



SuppAIChain

SuppAI Chain Control Tower

RAISE Your HACK HACKATHON – Team: SuppAIChain Vultr Track

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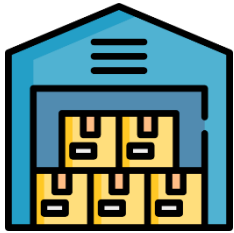


Business Context



Distribution Planning for Retail

Imagine a retail company with a regional warehouses that replenishes hundred of stores located in multiple countries worldwide.



Distribution planners send orders (with items, quantities and expected delivery dates) to **warehouse for preparation**: items are packed in boxes, loaded by pallets in trucks leaving for the airport.

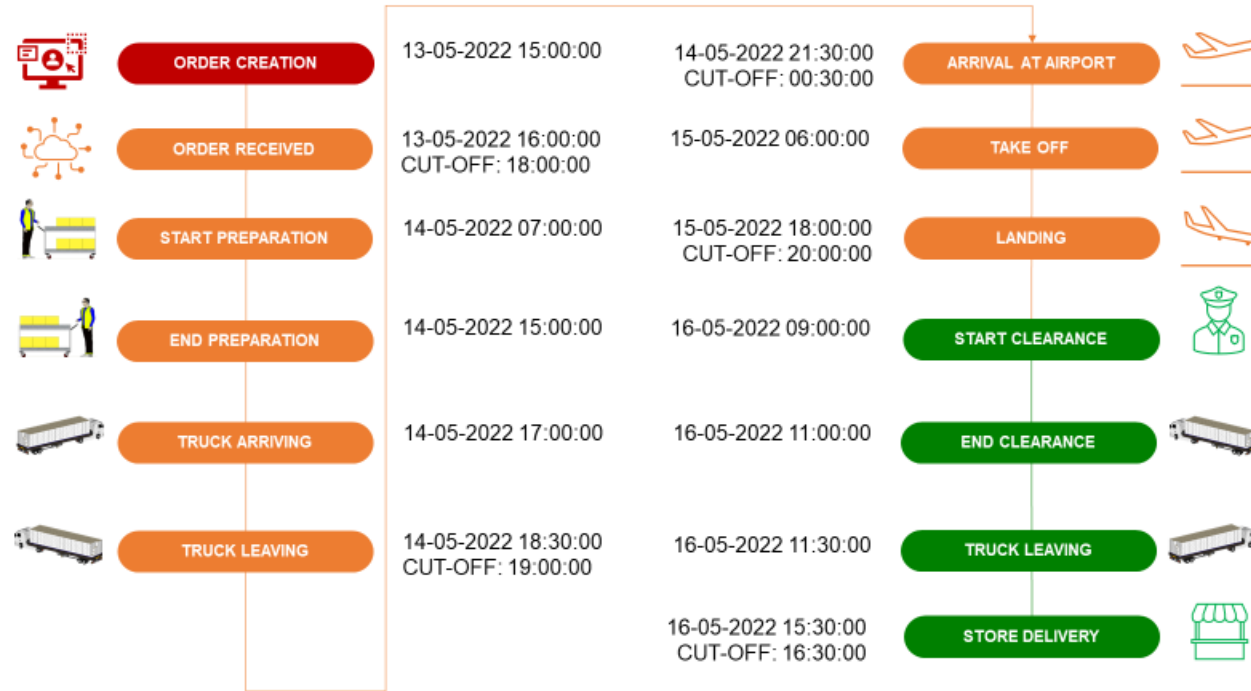
Distribution Planning for Retail



From the creation to store delivery, multiple systems manage goods flows at each step of distribution chain:

- **Order transmission:** order is transmitted to the warehouse management system
- **Order preparation:** goods are picked and packed in boxes (on pallets) that are loaded in trucks
- **Air Transportation:** trucks leave the warehouse to reach the airport for air freight to the destination country
- **Last Mile Delivery:** trip from the destination airport to the store

