

Development of information system of the marketing department of the enterprise

Part 1. Development of the concept of information system
Bahanovska Olena

Part 2. Business processes automation subsystem
Vyshnevskiy Volodymyr

Part 3. Development of subsystem data mining
Svitelska Iryna

Part 1. Development of the concept of information system

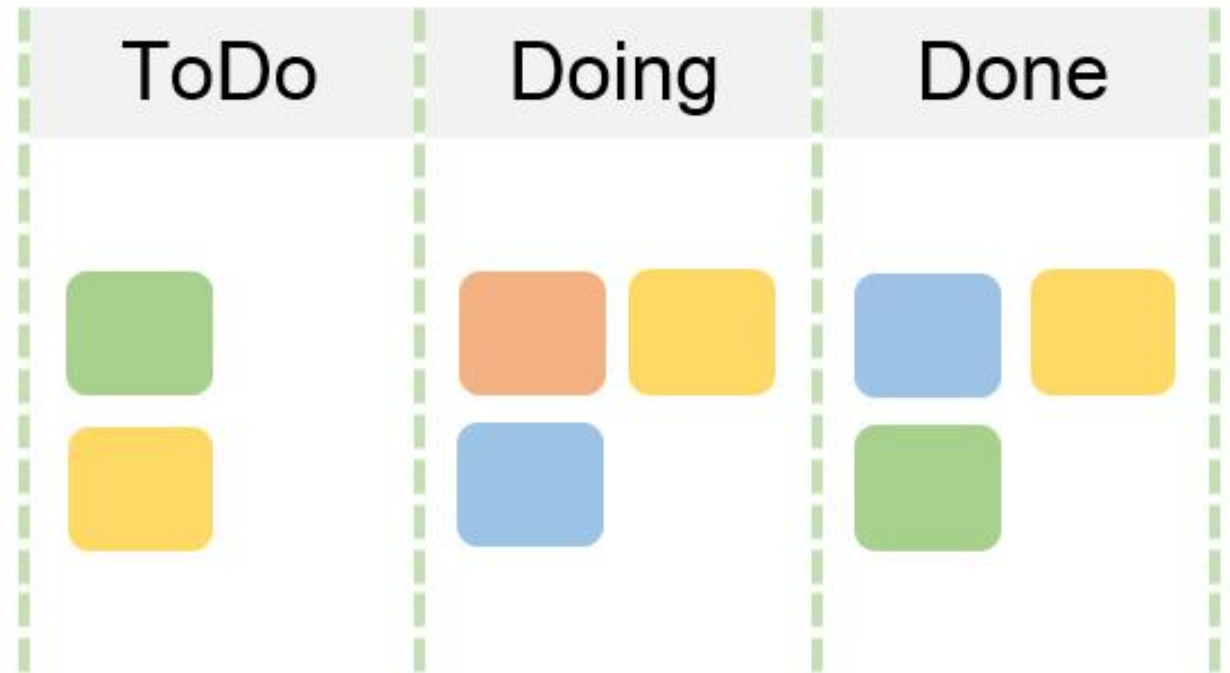
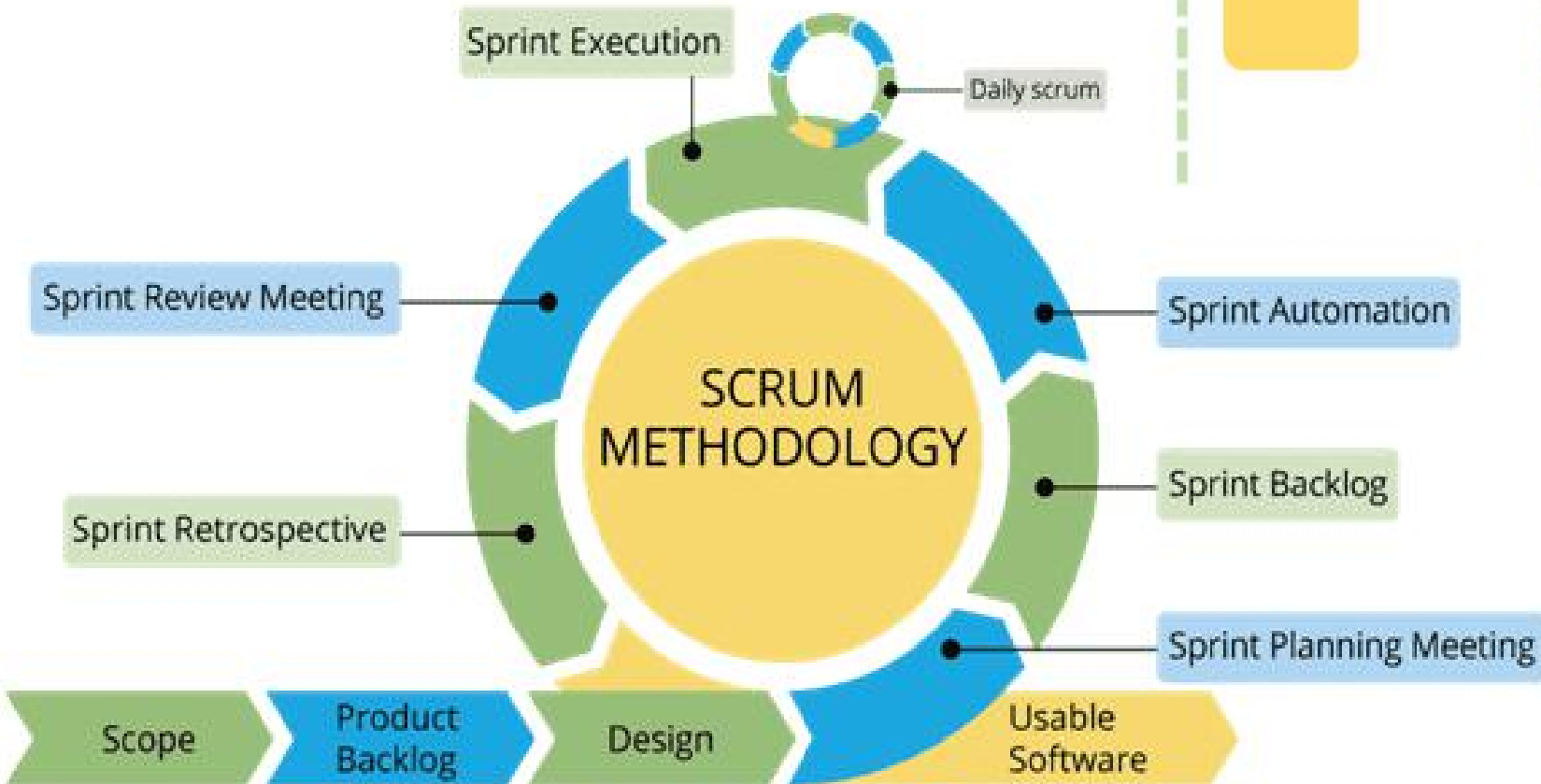
The purpose of the work

The purpose of the work is to improve the quality of the company's work by creation flexible architecture of information system of marketing department enterprise.

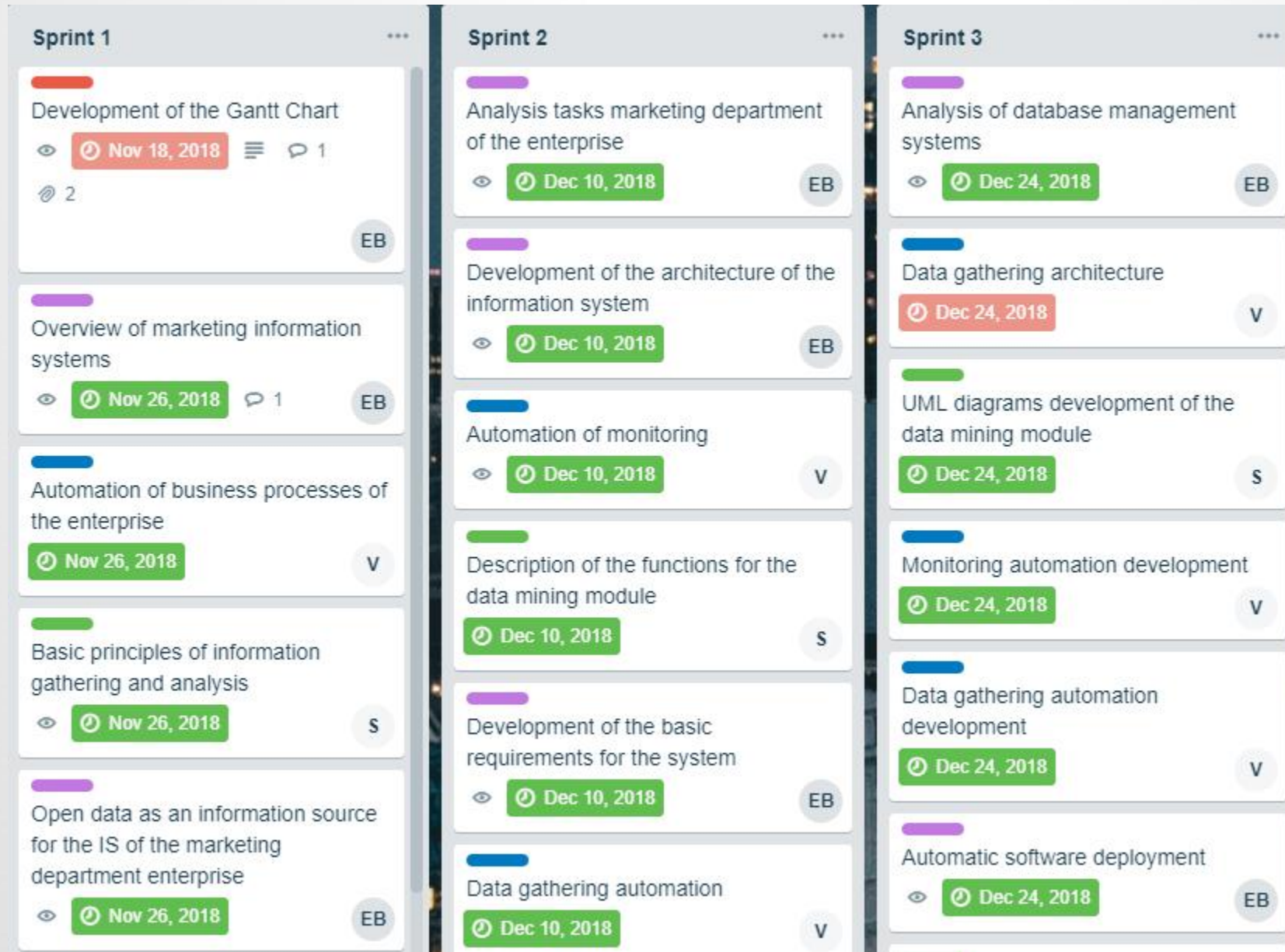
To achieve this goal, the following tasks must be solved:

1. analyze the existing methods of designing the concept of an information system;
2. review existing project management methodologies and choose the best one;
3. develop the architecture of the information system.

