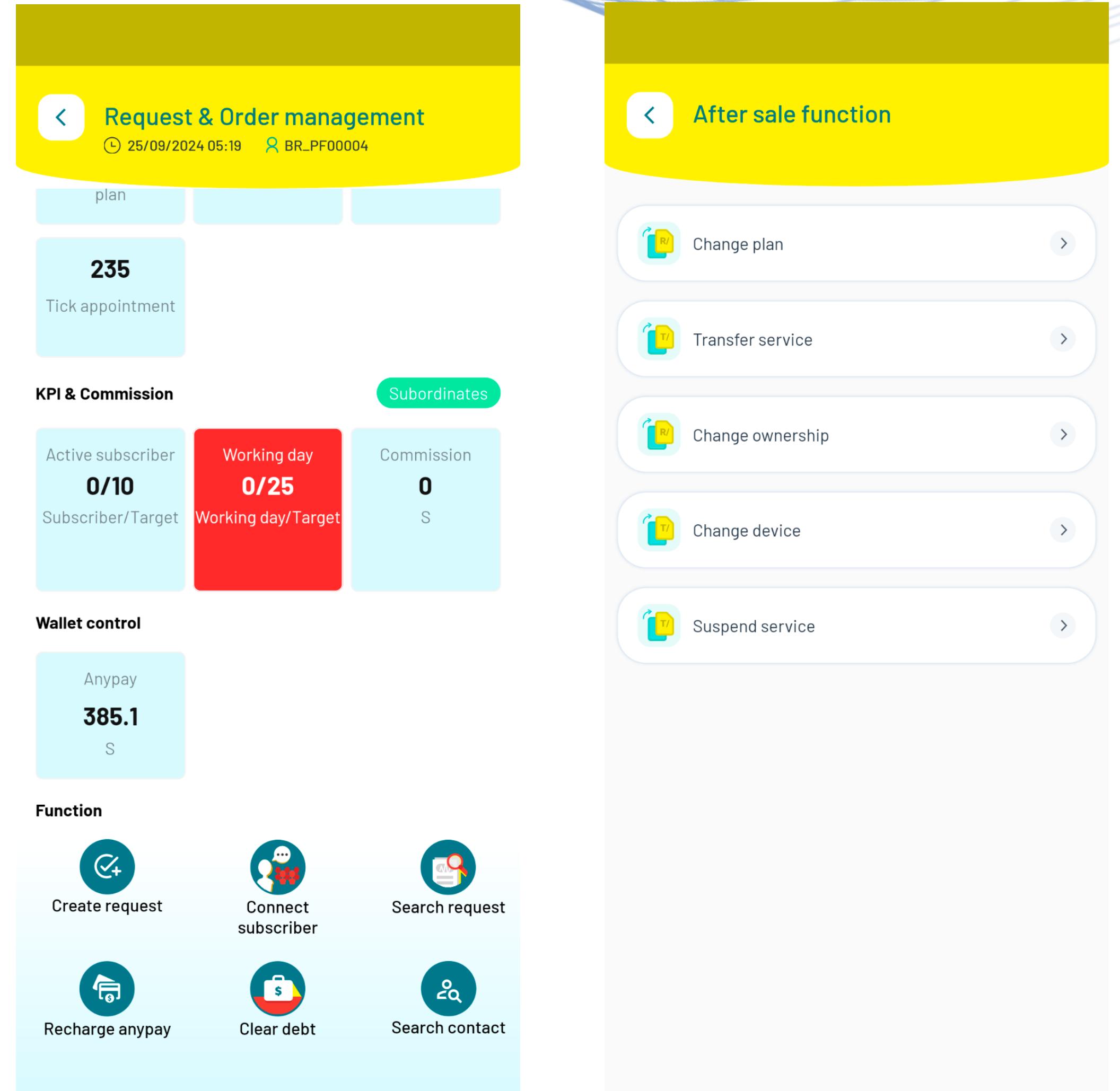
- Active subscriber
- Portability

### After sale processes:

