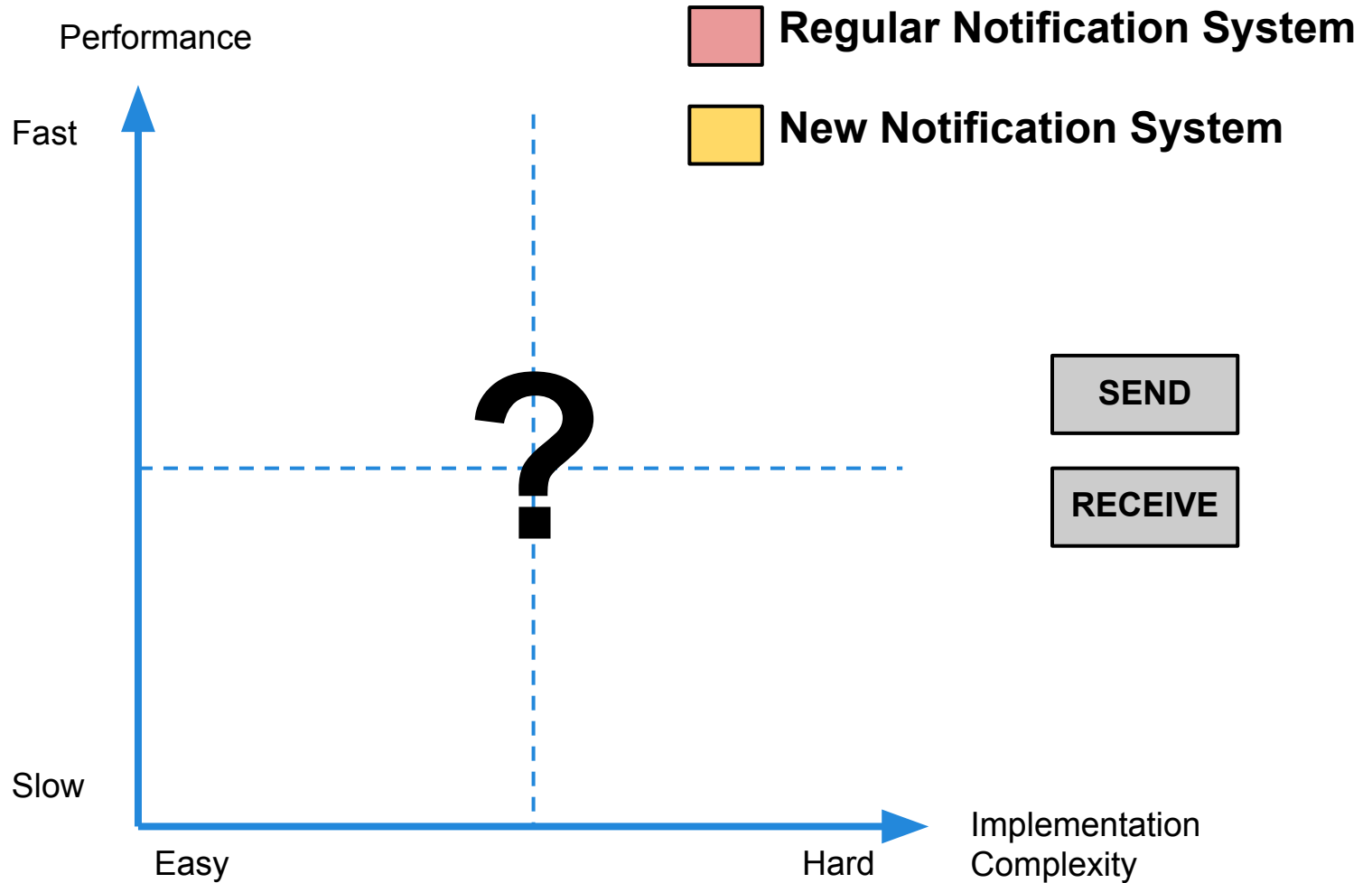


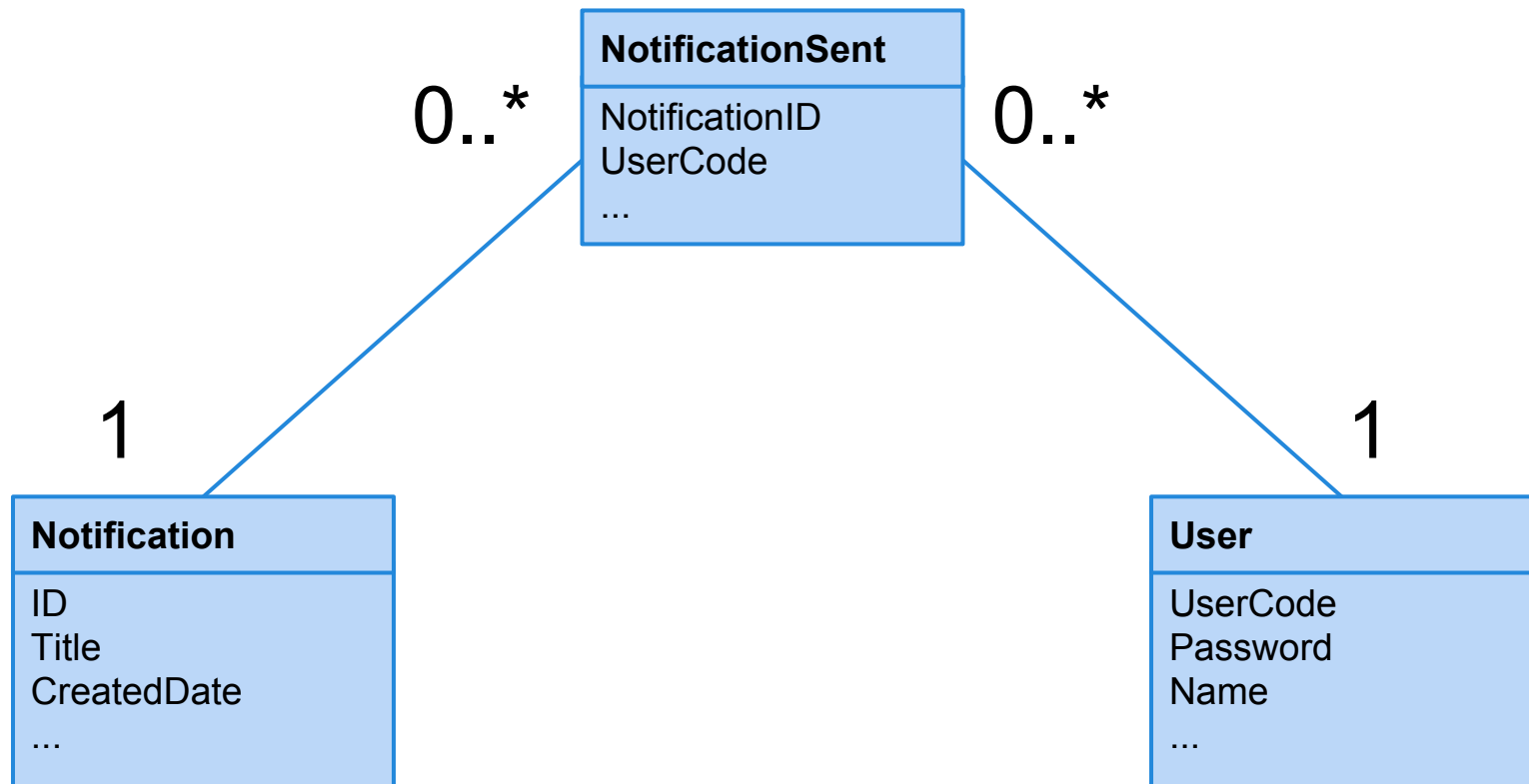
Notification System

FPT University - Capstone Project
Insurance Card

Objectives



Regular Notification System



Regular Notification System

Send notifications:

```
INSERT INTO Notification VALUES (...)
```

Create notification

Sent notification to all staffs

```
INSERT INTO NotificationSent VALUES (1, 1, NOW())
```

```
INSERT INTO NotificationSent VALUES (1, 2, NOW())
```

```
INSERT INTO NotificationSent VALUES (1, 3, NOW())
```

n is number of staffs
in system

```
INSERT INTO NotificationSent VALUES (1, n, NOW())
```