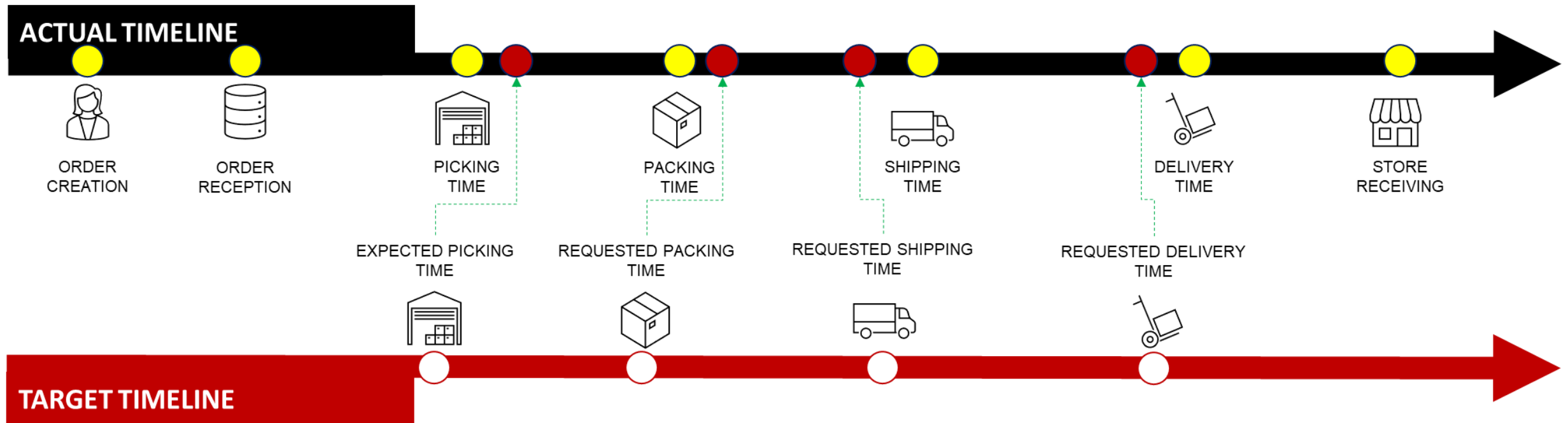
Distribution Planning for Retail



At each step, systems record timestamps that can be used to track the order along the distribution chain, measure performance and understand delays.

For instance: we know that the order preparation at the warehouse ended 14-05-2022 at 15:00:00

Distribution Planning for Retail



We can **compare the actual timestamps of a specific leg** with the **expected timestamp** based on target service levels.

For instance: if we suppose that we need 4 hours to pack an order after it has been created. If we created an order at 02:00 pm and this order shows a packing time of 06:30 pm we can flag the packing time as delayed.



Definition: Supply Chain Control Tower

What is a Supply Chain Control Tower?

A Supply Chain Control Tower is a set of dashboards that utilizes **these timestamps and on time flags** to provide end-to-end visibility and real-time monitoring of shipments enabling teams to detect delays and understand root causes.

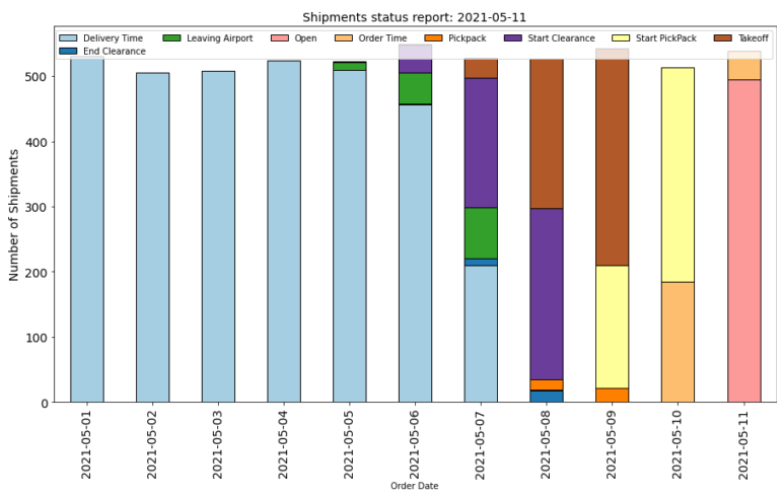
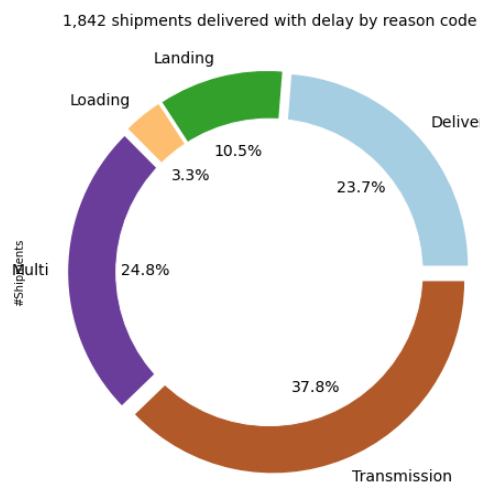
Flag ☐