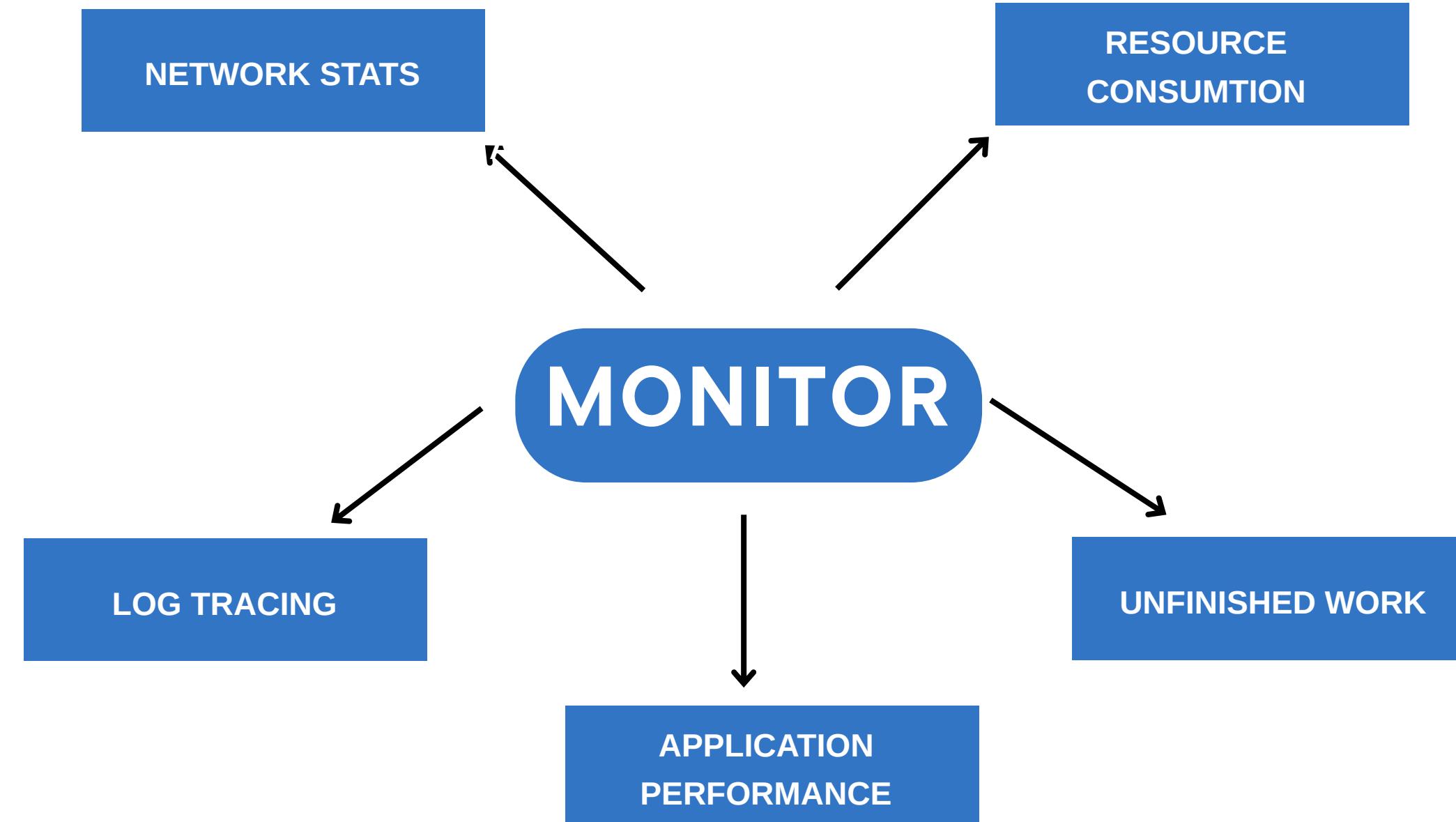
- Migration
- Update contract information
- Report incident