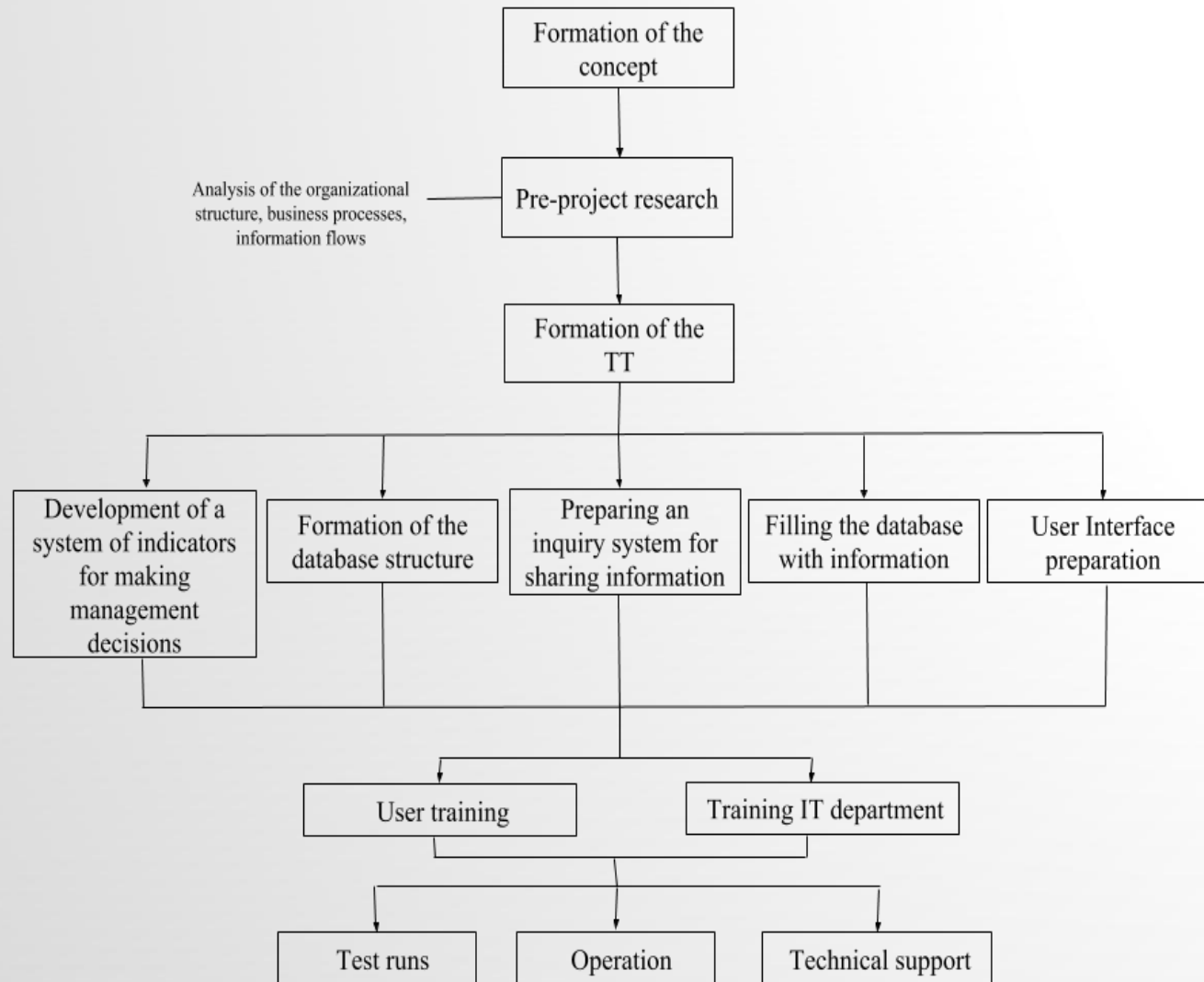
Agile / Scrum



Project management



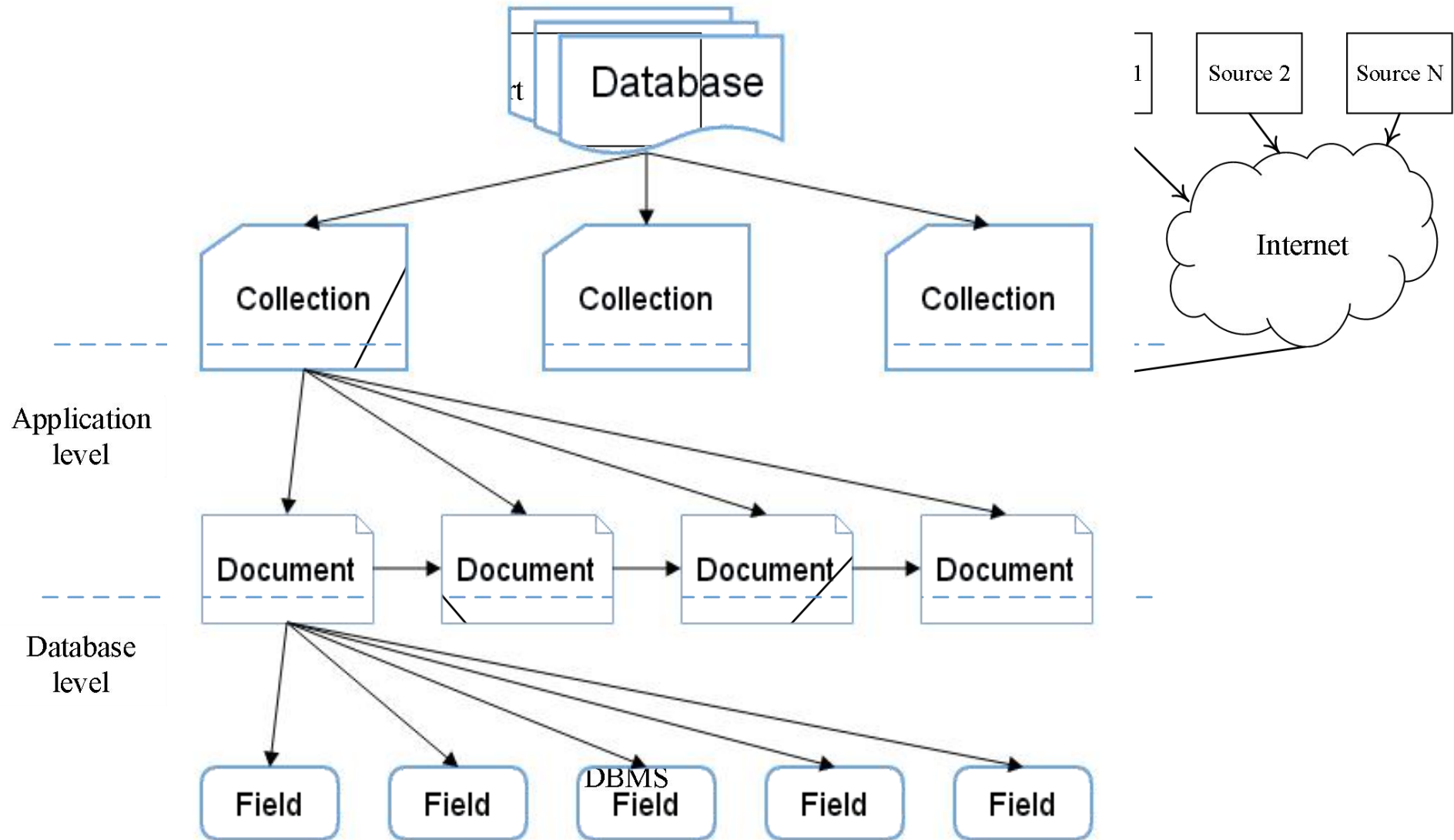
Implementation process of the information system



Main functions of the marketing department of the enterprise



Architecture of information system



Automatic software deployment

web servers

```
[root@localhost home]# ps -aux | grep gunicorn
root      8365  0.0  0.6 213748 11580 ?        S    10:37   0:00 /usr/bin/python2 /usr/bin/gunicorn -w 4 -b 0.0.0.0:5000 server:app --daemon
root      8370  1.3  1.9 418580 35780 ?        S1   10:37   0:00 /usr/bin/python2 /usr/bin/gunicorn -w 4 -b 0.0.0.0:5000 server:app --daemon
root      8371  1.3  1.9 418580 35788 ?        S1   10:37   0:00 /usr/bin/python2 /usr/bin/gunicorn -w 4 -b 0.0.0.0:5000 server:app --daemon
root      8376  1.3  1.9 418576 35792 ?        S1   10:37   0:00 /usr/bin/python2 /usr/bin/gunicorn -w 4 -b 0.0.0.0:5000 server:app --daemon
root      8377  1.3  1.9 418580 35796 ?        S1   10:37   0:00 /usr/bin/python2 /usr/bin/gunicorn -w 4 -b 0.0.0.0:5000 server:app --daemon
root      8473  0.0  0.0 112704   968 pts/0    S+   10:38   0:00 grep --color=auto gunicorn
[root@localhost home]#
```