Order Time	Order Date	City	Store	#Shipment	Order Amount	Transmission OnTime	Transmission	Start PickPack	Pickpack	Loading	Expected Loading Date	Loading OnTime
2025-07-01 17:00	01/07/2025	CITY2	CITY2/ST3	2025-07-01/CITY2/ST3/1	2742	FALSE	2025-07-02 17:00	2025-07-03 07:00	2025-07-03 16:18	2025-07-03 19:00	03/07/2025	TRUE
2025-07-04 14:00	04/07/2025	CITY3	CITY3/ST5	2025-07-04/CITY3/ST5/2	4808	TRUE	2025-07-04 14:58	2025-07-05 07:00	2025-07-05 12:55	2025-07-05 19:00	05/07/2025	TRUE
2025-07-01 16:00	01/07/2025	CITY4	CITY4/ST2	2025-07-01/CITY4/ST2/3	6758	FALSE	2025-07-02 17:00	2025-07-03 07:00	2025-07-03 12:56	2025-07-03 19:00	03/07/2025	TRUE
2025-07-05 12:00	05/07/2025	CITY5	CITY5/ST8	2025-07-05/CITY5/ST8/4	3003	TRUE	2025-07-05 13:35	2025-07-06 07:00	2025-07-06 15:37	2025-07-06 19:00	06/07/2025	TRUE
2025-07-03 19:00	03/07/2025	CITY3	CITY3/ST4	2025-07-03/CITY3/ST4/5	3759	FALSE	2025-07-04 17:00	2025-07-05 07:00	2025-07-05 14:53	2025-07-05 19:51	05/07/2025	FALSE

Flag ☐

Order Information

Time Stamps



Limitations of Classic Control Tower

The main issue faced by companies implanting these control towers using conventional dashboards built on top of data pipelines that will extract and clean data from systems is the limited user experience.

Distribution Planners often complain of the limited scope of these static dashboards and the difficulty of playing with filters and views to get the information they need.

As a large part of this population (distribution planners and performance managers) have limited programming skills **we need to provide them with tools** that can **enhance their capabilities in collecting insights from data**.

We aim to provide Analytics a Service Solutions to these operational teams so they can focus on diagnostic and operational improvement with the support of data.