### Advantages:

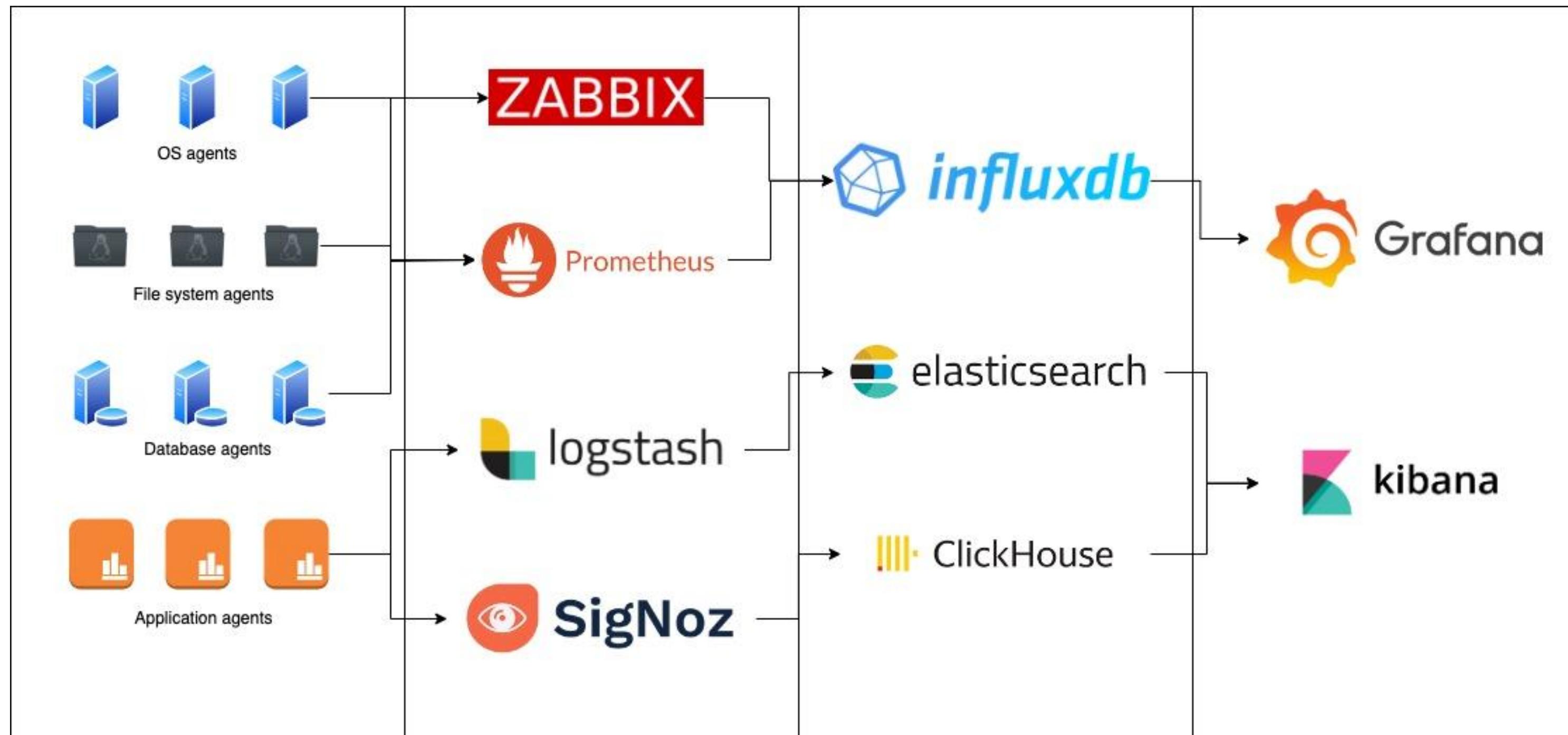
- Sale staff connect directly with customer and listen to their needs
- All process can be done without customer go to shop, reduce the time of sale and after sale process