MongoDB

```
[root@localhost home]# mongo
MongoDB shell version v3.4.18
connecting to: mongodb://127.0.0.1:27017
MongoDB server version: 3.4.18
Server has startup warnings:
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten]
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the database.
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten] **           Read and write access to data and configuration is unrestricted.
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten]
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten]
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten] ** WARNING: /sys/kernel/mm/transparent_hugepage/enabled is 'always'.
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten] **           We suggest setting it to 'never'
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten]
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten]
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten] ** WARNING: /sys/kernel/mm/transparent_hugepage/defrag is 'always'.
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten] **           We suggest setting it to 'never'
2019-01-06T10:18:17.997-0500 I CONTROL [initandlisten]
>
```

```
[root@localhost home]# netstat -nltp | grep 5000
tcp        0      0 0.0.0.0:5000          0.0.0.0:*              LISTEN     8365/python2
[root@localhost home]# netstat -nltp | grep 27017
tcp        0      0 127.0.0.1:27017      0.0.0.0:*              LISTEN     5860/mongod
```

ports 5000 and 27017

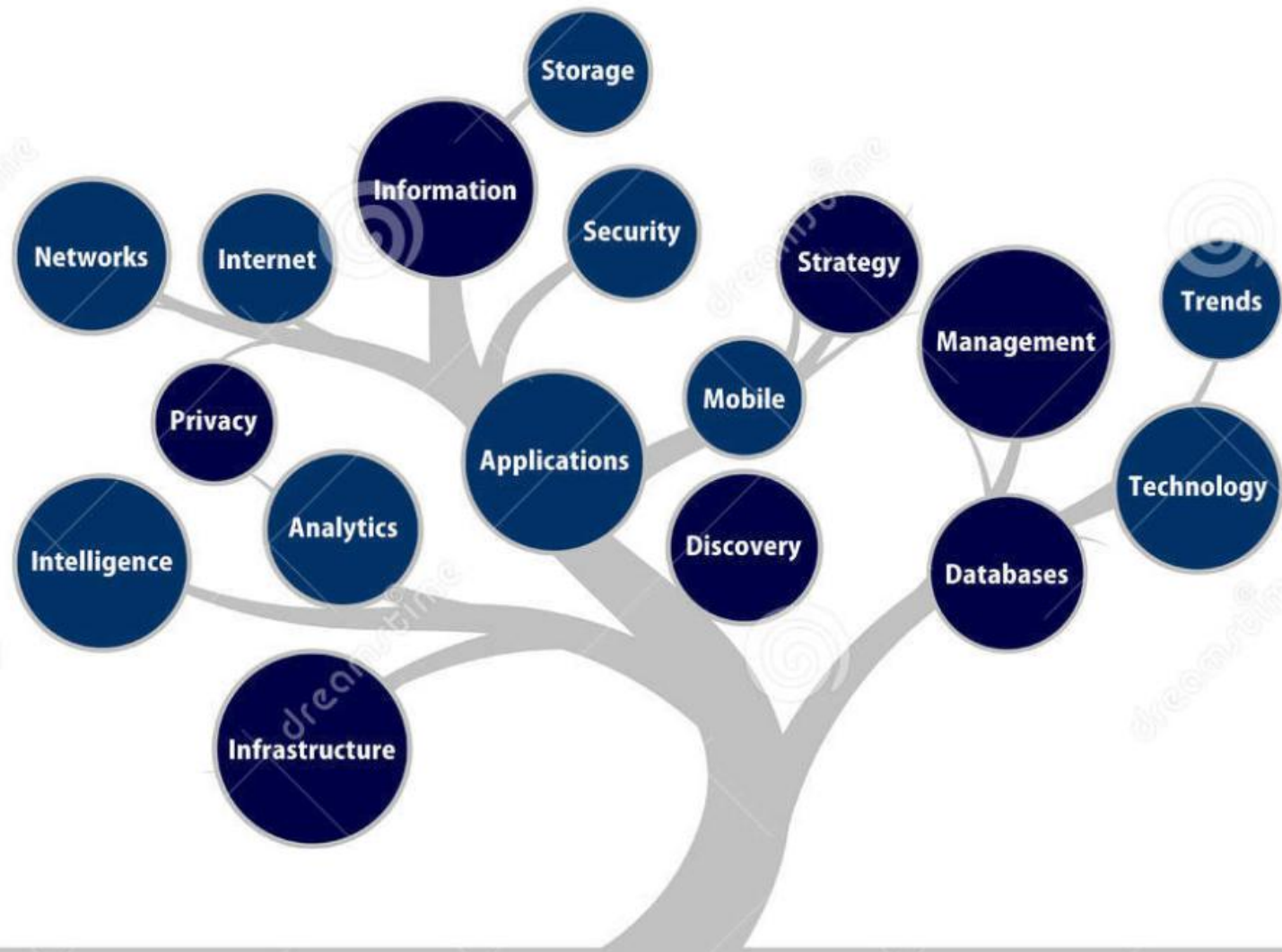
Part 2. Business processes automation subsystem

The purpose of the work

The purpose of the work is to improve the quality of the company's work, by automating the routine processes of business to increase value of specific tasks.

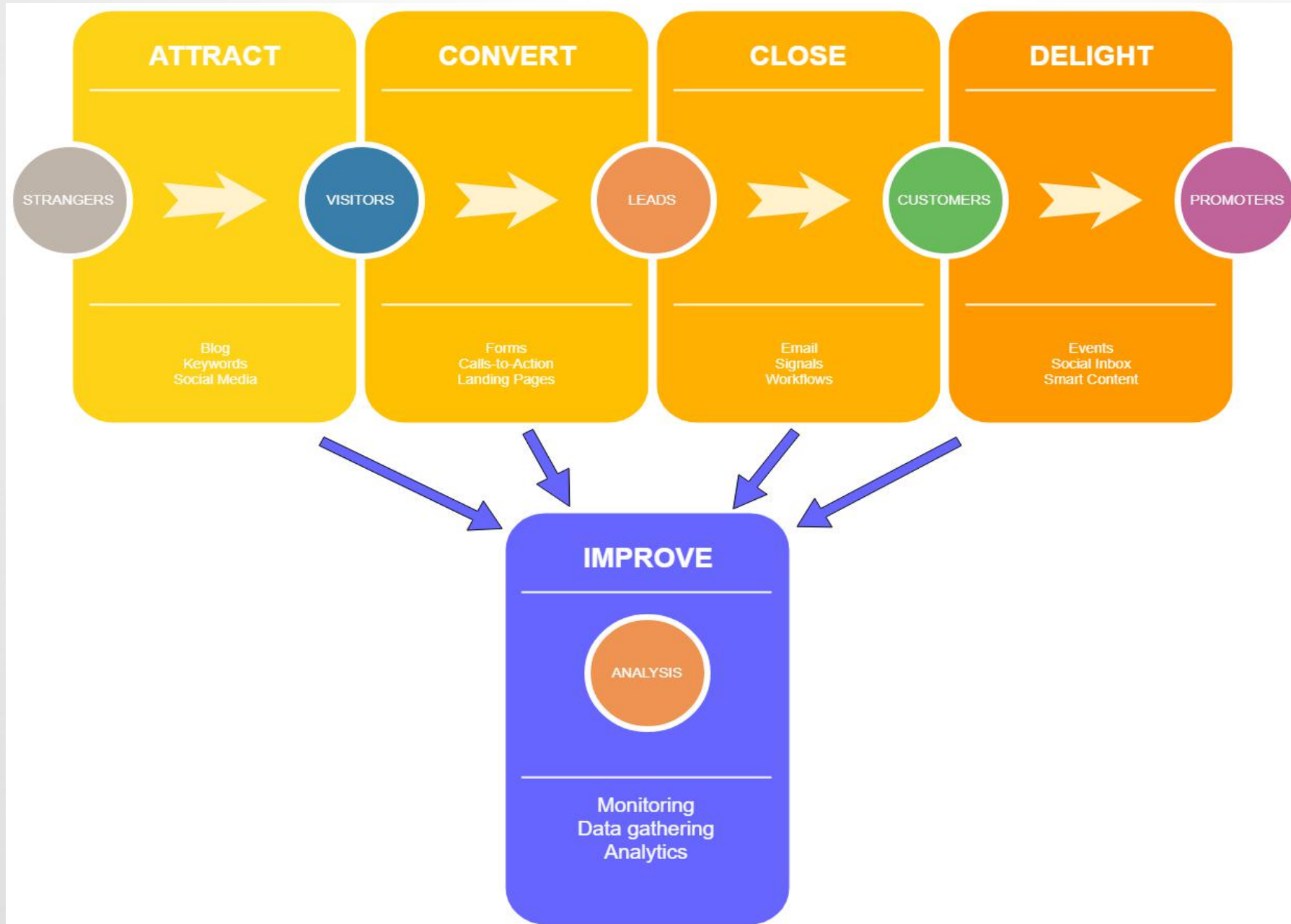
To fulfil desired purposes there were following problems to solve:

- Automate processes of data gathering and data storage;
- Implement monitoring tools to increase business value of stored data.