SupplAI Chain Control Tower

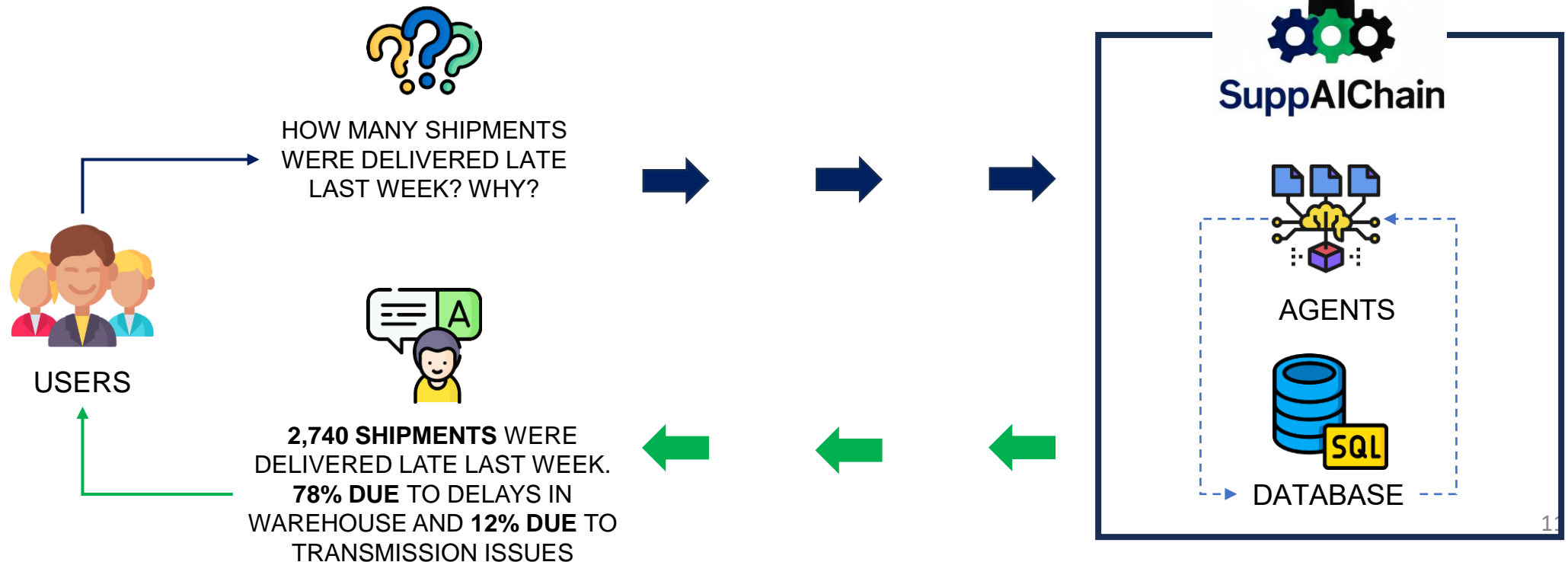


SuppAI Chain Control Tower - Presentation

With the **SuppAI Chain Control Tower**, users can directly interrogate the data with a conversational agent that will analyze the request, run an SQL query and formulate an answer using the results the query.

The agentic orchestration includes two agents:

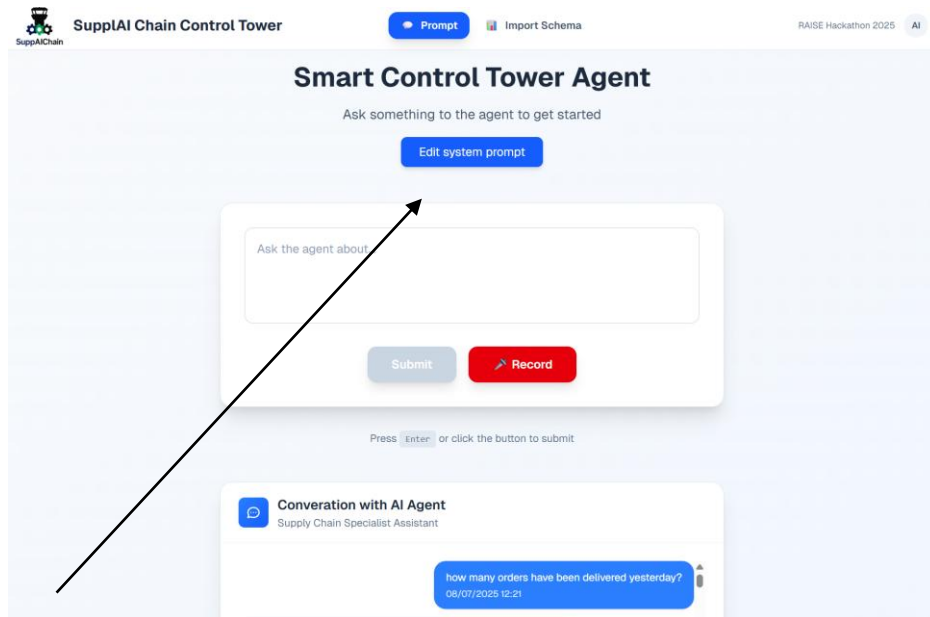
- A text-to-sql agent that generates and run queries on the database
- A code agent that writes code and executes it in a sandbox to generate visuals (Python)