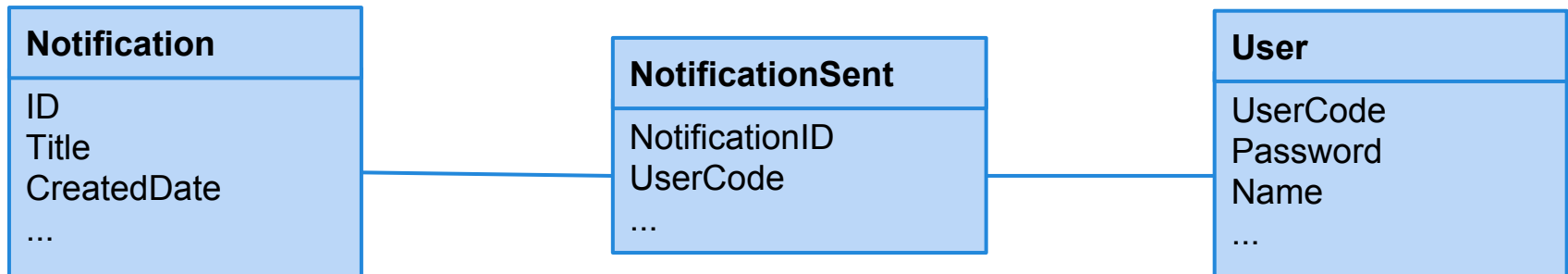
Regular Notification System

Receive notifications:

(Example, get all notifications from user with UserCode = NV0001)

```
SELECT n.*  
FROM Notification n  
JOIN NotificationSent ns  
ON n.Id = ns.NotificationId  
WHERE ns.UserCode = "NV0001"
```

(Have to join 2 tables)



New Notification System



Receiver: Regular Expression String

New Notification System

Examples:

- Send to all staffs:

```
^NV[0-9A-Z]{4,8}$
```

- Send to all staffs and customer **KH0005**:

```
^NV[0-9A-Z]{4,8}|KH0005$
```

- Send to staff **NV0001** and customer **KH0006**:

```
^NV0001|KH0006$
```

New Notification System

Send notifications:

Notification

ID
Title
CreateDate
Receiver
...

```
INSERT INTO Notification VALUES(..., "^NV[0-9A-Z]{4,8}$")
```

Pre-defined expression to
send to all staffs

New Notification System

Receive notifications:

(Example, get all notifications from user with UserCode = NV0001)

Notification

ID
Title
CreateDate
Receiver
...

```
SELECT * FROM Notification WHERE "NV0001" REGEXP Receiver;
```

MySQL function to
matches regular
expression value

Implementation complexity impact

 Regular Notification System

 New Notification System

SEND

1 query

>

SEND

Many queries

RECEIVE

1 query

>

RECEIVE

Many queries

Performance impacts

 Regular Notification System

 New Notification System

 SEND

1 query

>

 SEND

Many queries

Performance impacts

 Regular Notification System

 New Notification System



Performance impacts

```
1 SELECT n.*
2 FROM mic_notification n
3 JOIN mic_notification_sent ns
4 ON n.id = ns.notification_id
5 WHERE ns.user_code = "NV0001"
6
7
```

Visual Explain

Display Info:

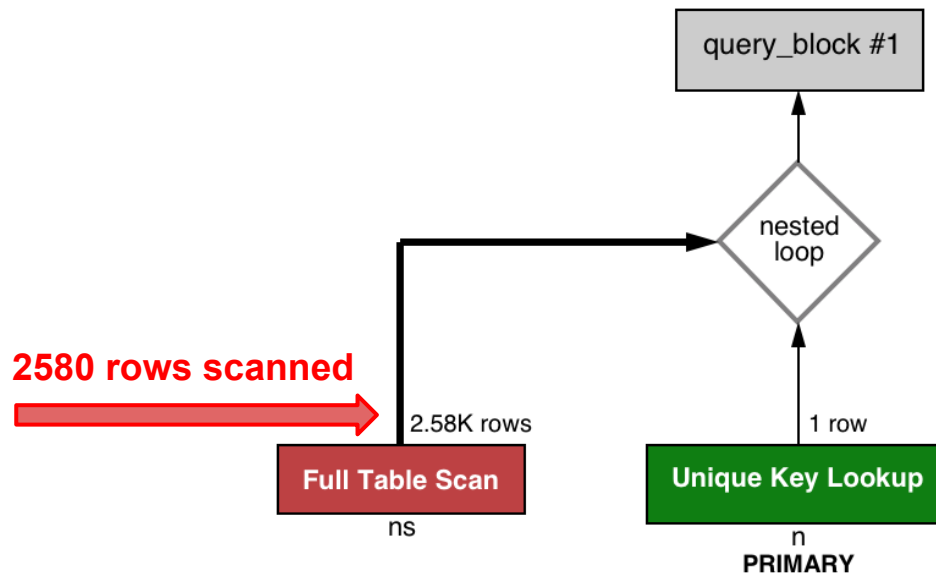
Read + Eval cost



Overview:



View Source:



JOIN



Result
Grid



Form
Editor



Field
Types



Query
Stats



Execution
Plan

Performance impacts

The screenshot shows a database query editor with the following SQL query:

```
1 SELECT * FROM mic_notification WHERE "NV0001" REGEXP Receiver;  
2
```

Below the query editor, the execution plan is displayed:

```
graph BT; A[query_block #1] -- 23 rows --> B[Full Table Scan]; B -- mic_notification --> C[mic_notification];
```

A red arrow points to the 'Full Table Scan' operation with the text '23 rows scanned'.

The interface includes a toolbar with the following options: Visual Explain, Display Info: Read + Eval cost, Overview, and View Source. On the right side, there is a sidebar with icons for Result Grid, Form Editor, and Field Types.

REGEXP

Performance impacts

 Regular Notification System

 New Notification System

100% 15:1

Result Grid Filter Rows: Search Export:

Query_ID	Duration	Query
1	0.00006800	SHOW WARNINGS
2	0.00109100	SELECT n.* FROM mic_notification n JOIN mic_notification_sent ns ON n.id = ns.notification_id...
3	0.00029100	SELECT * FROM mic_notification WHERE "NV0001" REGEXP Receiver LIMIT 0, 10000