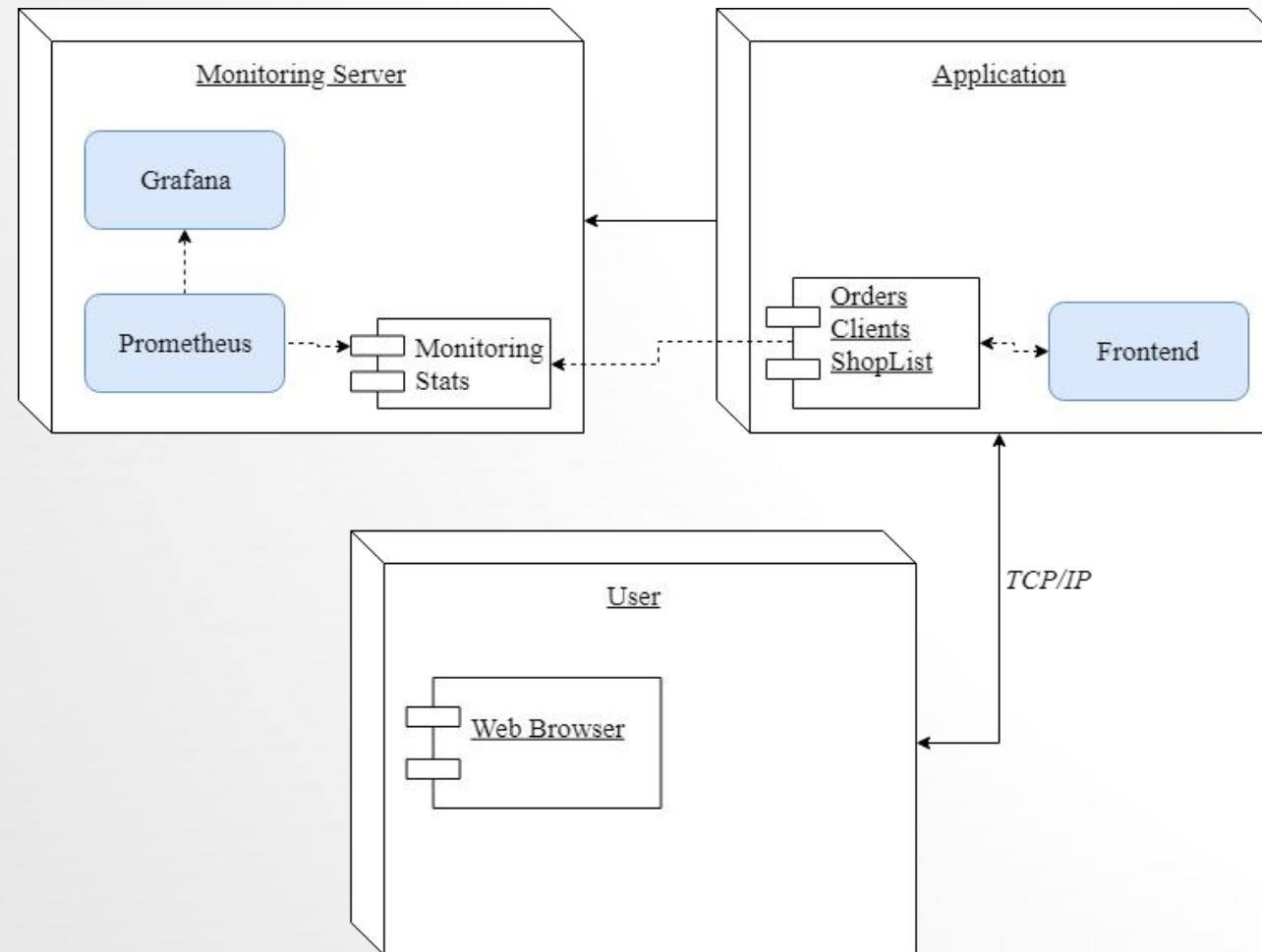


BIG DATA

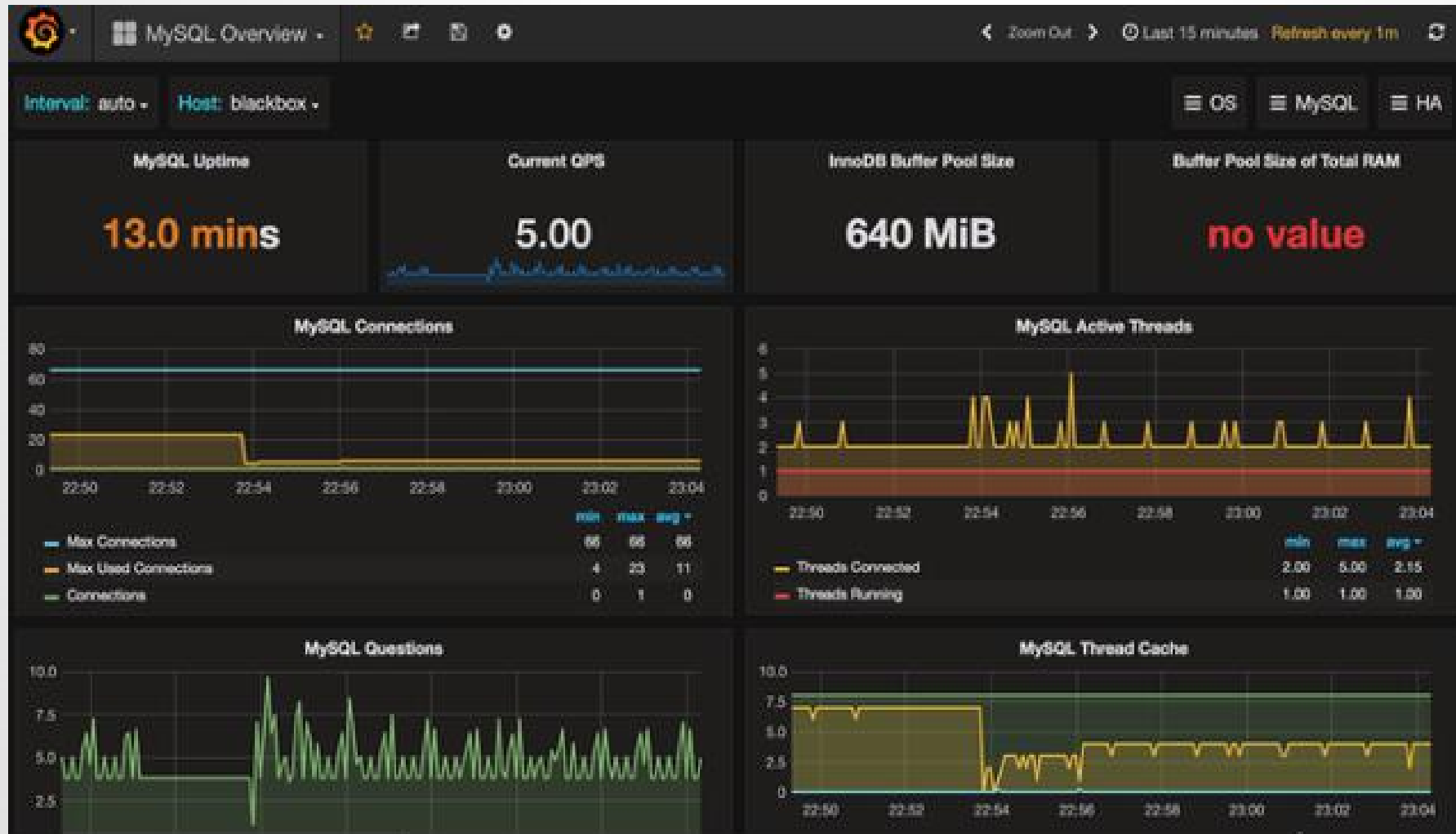
●●●●●● FUNDAMENTALS ●●●●●●



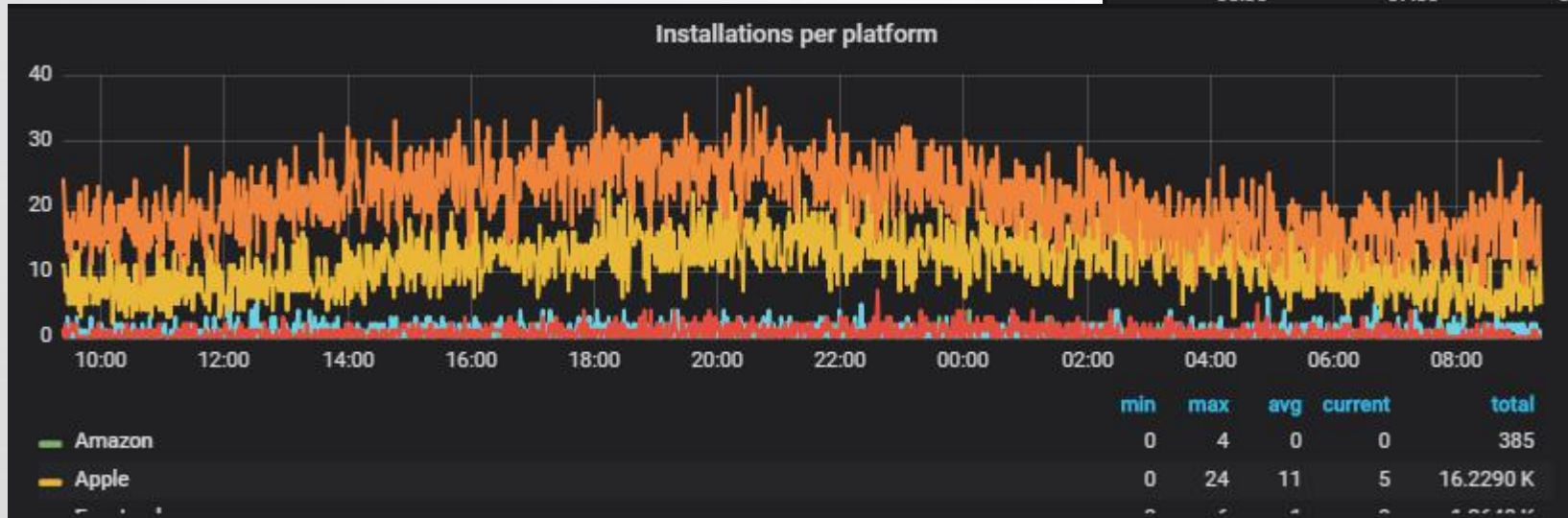
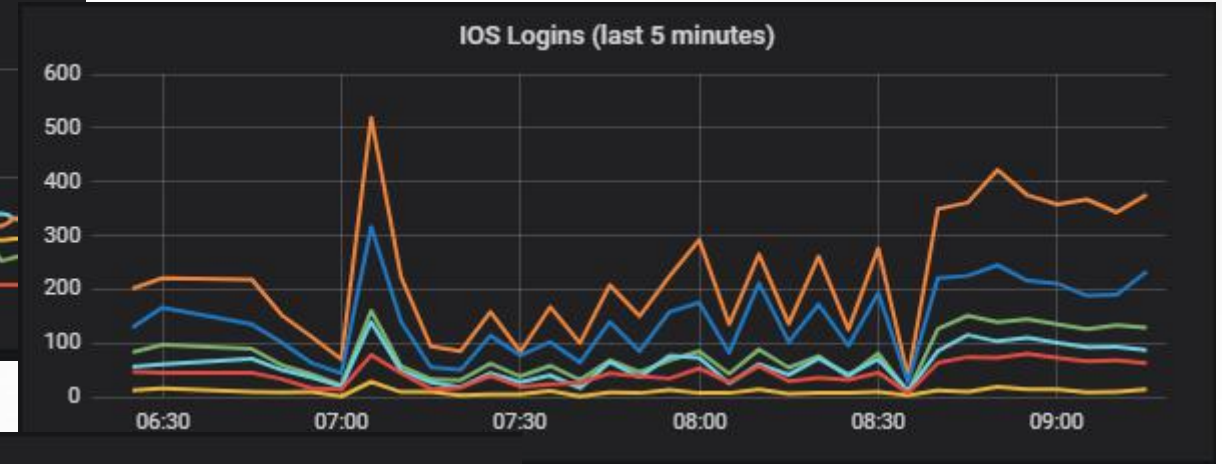
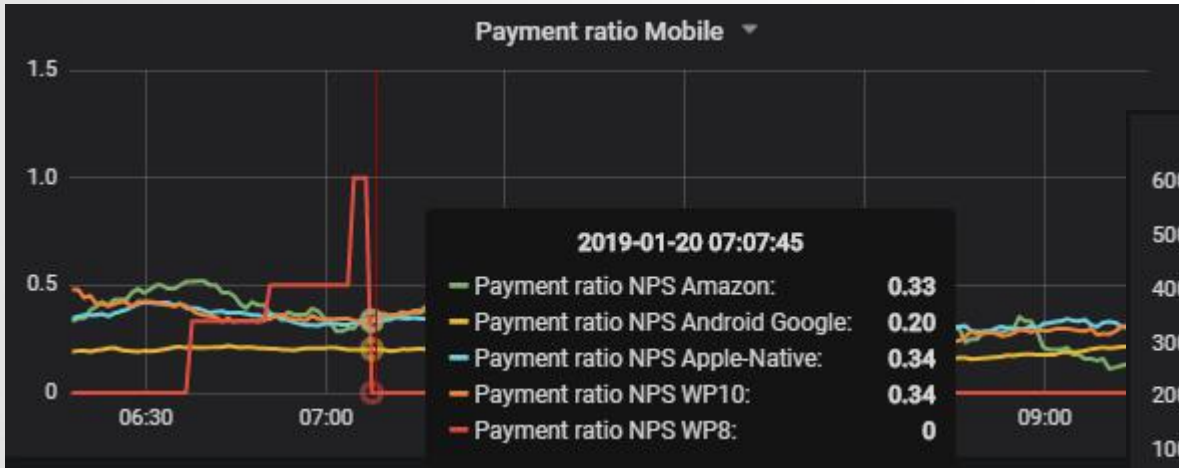
MONITORING