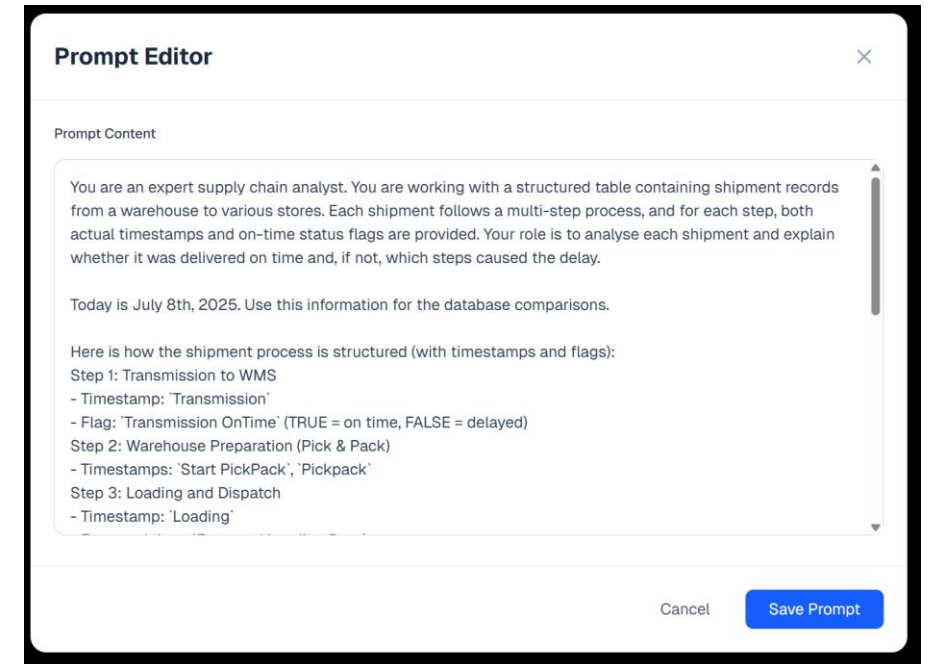
SupplAI Chain Control Tower – System Prompt

The agent knowledge of the database is concentrated in the system prompt that is accessible on the UI.

We have an **on-boarding process** to help users setting up the prompt by uploading a sample of the dataset and mapping the data schema.



System Prompt: accessible in the UI by clicking on System Prompt

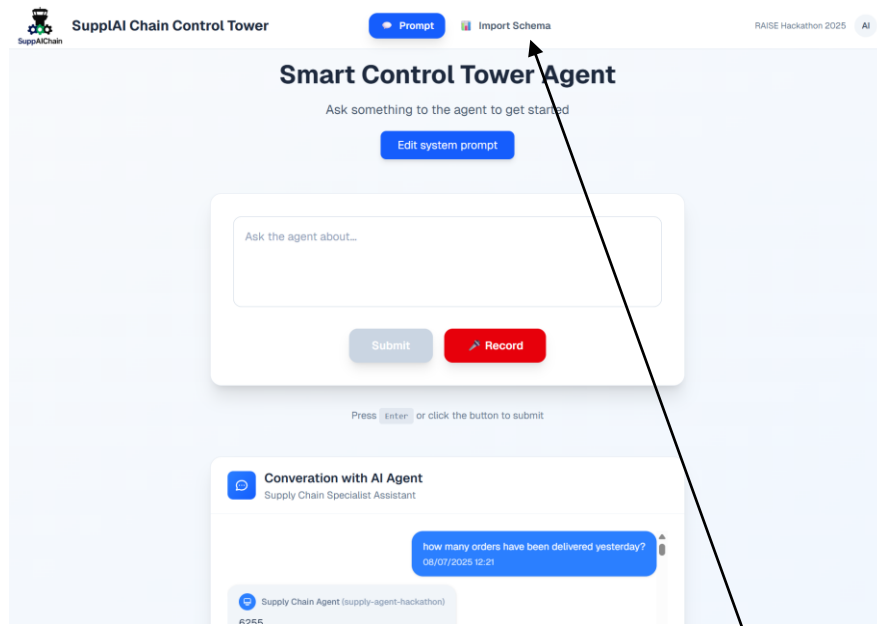


Prompt Editor: where users can edit the prompt generated by the On-boarding Agent presented in the next slide