### 3. MONITORING AND ALERT



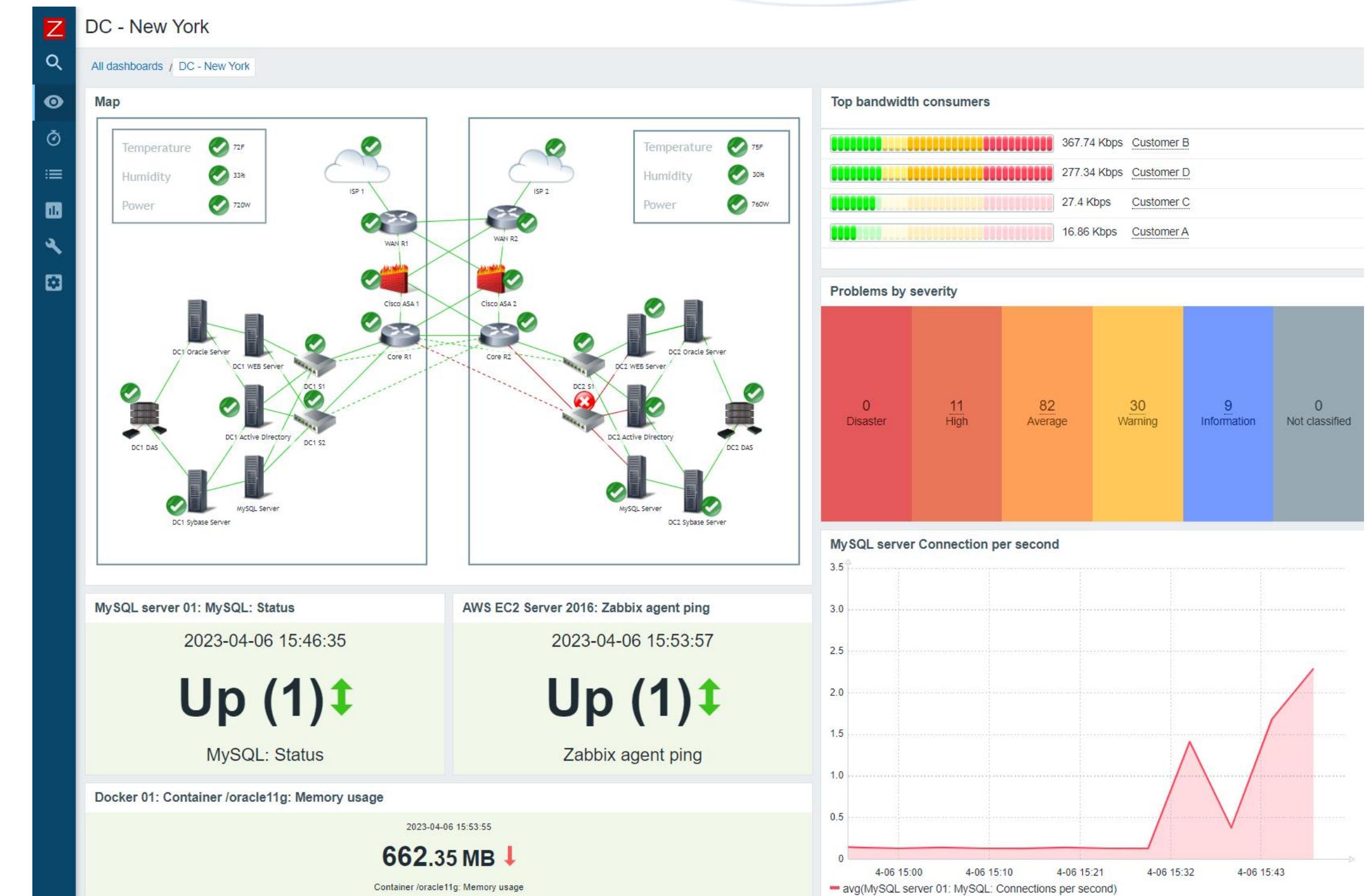
# SYSTEM ARCHITECTURE



# MONITORING NETWORK STATS

## Zabbix

- Incoming and Outgoing traffic
- Total bandwidth usage
- Package loss and interface error
- Total connection
- Link status
- Speed and status
- Integrate with alert system