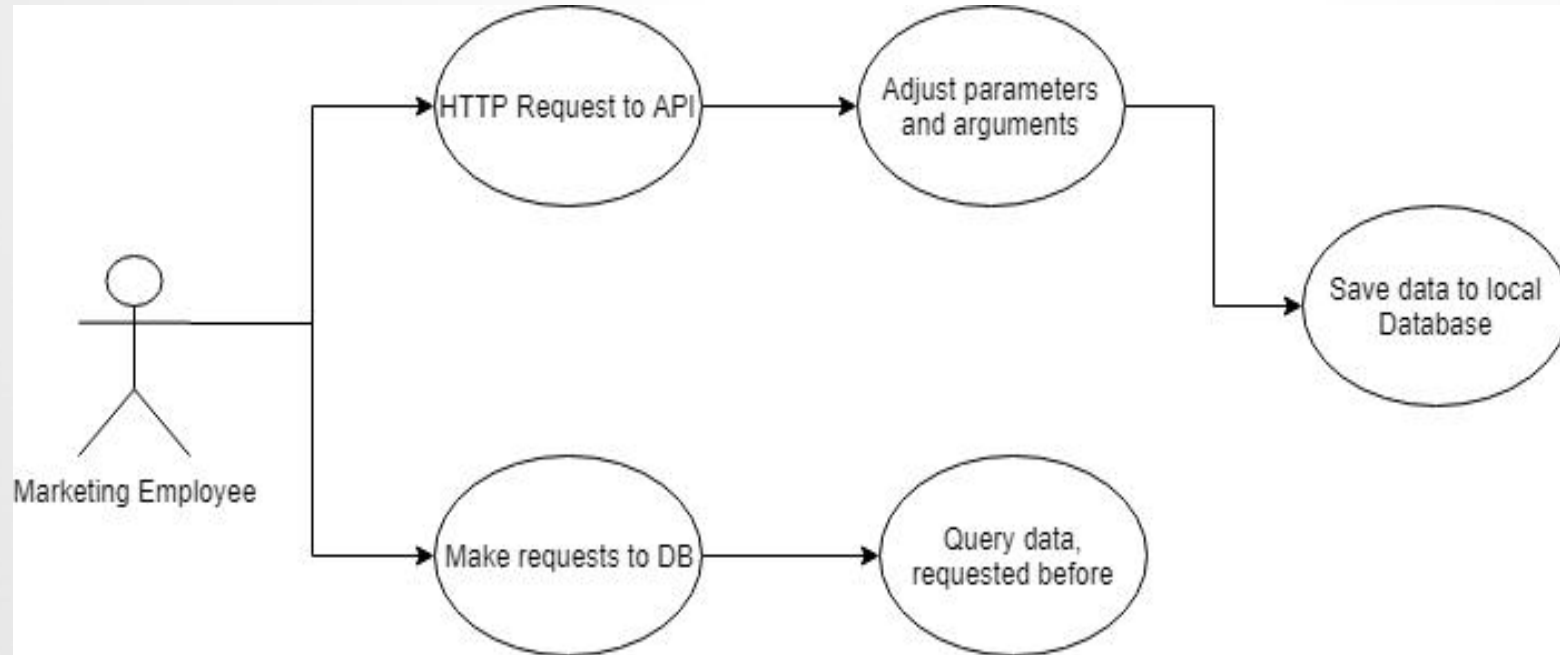
DATABASE STATISTICS



BUSINESS STATISTICS



DATA GATHERING AUTOMATION

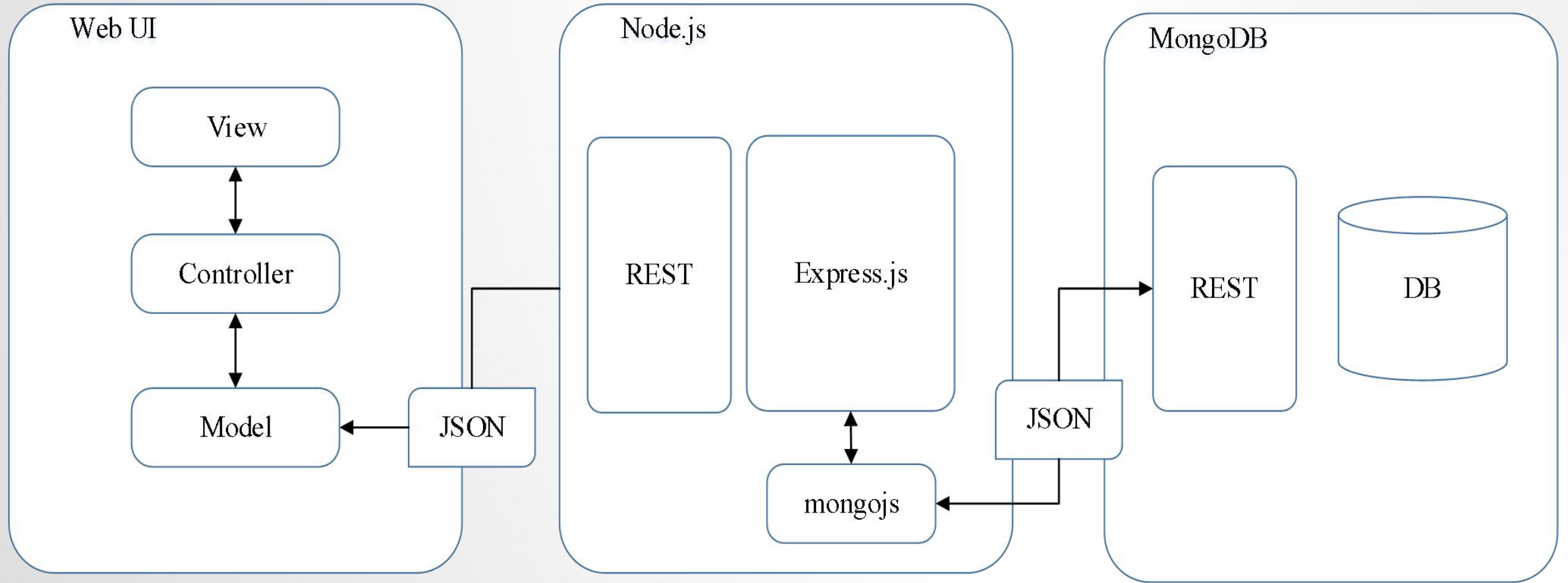


Part 3. Development of subsystem data minin

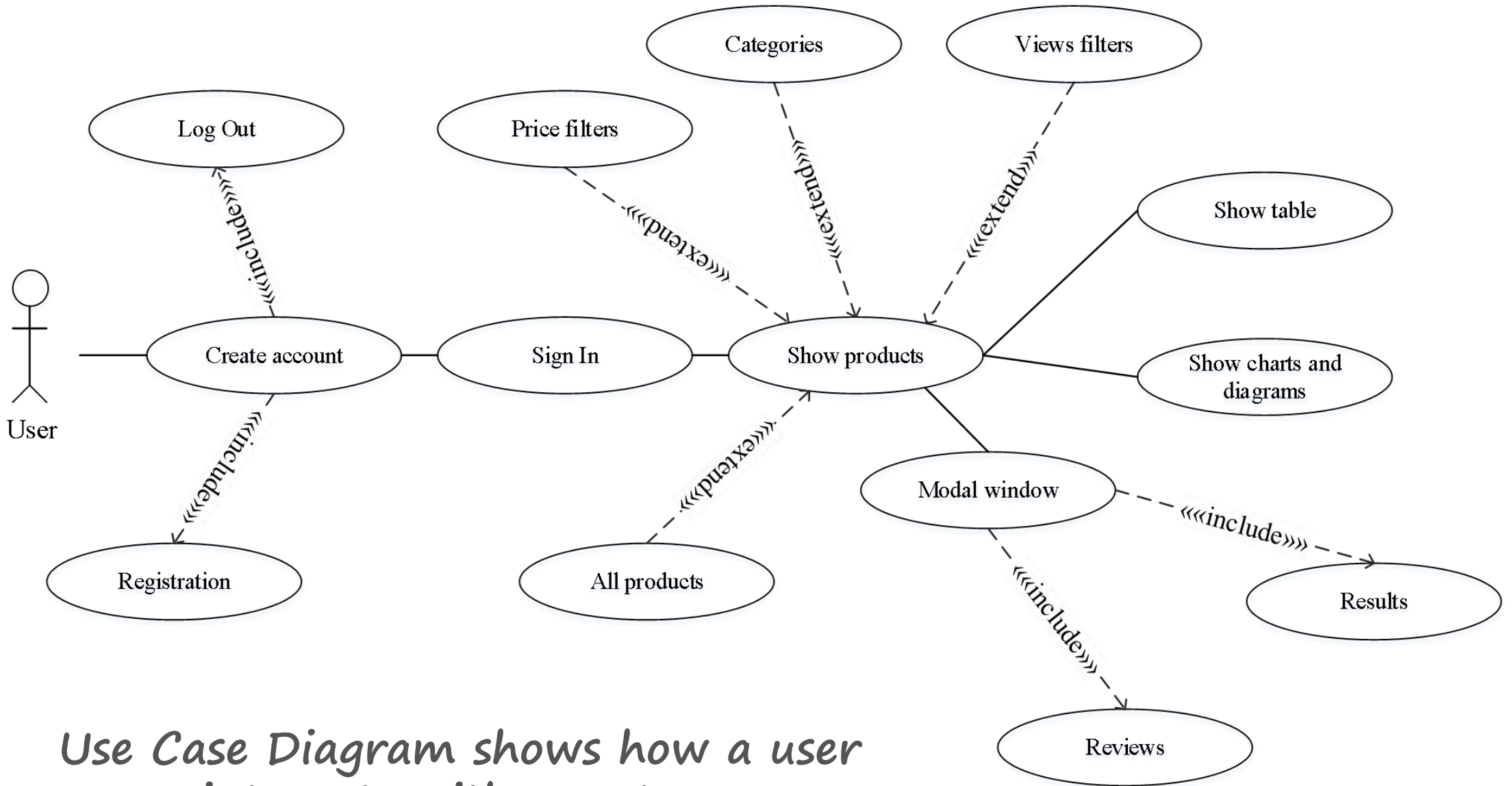
The purpose of the work is to get predictions of the frequency of sales of products

Main functions:

