





# LLM-POWERED CUSTOMER SUPPORT FOR LINEAGE

Final presentation for A-Lab 2024

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OF MANAGEMENT



# LINEAGE – WORLD'S LARGEST LOGISTICS AND WAREHOUSING OF FROZEN GOODS COMPANY

Logistics and warehousing...



...of frozen goods

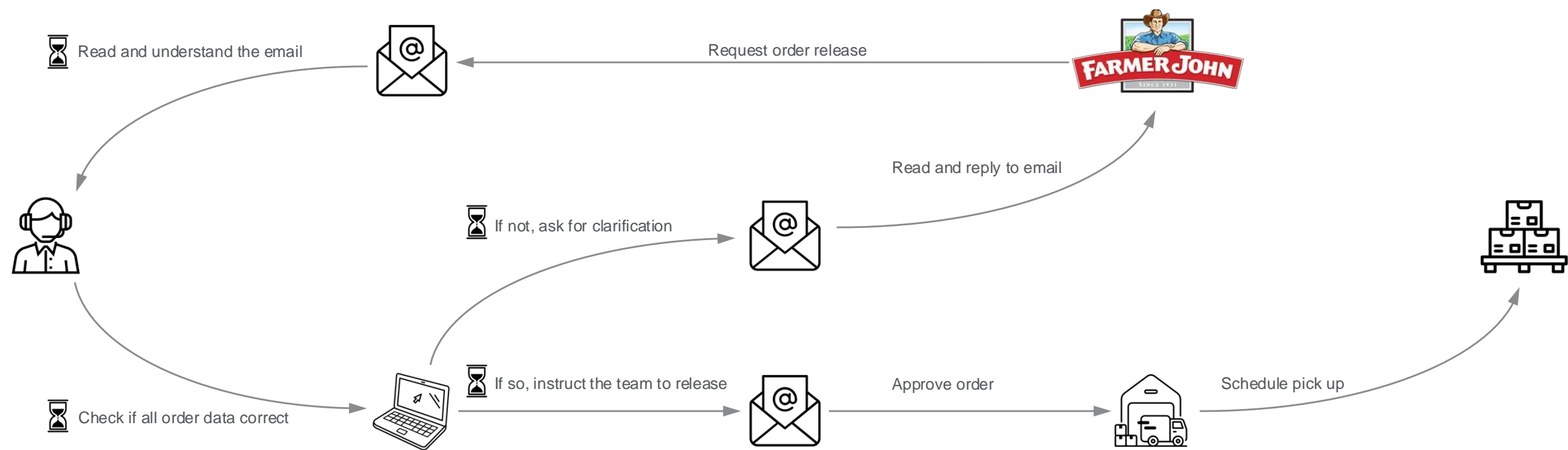


# PROJECT OBJECTIVE: AUTOMATE CUSTOMER SERVICE REQUESTS

**Now:** email handling is a highly manual and mostly repetitive task

Simplified process flow example for goods release

 Time consuming tasks



**Future:** most of incoming emails are automated, without the need for human interaction

Credits to icon designers: ainul muttaquin, Eucalyp, eskak, Graphixs\_Art, Kasanah, and Mol Media from Noun Project

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## VALUE AT STAKE

Based on Lineage's CSR  
budget and time allocation  
to customer email  
management