# MONITORING RESOURCES

## Prometheus / Grafana

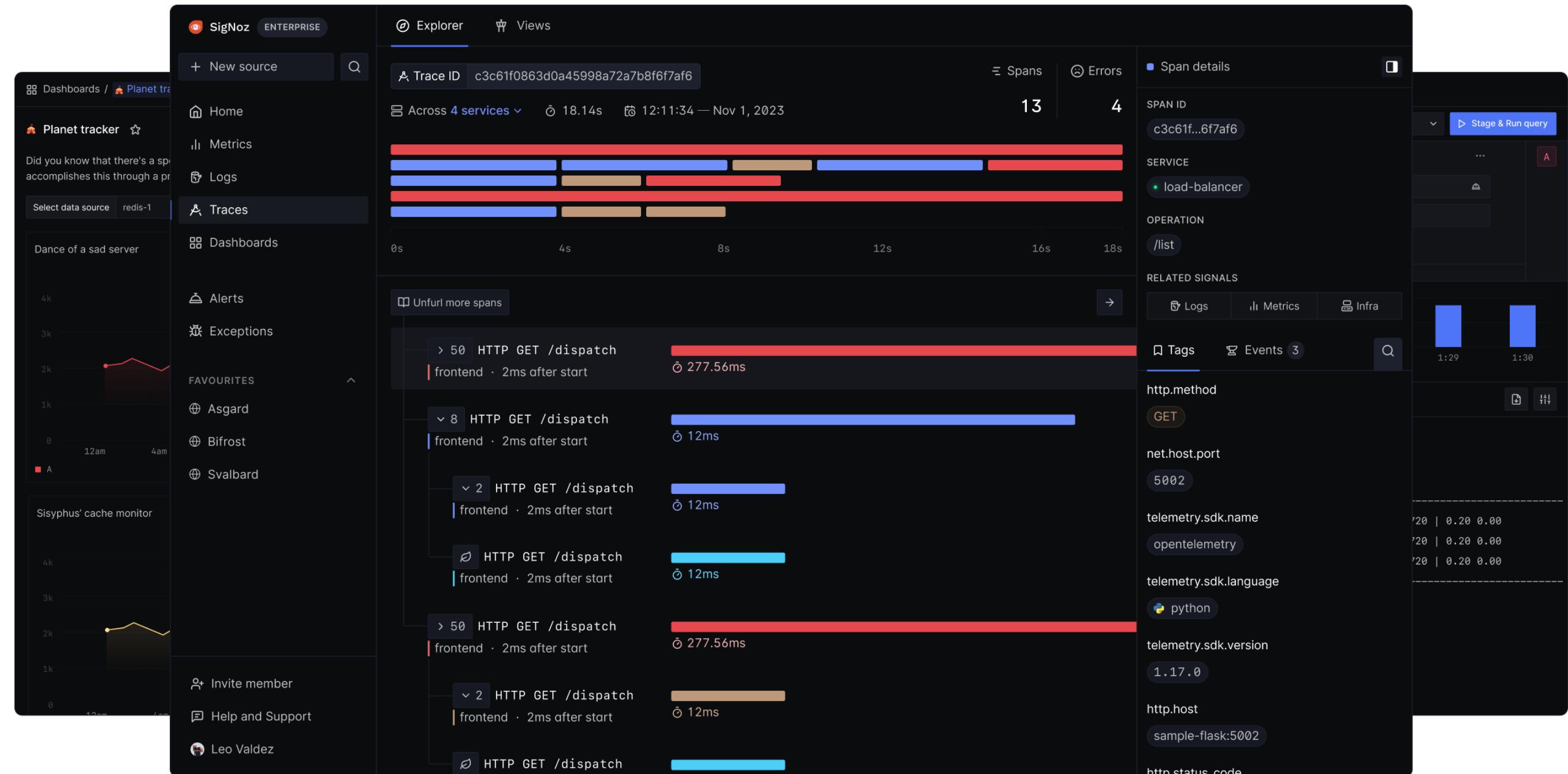
- CPU usage
- Memory usage
- File system usage
- Store as time-series data
- Query using PromQL
- Dashboard visualize
- Integrate with alert system