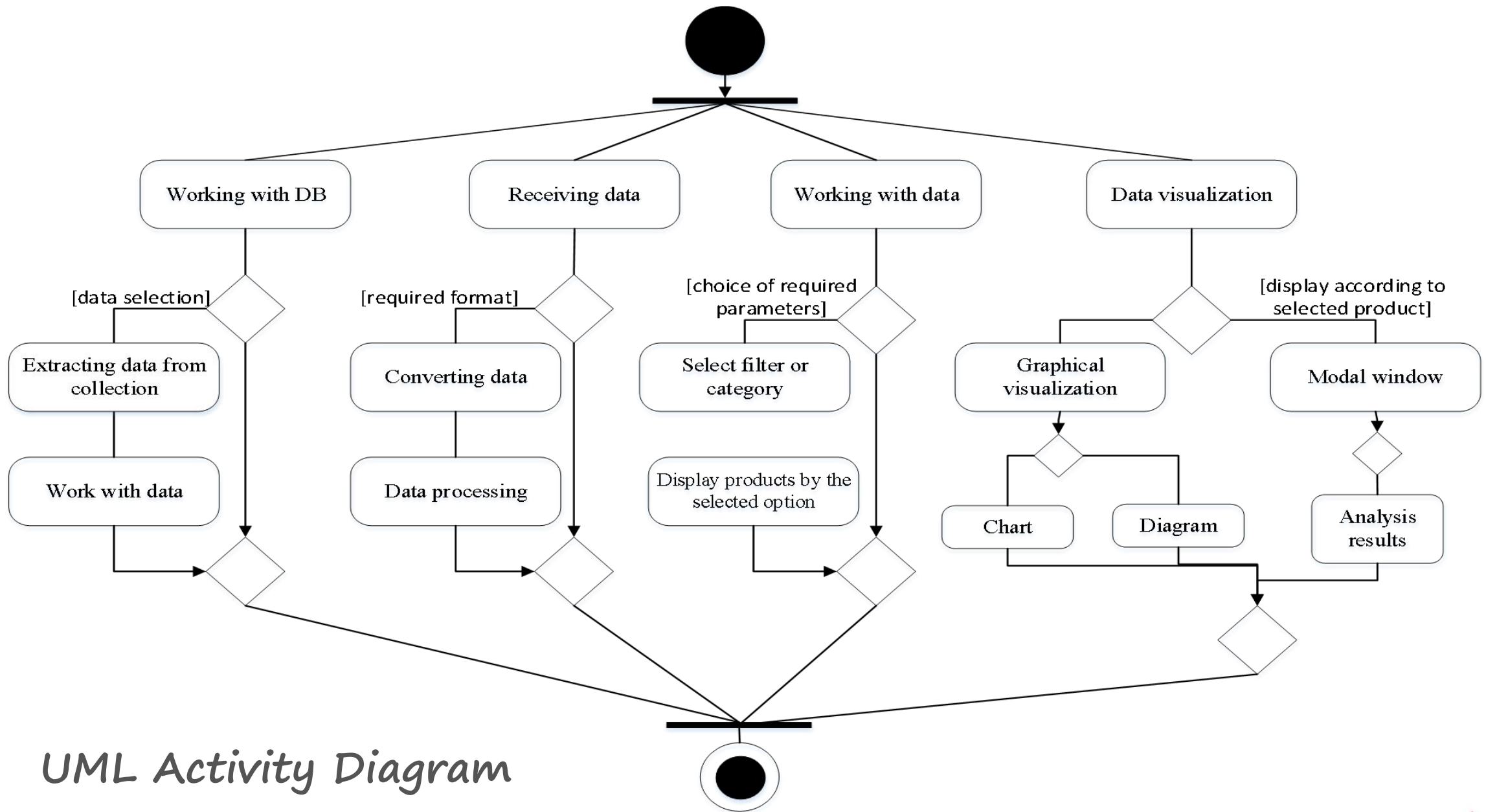
- receiving data from the database and writing them in a file;
- user authorization;
- view list of PRODUCTS;
- the ability to view data in a user-friendly form;
- review of forecasted demand for PRODUCTS;
- view information in the form of linear charts;
- ability to sort by parameters;
- visualization of results.