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Almost

**\$30M**

invested annually in CSRs email handling

# WE CREATED MORE PRECISE SUBCATEGORIES FOR ORDERS AND APPOINTMENTS

## Old categories

Orders

Appointments

Reporting

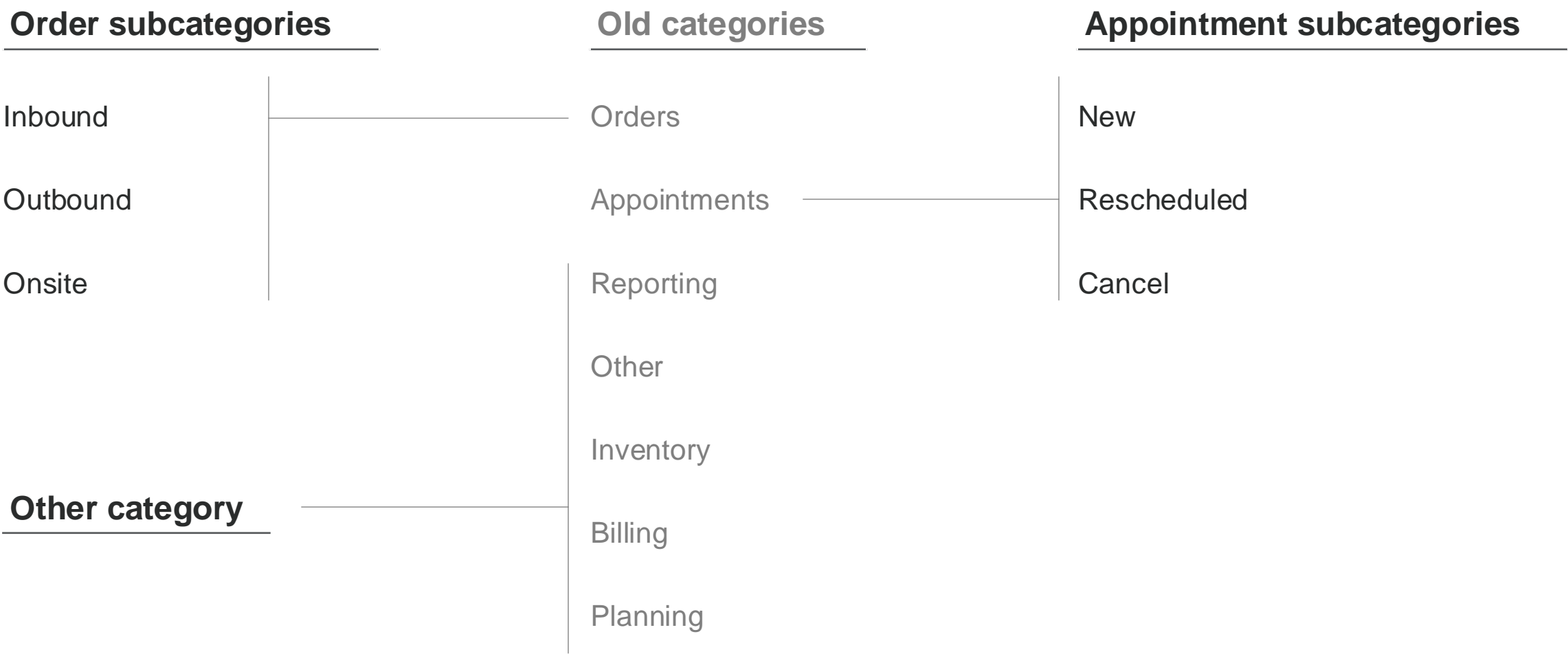
Other

Inventory

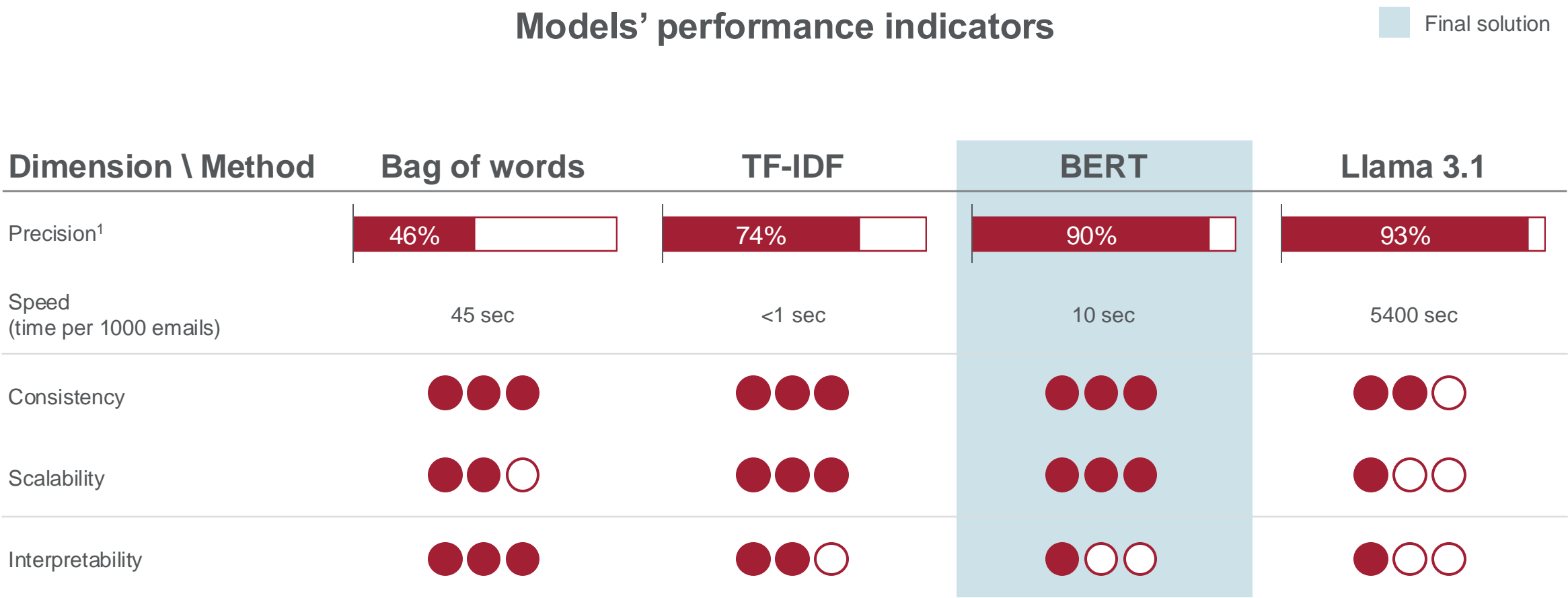
Billing

Planning