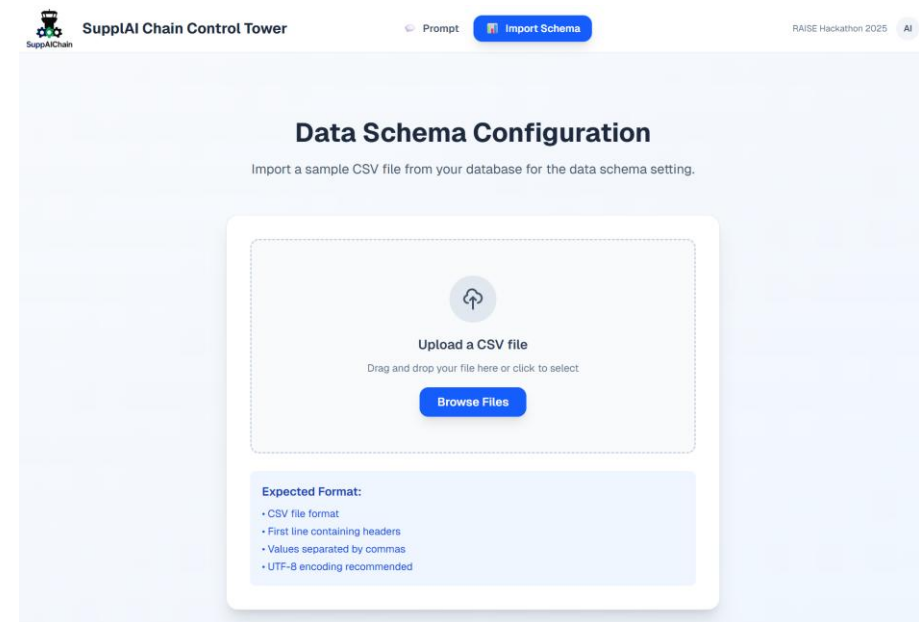
SupplAI Chain Control Tower – On Boarding

The agent knowledge of the database is concentrated in the system prompt that is accessible on the UI.

We have an **on-boarding process** to help users setting up the prompt by uploading a sample of the dataset and mapping the data schema.



Import Schema Page: click on the button on the top



Schema Page: upload your dataset here

SupplAI Chain Control Tower – On Boarding

After the user uploaded the data, a form will be created to ask the user to fill the schema with

- Description of each field: business description
- Data type that can be ID, Flag, Timestamp, Date, Location

Database Schema Configuration

5 rows • 32/32

Why this step?

The agent needs to understand the structure of your database to answer your questions. Configure each column by specifying its data type and adding a description. You can also exclude columns that are not relevant to you. The results will be used to generate the system prompt.

Table Name

Ex: inventory_data, supply_chain_data, products_...

Choose a descriptive name to easily identify your data.

Column Configuration

Keep	Column Name	Description	Data Type	Preview
<input checked="" type="checkbox"/> ✓ Yes		Ex: Product ID, stock quantity...	ID	0
<input checked="" type="checkbox"/> ✓ Yes	Order Time	Order Creation Time	ID	2025-07-01 17:00:00.000000
<input checked="" type="checkbox"/> ✓ Yes	Order Date	Order Creation Date	Date	2025-07-01
<input checked="" type="checkbox"/> ✓ Yes	City	City destination	ID	CITY2
<input checked="" type="checkbox"/> ✓ Yes	Store	Store destination	ID	CITY2/ST3

Define Schema Form: in this form the user will provide a description and the data type of each field

<input checked="" type="checkbox"/> ✓ Yes	Leaving Airport	Time when the truck leaves the i	ID	2025-07-05 11:33:50.199570
<input checked="" type="checkbox"/> ✓ Yes	City Arrival	Time when the truck arrives in tr	ID	2025-07-05 15:46:03.534515
<input checked="" type="checkbox"/> ✓ Yes	City Arrival Date	Date when the truck arrives in tr	Date	2025-07-05
<input checked="" type="checkbox"/> ✓ Yes	Store Open	Flag if the store is open when th	ID	True
<input checked="" type="checkbox"/> ✓ Yes	Delivery Time	Actual store delivery time	ID	2025-07-05 15:46:03.534515
<input checked="" type="checkbox"/> ✓ Yes	Delivery Date	Actual store delivery date	Date	2025-07-05
<input checked="" type="checkbox"/> ✓ Yes	Expected Delivery Time	Expected store delivery time	ID	2025-07-06 13:45:00.000000
<input checked="" type="checkbox"/> ✓ Yes	On Time Delivery	Flag of the on time delivery	ID	True

Import Summary:

- 32 column(s) will be imported
- 5 rows of data

Table: ddd

AnnulerUpload 32 column(s)