# MONITOR APPLICATION PERFORMANCE

## Signoz / Clickhouse

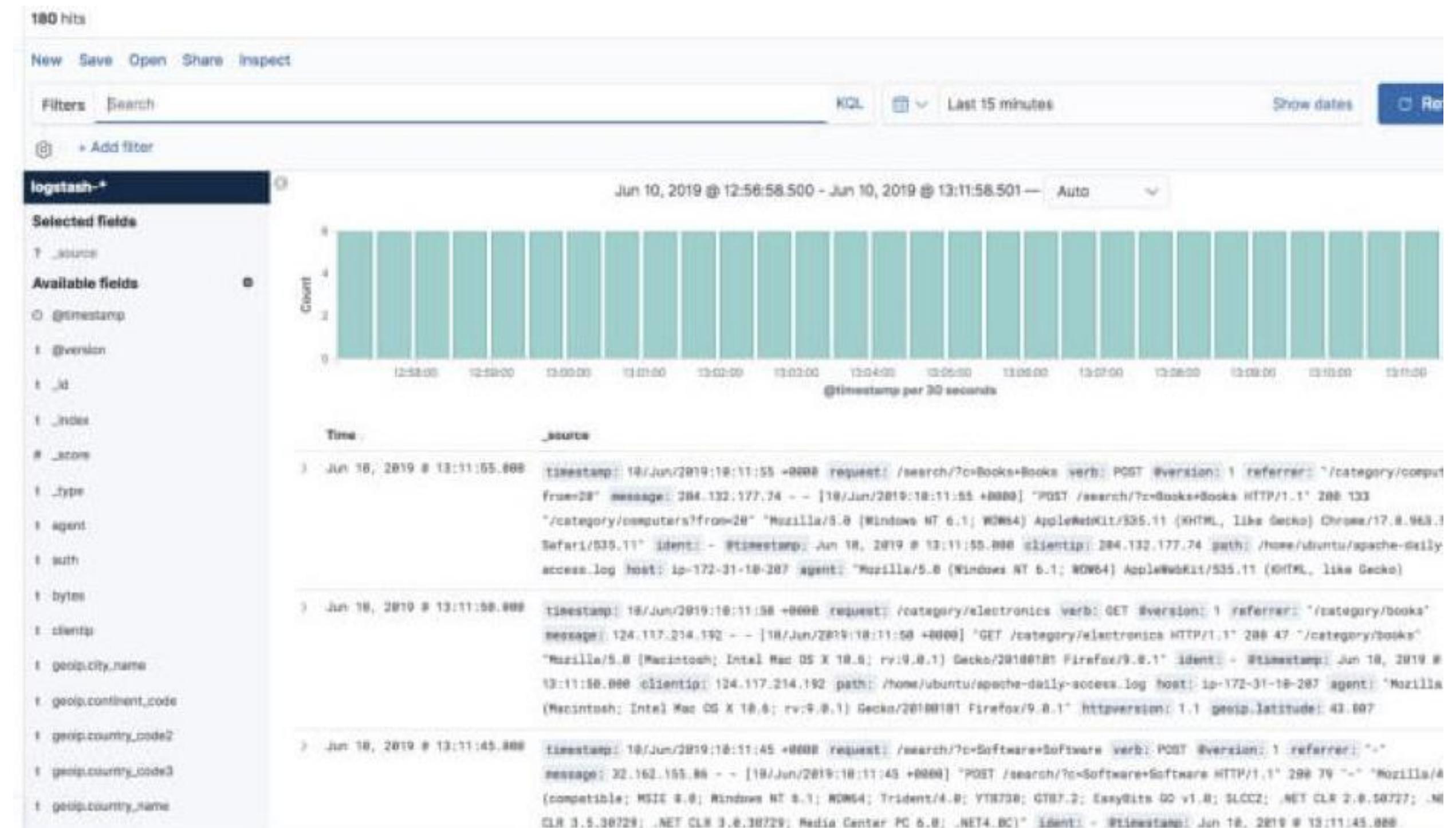
- Metrics: p99 latency, error rates, query time...
- Filter and query log
- Aggregate trace data
- Auto record exception
- Visualize traces, metrics, logs in timespan
- Integrate with alert system



# LOG TRACING

## ELK stack

- Collect log from multiple source
- Parse log pattern and index in Elasticsearch
- Aggregate log data
- Query log data