# WE CREATED MORE PRECISE SUBCATEGORIES FOR ORDERS AND APPOINTMENTS



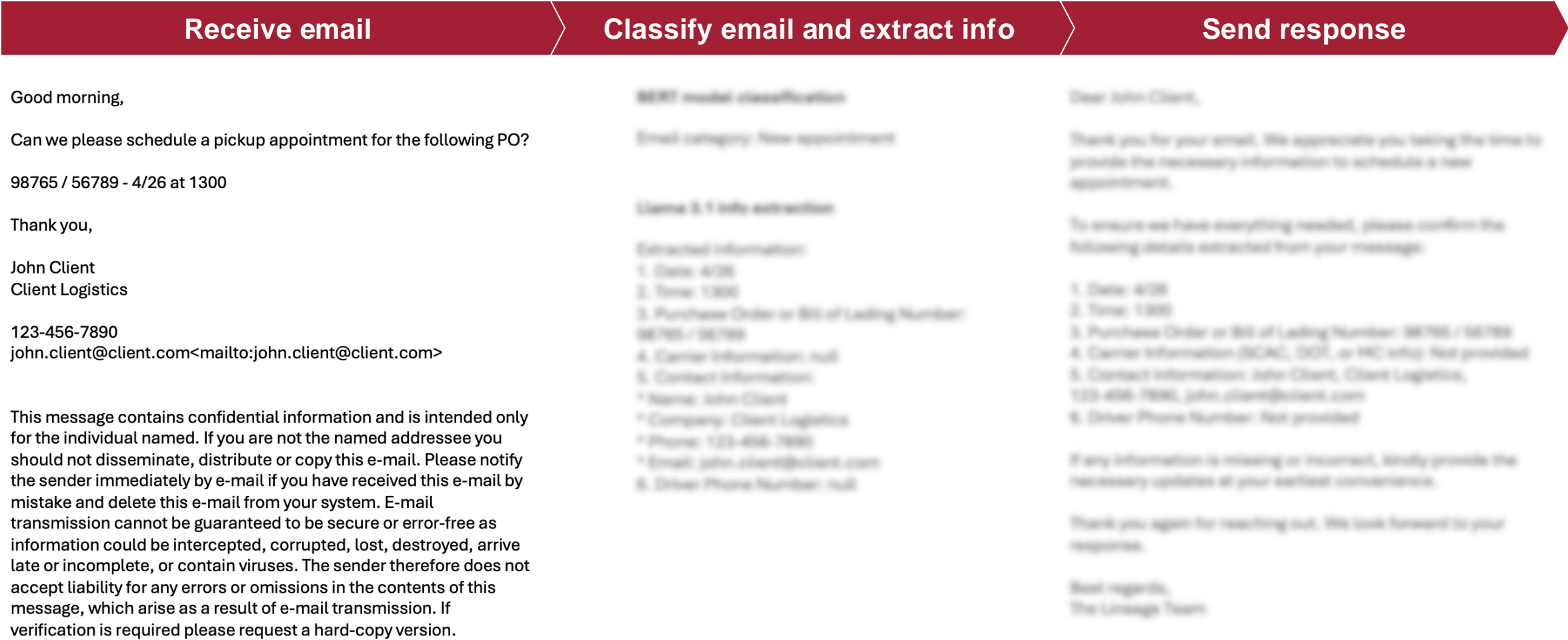
# BERT IS THE BEST CATEGORIZING MODEL AMONG FOUR ALTERNATIVES



1. Precision weighted by category size; BERT's precision for a model with a 94% threshold; Llama's precision expressed as truthfulness rate (= 1 – hallucination rate)