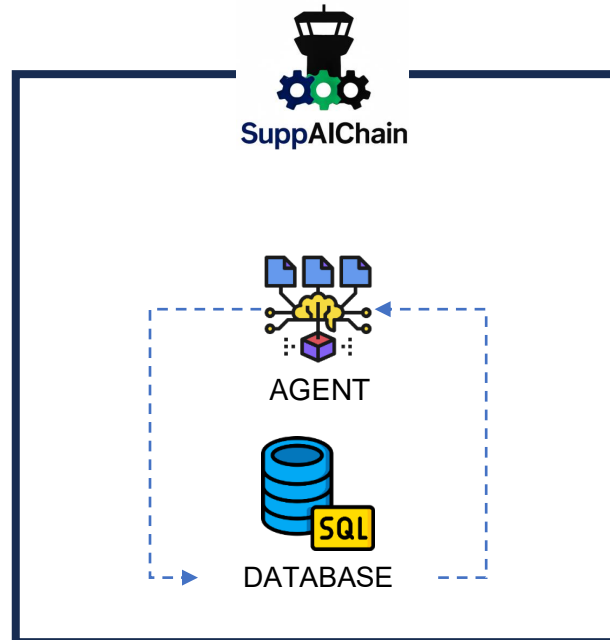
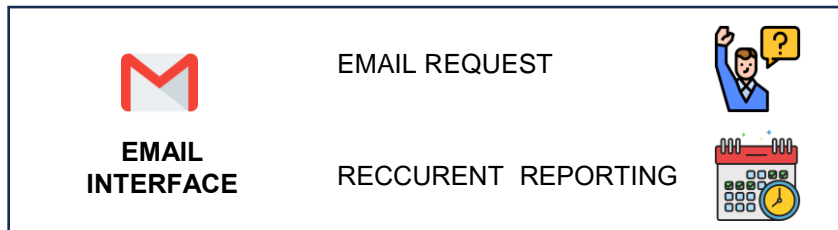
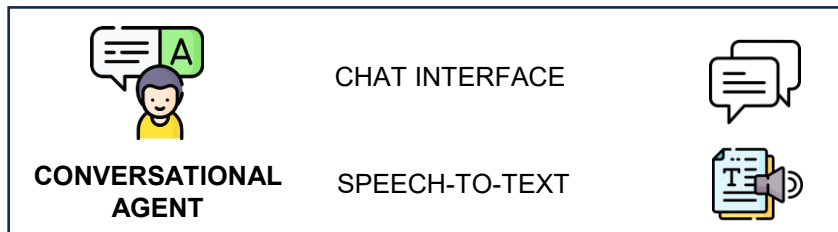
Confirm the schema: user will click on the button upload and the system prompt will be updated

SuppAI Chain Control Tower - Features

Around the core functionality of the text-to-sql agent, we have built features for the different usage distribution planners may have for their day-to-day operations.

Conversation features: when they would like an immediate answer to their questions (*For example: How many orders were delivered late last Sunday?*)

Email interface: to generate one-shot or recurring email reports focusing on specific scopes (*For example: Sending daily reports of orders with transmission issues to the IT team*)



ANSWER IN THE CHAT



ANSWER IN AN EMAIL

Introduction of the Database

Before trying the app, you may need some context about the dataset included in the app.

The dataset includes timestamps, flags and information for each leg of the distribution process for 50,000 shipments from May 1st to May 8th 2025:

- **Order information:** fields used to define the shipment in your questions
Example: Please tell me how many shipments were delivered late in CITY3?
- IT: inform us if the order has been transmitted on time (*Responsibility: IT team*)
- Warehouse: inform us about the start and end of order preparation (pickpack) and the loading time. (*Responsibility: Warehouse Team*)
- Road: covers the part of the truck leaving the warehouse to the airport (*Responsibility: Transportation team*)
- Air Freight: covers the air part between airports of the warehouse and the store (*Responsibility: Air Freight team*)
- Last Mile: road transportation from the destination airport to the store (*Responsibility: Last Mile Transportation team*)