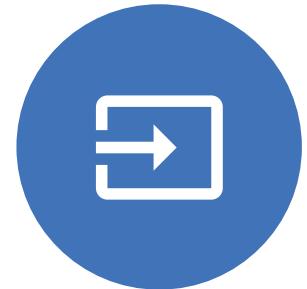


## 4. CASE STUDIES

Features of  
MBCCS FTTH  
system



Benefit after  
deploying at  
Peru

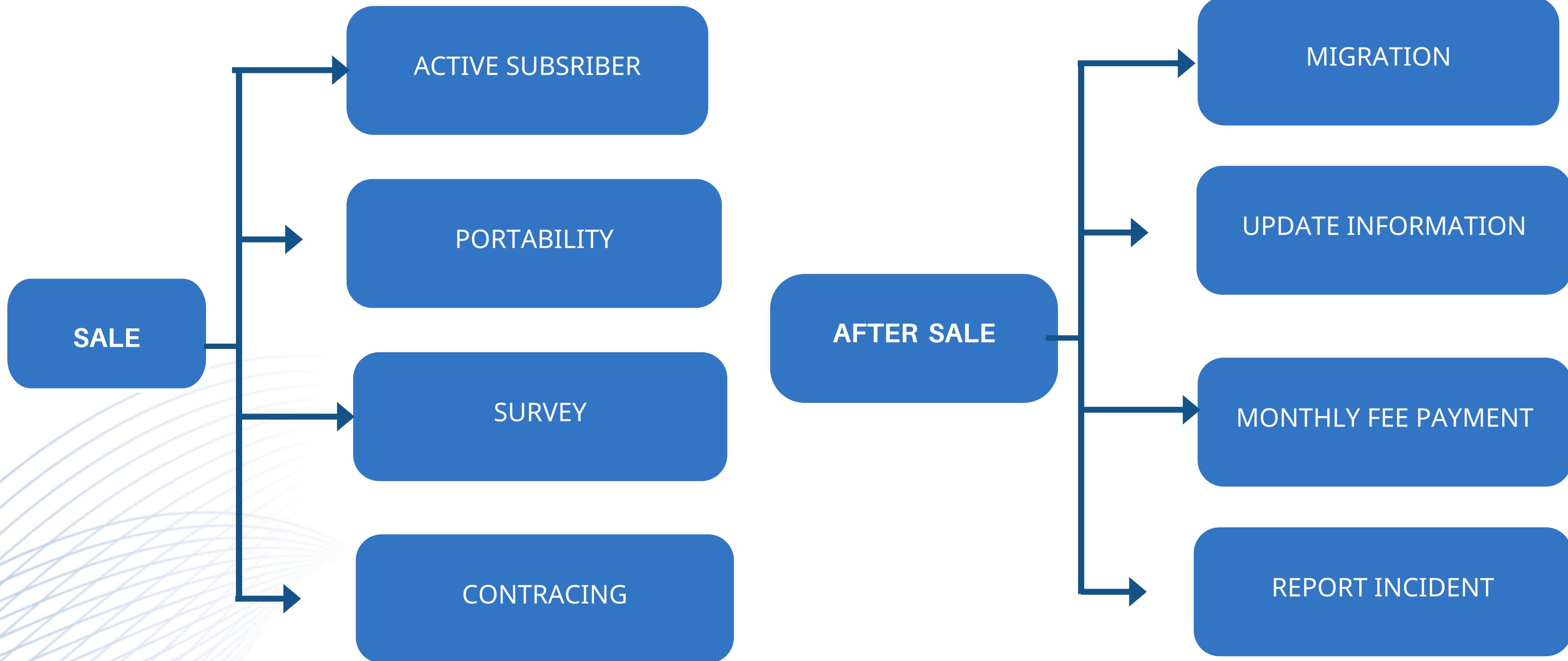


MBCCS FTTH



Đề xuất cài tiến

## FEATURES OF MBCCS FTTH



## BENEFIT AFTER DEPLOYING

5

SUBSCRIBERS/DAY

5 subscriber per day is the average sale made by each staff after use new MBCCS FTTH application