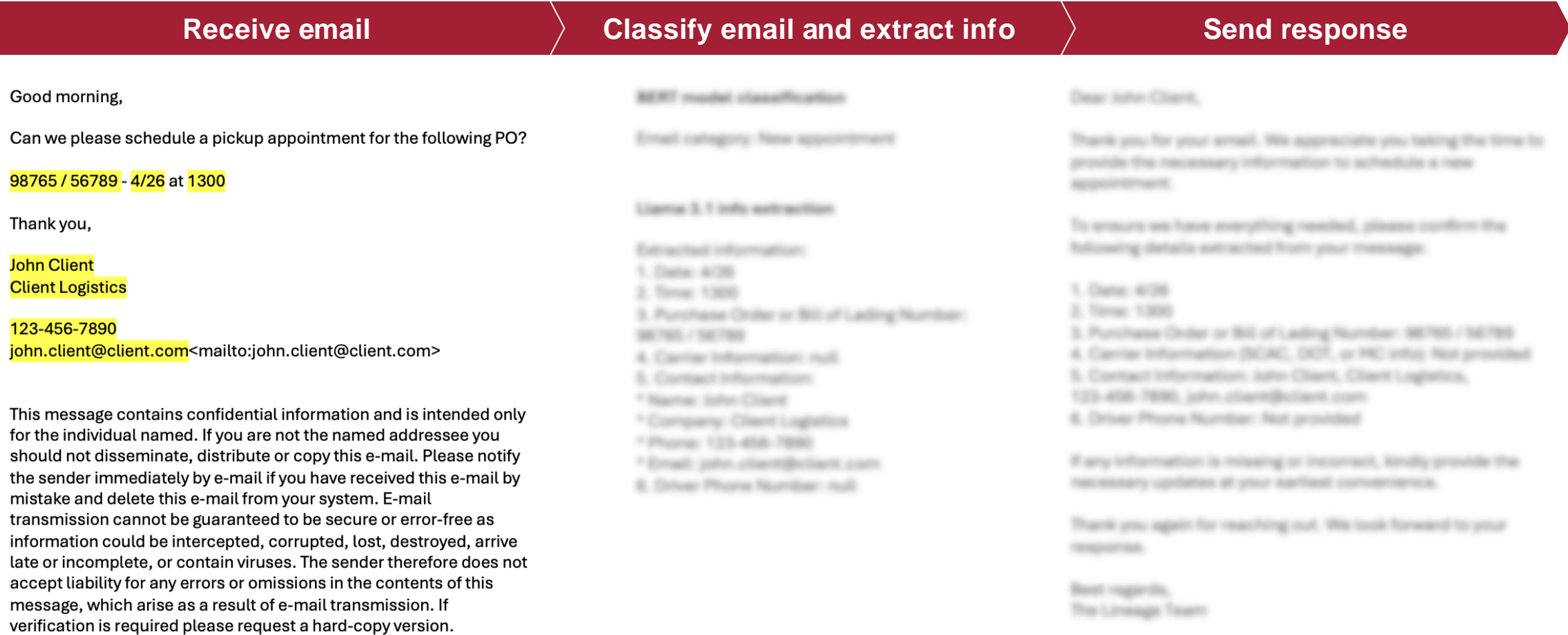


# FULL SOLUTION IN ACTION