The structural scheme of the subsystem

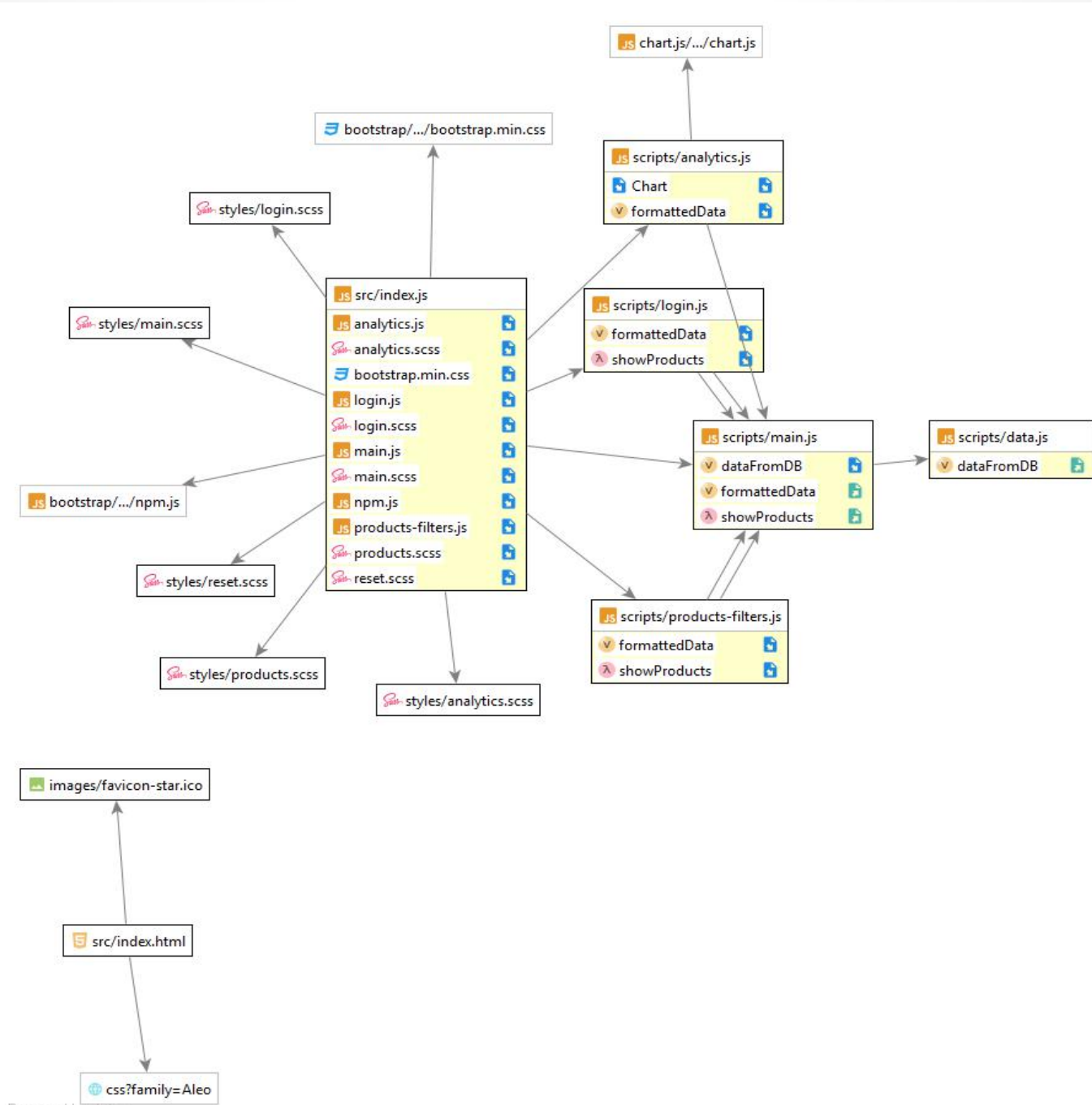


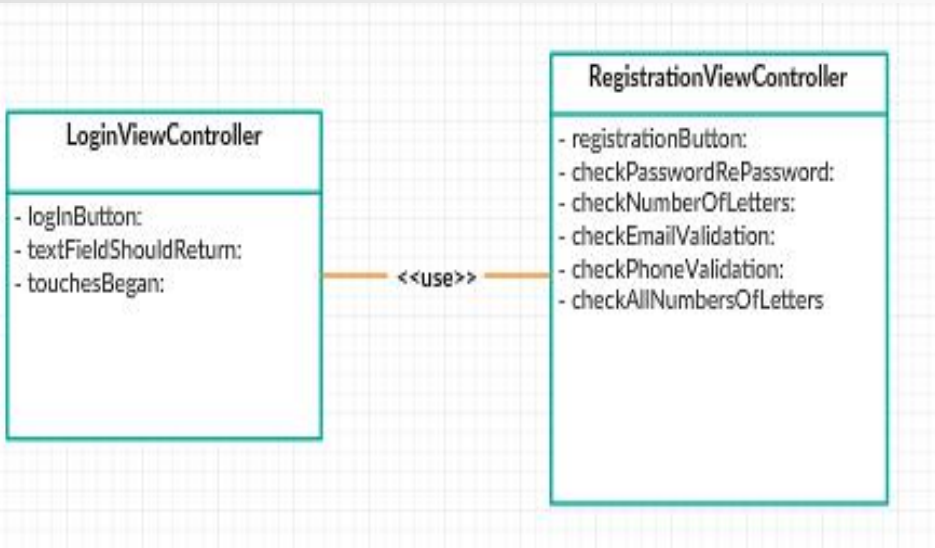
Use Case Diagram shows how a user interacts with a system



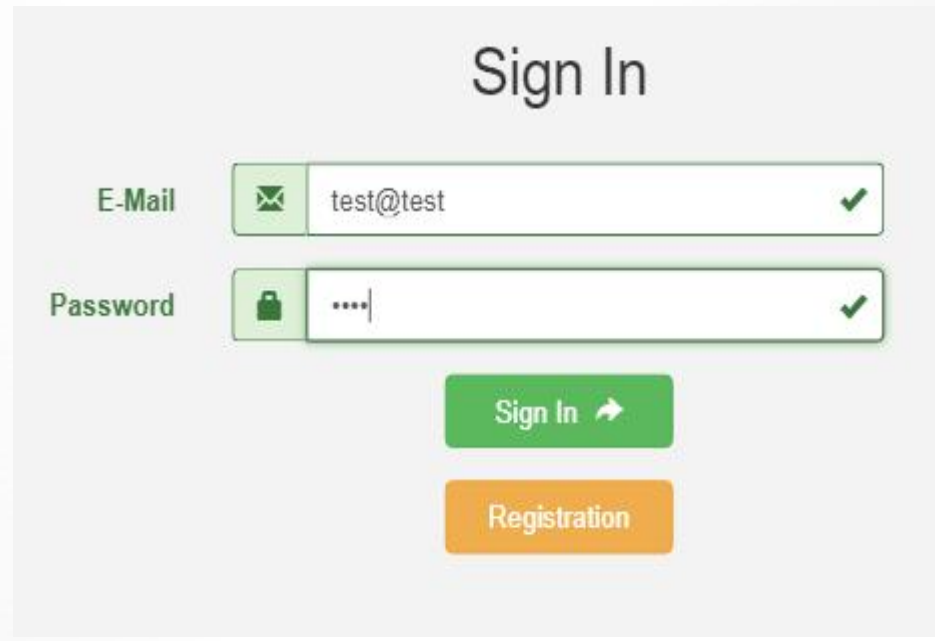
UML Activity Diagram

Diagram of links between the main modules of the program





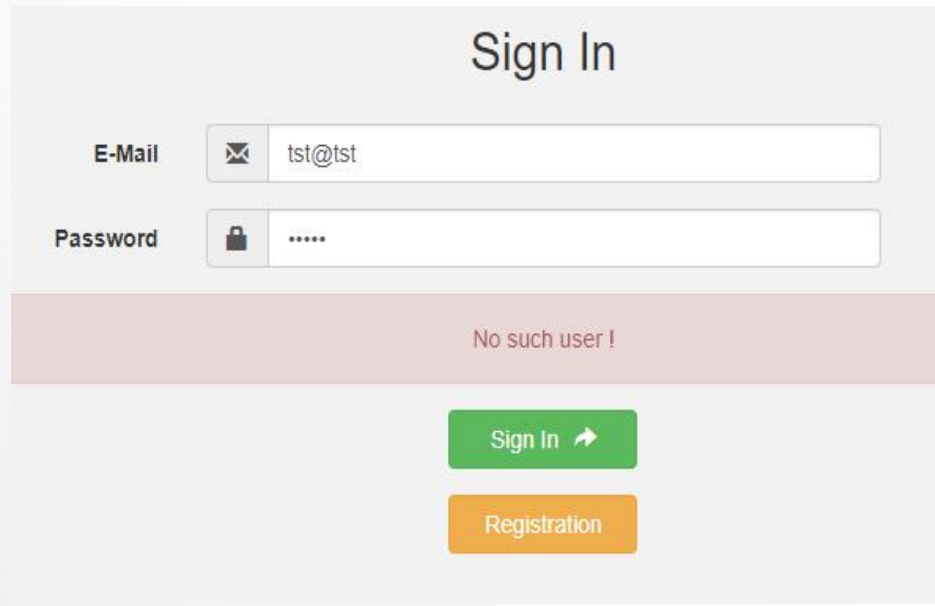
Classes Diagram of the module «User Authorization»
Registration



Window «Sign In»



Window



User validation

The main page of the system

[LOG OUT](#)

SIDEBAR

[ALL PRODUCTS](#)

Price filters

[WITH DISCOUNT](#)

[WITHOUT DISCOUNT](#)

[HIGH-LOW](#)

[LOW-HIGH](#)

Views filters

[MOST VIEWS](#)

[LEAST VIEWS](#)

Categories


[VIDEO GAME CONSOLES](#)

[AUDIO DOCKS & MINI](#)

[PORTABLE STEREOS &](#)


Items: 100

Microsoft Xbox One...




Price: 299.99\$
Discount: 91.00\$
Sale: 208.99\$
Views: 9257
[Go to the product](#)

PlayStation 4 Pro 1T...




Price: 103.69\$
Discount: 0.00\$
Sale: 103.69\$
Views: 158
[Go to the product](#)

JBL CHARGE 3 Wat...




Price: 99.95\$
Discount: 0.00\$
Sale: 99.95\$
Views: 462
[Go to the product](#)

Microsoft Xbox One...




Price: 299.99\$
Discount: 81.99\$
Sale: 218.0\$
Views: 347
[Go to the product](#)

New Charge 3+ Pop...




Price: 49.99\$
Discount: 0.00\$
Sale: 49.99\$
Views: 296
[Go to the product](#)

Authentic Nintendo...




Price: 85.49\$
Discount: 0.00\$
Sale: 85.49\$
Views: 1045
[Go to the product](#)

US STOCK! PXP3 Ga...




Price: 14.58\$
Discount: 0.00\$
Sale: 14.58\$
Views: 539
[Go to the product](#)

JBL CHARGE 3 Wat...




Price: 149.95\$
Discount: 50.00\$
Sale: 99.95\$
Views: 68
[Go to the product](#)

4.3" PSP Portable Ha...



Price: 29.8\$
Discount: 0.00\$
Sale: 29.8\$
Views: 79
[Go to the product](#)

JBL CHARGE 3 Wat...