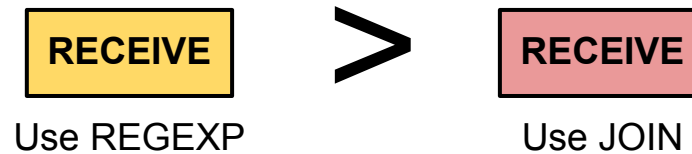
JOIN = 1.091 ms

REGEXP = 0.291 ms

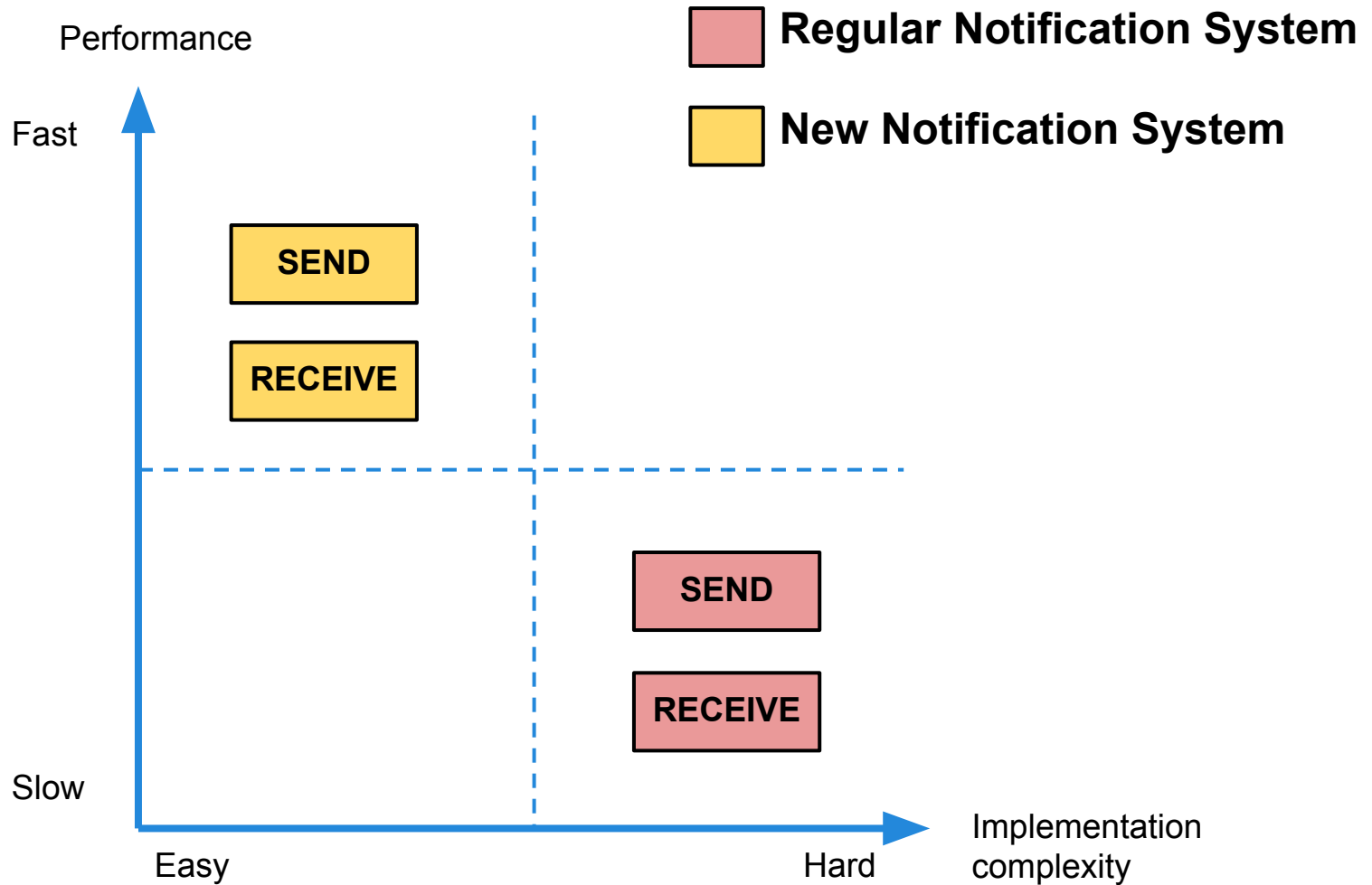
Performance impacts

 Regular Notification System



 New Notification System





Comparison



Advantages / Disadvantages

	 Regular Notification System	 New Notification System
Pros	<ul style="list-style-type: none">- 3NF standards- Easily back-tracking and analyzing notification data	<ul style="list-style-type: none">- Better performance- Easily for implementation
Cons	<ul style="list-style-type: none">- Complex in implementation- Poor performance	<ul style="list-style-type: none">- Very hard to back-tracking data and analyzing notification data

Advantages / Disadvantages

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Pros	<ul style="list-style-type: none">- 3NF standards- Easily back-tracking and analyzing notification data	<ul style="list-style-type: none">- Better performance- Easily for implementation
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Conclusion

New notification system is the best choice
for **this project**

Notification
ID
Title
CreateDate
Receiver
...

User
UserCode
Password
Name
...