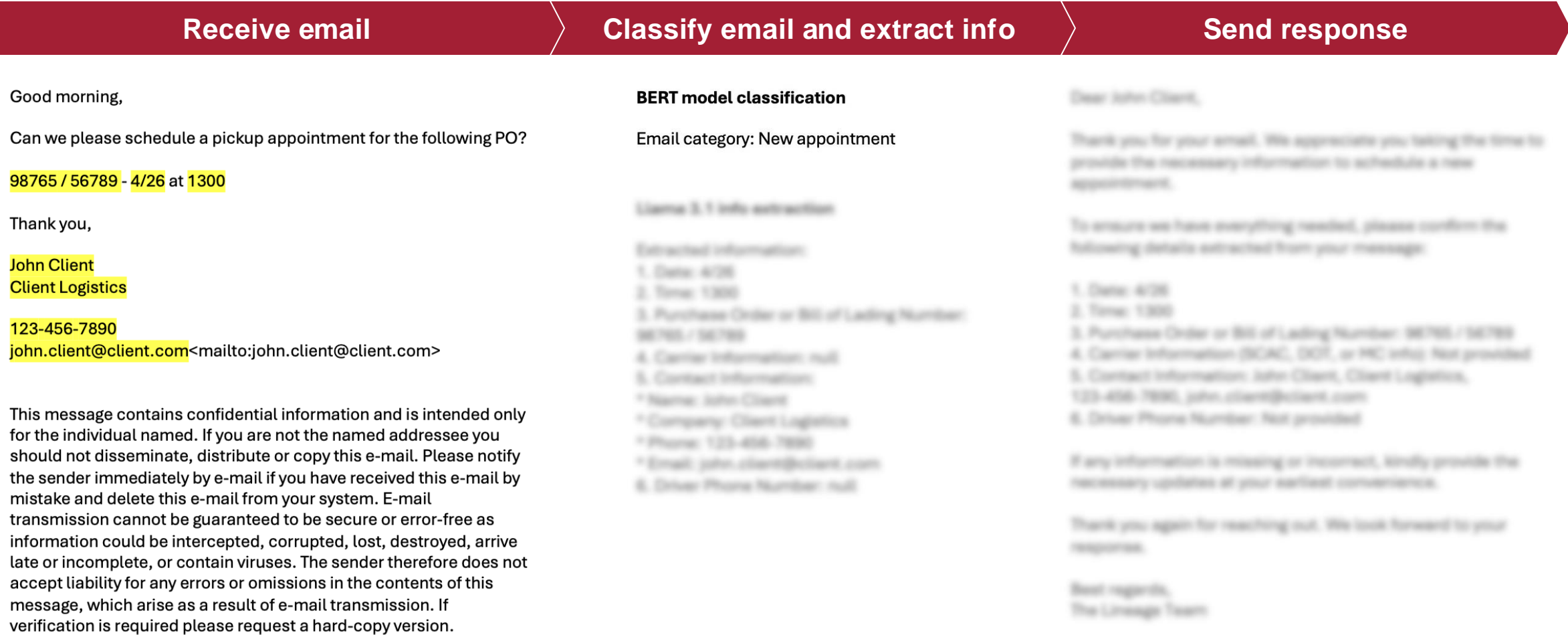
Note: Actual example. Client and order information anonymized.