Price: 149.95\$
Discount: 50.00\$
Sale: 99.95\$
Views: 107
[Go to the product](#)

Price filters

WITH DISCOUNT WITHOUT DISCOUNT

HIGH-LOW LOW-HIGH

Views filters

MOST VIEWS LEAST VIEWS

Categories

VIDEO GAME CONSOLES AUDIO DOCKS & MINI SPEAKERS PORTABLE STEREOS & BOOMBOXES

SIDEBAR

ALL PRODUCTS

Price filters











WITH DISCOUNT WITHOUT DISCOUNT

HIGH-LOW LOW-HIGH

Views filters

MOST VIEWS LEAST VIEWS

Items: 26

<p>Microsoft Xbox One...</p>  <p>Price: 299.99\$ Discount: 91.00\$ Sale: 208.99\$ Views: 9257 Go to the product</p>	<p>Microsoft Xbox One...</p>  <p>Price: 299.99\$ Discount: 81.99\$ Sale: 218.0\$ Views: 347 Go to the product</p>	<p>JBL CHARGE 3 Wat...</p>  <p>Price: 149.95\$ Discount: 50.00\$ Sale: 99.95\$ Views: 68 Go to the product</p>	<p>JBL CHARGE 3 Wat...</p>  <p>Price: 149.95\$ Discount: 50.00\$ Sale: 99.95\$ Views: 107 Go to the product</p>	<p>Nintendo Switch 32...</p>  <p>Price: 319.99\$ Discount: 10.00\$ Sale: 309.99\$ Views: 9413 Go to the product</p>
<p>JBL FLIP 3 Waterpr...</p>  <p>Price: 99.95\$ Discount: 30.00\$ Sale: 69.95\$ Views: 1234 Go to the product</p>	<p>Xbox One S 1TB Co...</p>  <p>Price: 349.0\$ Discount: 100.00\$ Sale: 249.0\$ Views: 5678 Go to the product</p>	<p>JBL FLIP 4 Waterpr...</p>  <p>Price: 99.95\$ Discount: 30.00\$ Sale: 69.95\$ Views: 890 Go to the product</p>	<p>JBL FLIP 4 Waterpr...</p>  <p>Price: 99.95\$ Discount: 30.00\$ Sale: 69.95\$ Views: 456 Go to the product</p>	<p>JBL FLIP 4 Waterpr...</p>  <p>Price: 99.95\$ Discount: 30.00\$ Sale: 69.95\$ Views: 234 Go to the product</p>

The result of the filter operation «With discount»

Filtration and product filtering sections

NUMBER	NAME	CATEGORY	VIEWS	DISCOUNT
48	Microsoft Xbox One 500gb Black Console Bundle w/ accessories ie. controller etc	Video Game Consoles	15042	0.00
15	Nintendo Switch 32GB Console with Neon Blue and Neon Red Joy-Con	Video Game Consoles	9413	10.00
1	Microsoft Xbox One S 1TB Console - White	Video Game Consoles	9257	91.00
22	Nintendo Switch with Neon Blue and Neon Red Joy-Con	Video Game Consoles	8233	0.00
36	Rockville RPB27 20w Rugged Portable Waterproof Bluetooth Speaker w Bumping Bass!	Portable Stereos & Boomboxes	7508	50.04
69	Xbox One X 1TB Black Console - Black controller & Xbox One X included	Video Game Consoles	4734	0.00
83	Sony PlayStation 4 PS4 Slim/Special Edition/PRO Option 1TB 500GB PS4 Console	Video Game Consoles	4367	0.00
34	Blackmore Portable 750 Watts Amplified Bluetooth Speaker - Black	Audio Docks & Mini Speakers	2698	20.00
66	JBL FLIP 3 Waterproof Portable Bluetooth Speaker	Audio Docks & Mini Speakers	2360	0.00
77	Xbox One S 1TB Console Microsoft Xbox one S 1Tb Brand New	Video Game Consoles	2289	0.00
72	Nintendo Switch with Neon Blue and Neon Red Joy-Con + Pokemon Let's Go	Video Game Consoles	1852	0.00

Table with product with sorted by «Views» from larger to sma

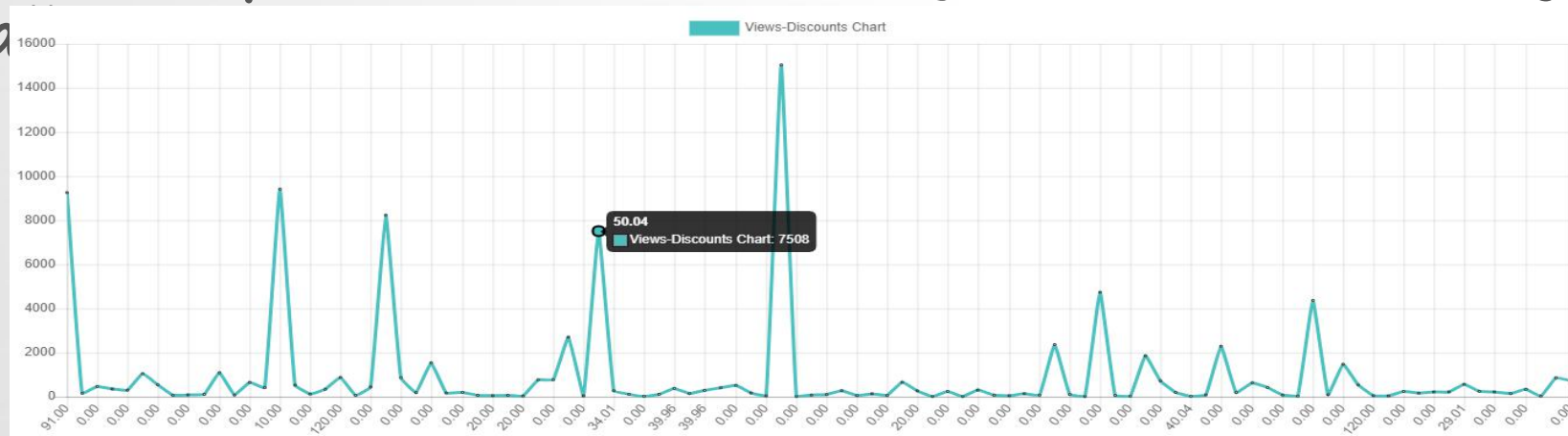
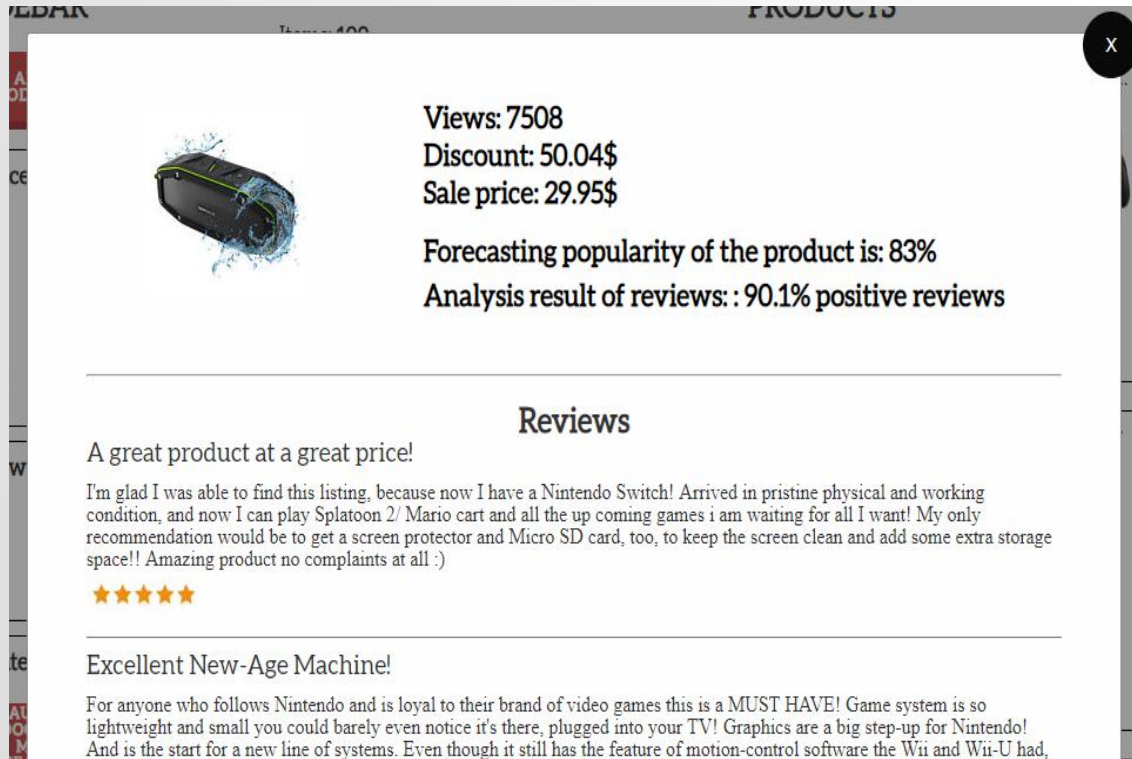


Chart of dependence between product views and discounts

The examples of pop-up windows with reviews and analysis results for 2 different products



Views: 7508
Discount: 50.04\$
Sale price: 29.95\$

Forecasting popularity of the product is: 83%
Analysis result of reviews: : 90.1% positive reviews

Reviews

A great product at a great price!

I'm glad I was able to find this listing, because now I have a Nintendo Switch! Arrived in pristine physical and working condition, and now I can play Splatoon 2/ Mario cart and all the up coming games i am waiting for all I want! My only recommendation would be to get a screen protector and Micro SD card, too, to keep the screen clean and add some extra storage space!! Amazing product no complaints at all :)

★★★★★

Excellent New-Age Machine!

For anyone who follows Nintendo and is loyal to their brand of video games this is a MUST HAVE! Game system is so lightweight and small you could barely even notice it's there, plugged into your TV! Graphics are a big step-up for Nintendo! And is the start for a new line of systems. Even though it still has the feature of motion-control software the Wii and Wii-U had,

Modal window with results of product analysis with a positive characteristic



Views: 6
Discount: 0.00\$
Sale price: 19.79\$

Forecasting popularity of the product is: 15%
Analysis result of reviews: : 24.6% negative reviews

Reviews

Mad

I ordered this by accident and hit return within 5 minutes of ordering so I know he got my cancellation order and got my message. The funny thing is this showed up at my house the very next day. He hasn't even emailed me back to let me know I can return it. I don't trust him. I want to return it

★★★★★

Fast Load Times, Beautiful Picture, Great Value, Xbox One S is better value...

For that price I think this console is a great deal. I had the day one edition of the xbox one and it was time for an update. I was either going to get an Xbox one S (\$200 at the time) or the X. I got the X and wasn't blown away by the picture (could be my eyes, my first generation 4K tv, or the Xbox) I wish i could return the Xbox to get the s but It turns out that Newegg doesn't accept returns. Ultimately, the load times are much faster than the Xbox one and the picture is better. It is a great value for \$400 and I recommend it if you have a 4K tv with HDR10. But with my current setup and my interests, I think the S would've been a better buy at \$200.

★★★★★

Modal window with results of product analysis with a negative characteristic

Conclusions:

Analogs and tests shown that represented method is optimal to use on enterprise production and has a great impact on business side.

The introduction of the developed system is expected to increase the effectiveness of the marketing department and increase the profit of the company as a whole.