3 minutes is the average of a sale process on mobile app from create customer request information to finish contracting

## BENEFIT AFTER DEPLOYING

**28** HOURS

28 hours is the average waiting time for customer from finish signing contract to complete install internet line

Before using MBCCS FTTH, the average waiting time for customer is 5 days

## BENEFIT AFTER DEPLOYING

**3**  
**HOURS**

3 hours is the average time to resolve customer network incident after receive incident report

Before using MBCCS FTTH, the average time for response is 1 day and does not commit SLA

# IMPROVEMENTS



**Employ more monitoring and alert mechanism to gain insight of all aspects**



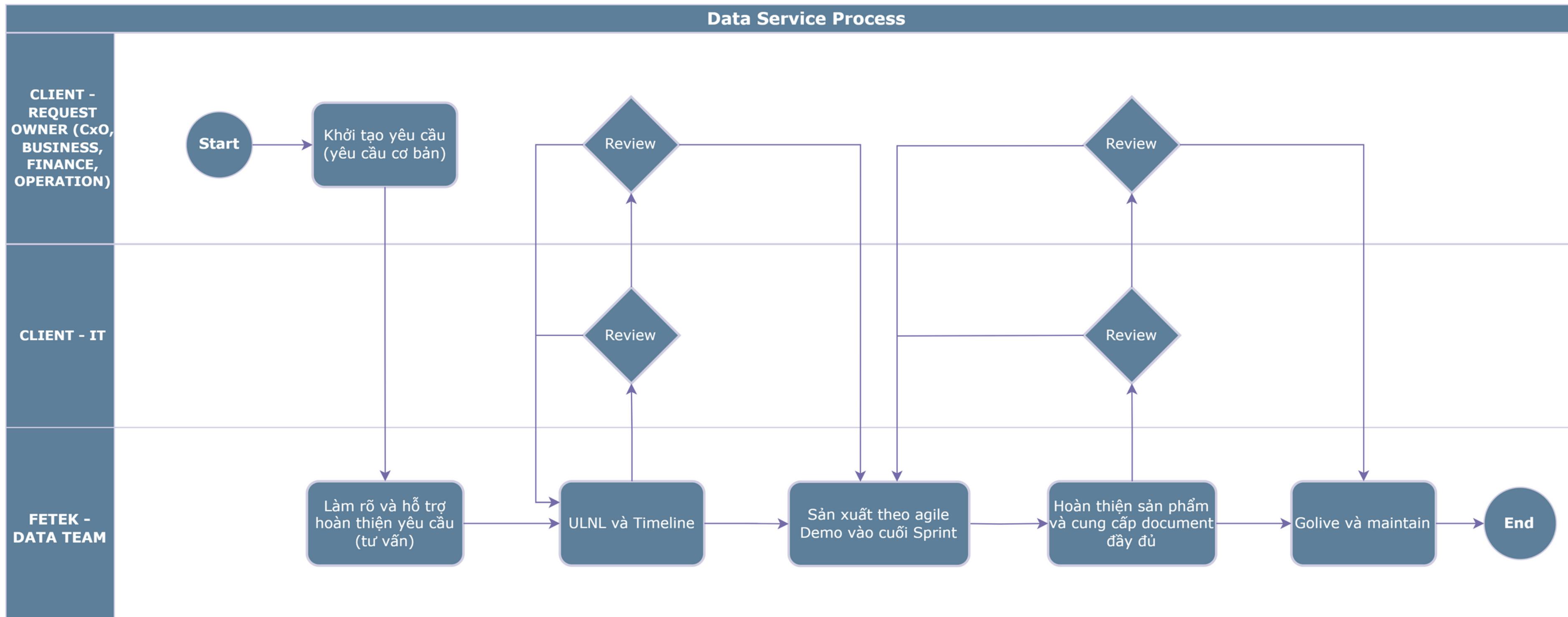
**Deploy CI/CD and/or Cloud service to reduce development time and response time incase incident happen**



**Upgrade work management process to make it automatically and reduce deployment time for customer**



# 5. SOFTWARE SERVICE MODEL





**THANK YOU**