# FULL SOLUTION IN ACTION



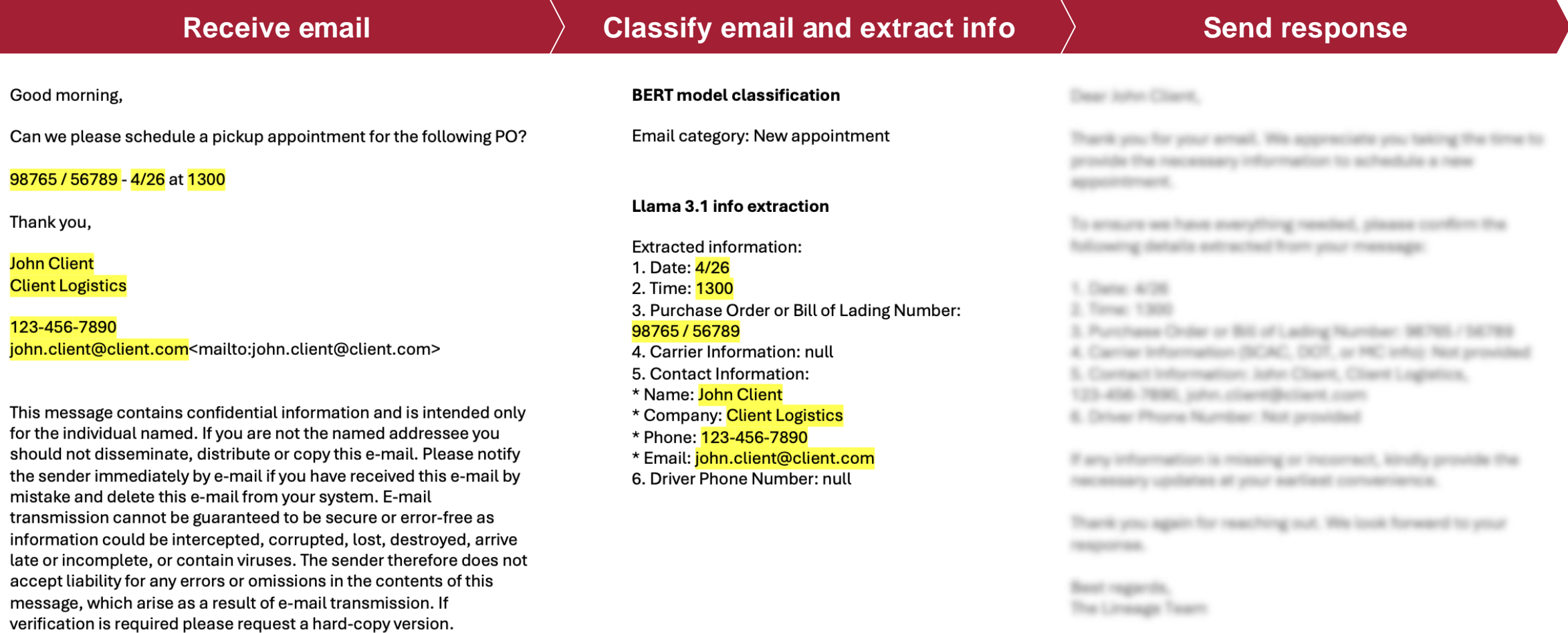
Note: Actual example. Client and order information anonymized.

# FULL SOLUTION IN ACTION



Note: Actual example. Client and order information anonymized.

# FULL SOLUTION IN ACTION



Note: Actual example. Client and order information anonymized.



# FULL SOLUTION IN ACTION

## Receive email

Good morning,

Can we please schedule a pickup appointment for the following PO?

98765 / 56789 - 4/26 at 1300

Thank you,

John Client  
Client Logistics

123-456-7890  
john.client@client.com<mailto:john.client@client.com>

This message contains confidential information and is intended only for the individual named. If you are not the named addressee you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system. E-mail transmission cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. The sender therefore does not accept liability for any errors or omissions in the contents of this message, which arise as a result of e-mail transmission. If verification is required please request a hard-copy version.

## Classify email and extract info

### BERT model classification

Email category: New appointment

### Llama 3.1 info extraction

Extracted information:

1. Date: 4/26
2. Time: 1300
3. Purchase Order or Bill of Lading Number: 98765 / 56789
4. Carrier Information: null
5. Contact Information:
  - \* Name: John Client
  - \* Company: Client Logistics
  - \* Phone: 123-456-7890
  - \* Email: john.client@client.com
6. Driver Phone Number: null

## Send response

Dear John Client,

Thank you for your email. We appreciate you taking the time to provide the necessary information to schedule a new appointment.

To ensure we have everything needed, please confirm the following details extracted from your message:

1. Date: 4/26
2. Time: 1300
3. Purchase Order or Bill of Lading Number: 98765 / 56789
4. Carrier Information (SCAC, DOT, or MC info): Not provided
5. Contact Information: John Client, Client Logistics, 123-456-7890, john.client@client.com
6. Driver Phone Number: Not provided

If any information is missing or incorrect, kindly provide the necessary updates at your earliest convenience.

Thank you again for reaching out. We look forward to your response.

Best regards,  
The Lineage Team