Order Information	Order Time	2025-07-01 17:00:00.00
	Order Date	01/07/2025
	City	CITY2
	Store	CITY2/ST3
	#Shipment	2025-07-01/CITY2/ST3/
	Order Amount	2742
IT	Transmission OnTime	FALSE
	Transmission	2025-07-02 17:00:00.00
Warehouse	Start PickPack	2025-07-03 07:00:00.00
	Pickpack	2025-07-03 16:18:29.38
	Loading	2025-07-03 19:00:00.00
	Expected Loading Date	03/07/2025
	Loading OnTime	TRUE
	Loading Date	03/07/2025
Road	Airport Arrival	2025-07-03 22:00:55.52
	Airport OnTime	TRUE
	Airport Arrival Date	03/07/2025
Air Freight	Takeoff	2025-07-04 06:00:00.00
	Landing	2025-07-04 18:13:21.76
	Landing Date	04/07/2025
	Landing OnTime	TRUE
	Start Clearance	2025-07-05 09:00:00.00
	End Clearance	2025-07-05 10:55:13.20
	Leaving Airport	2025-07-05 11:33:50.19
Last Mile	City Arrival	2025-07-05 15:46:03.53
	City Arrival Date	05/07/2025
	Store Open	TRUE
	Delivery Time	2025-07-05 15:46:03.53
	Delivery Date	05/07/2025
	Expected Delivery Time	2025-07-06 13:45:00.00
	On Time Delivery	TRUE

Introduction of Flags

The flags will help the AI agent to perform the root cause analysis of late deliveries, they cover each leg of the distribution chain.

- **Transmission OnTime:** if the order has been transmitted on time to the WMS
Example: How many late transmissions we had the first week?
- **Loading OnTime:** if warehouse team loaded the truck on time
Example: How many late deliveries of May 6th involve late loading?
- **Airport OnTime:** if the truck arrived at the airport on time
Example: Which shipments of May 7th arrived late in at the airport?
- **Landing OnTime:** if the flight landed on time at the airport destination
- **Store Open:** if the store was open when the truck arrived the first time
If the store was not open, it means the truck missed a first delivery,
- **On Time Delivery:** main flag that will tell us if an order has been delivered on time

The last flag will tell us if an order is delivered on time while the other flags will help us to understand what failed in the process in case of late delivery.

Order Information	Order Time	2025-07-01 17:00:00.00
	Order Date	01/07/2025
	City	CITY2
	Store	CITY2/ST3
	#Shipment	2025-07-01/CITY2/ST3/
	Order Amount	2742
IT	Transmission OnTime	FALSE
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Warehouse	Start PickPack	2025-07-03 07:00:00.00
	Pickpack	2025-07-03 16:18:29.38
	Loading	2025-07-03 19:00:00.00
	Expected Loading Date	03/07/2025
	Loading OnTime	TRUE
	Loading Date	03/07/2025
Road	Airport Arrival	2025-07-03 22:00:55.52
	Airport OnTime	TRUE
	Airport Arrival Date	03/07/2025
Air Freight	Takeoff	2025-07-04 06:00:00.00
	Landing	2025-07-04 18:13:21.76
	Landing Date	04/07/2025
	Landing OnTime	TRUE
	Start Clearance	2025-07-05 09:00:00.00
	End Clearance	2025-07-05 10:55:13.20
	Leaving Airport	2025-07-05 11:33:50.19
Last Mile	City Arrival	2025-07-05 15:46:03.53
	City Arrival Date	05/07/2025
	Store Open	TRUE
	Delivery Time	2025-07-05 15:46:03.53
	Delivery Date	05/07/2025
	Expected Delivery Time	2025-07-06 13:45:00.00
	On Time Delivery	TRUE

Chat Interface

The core functionality of the tool with which users can interrogate the database about their shipments.

Chat Box where users can ask questions



Chat Box where users can ask questions



Previous interactions are recorded here



Smart Control Tower Agent

Ask something to the agent to get started

Edit system prompt

Which stores were delivered late yesterday?



Submit

Record

Press **Enter** or click the button to submit



Converation with AI Agent

Supply Chain Specialist Assistant

How many shipments have been created the first day of the month?

08/07/2025 07:11



Supply Chain Agent (supply-agent-hackathon)

6248

08/07/2025 07:11

How many shipments are delivered per day? List me all the days

07/07/2025 17:39



Supply Chain Agent (supply-agent-hackathon)

The number of shipments delivered per day is as follows:

[{'Delivery Date': '2025-07-04', 'num_shipments': 2403},

Speech-to-text

Users can select **Record** to use the Speech-to-text functionality to dictate their question.

Button for the Speech-to-text functionality:



Smart Control Tower Agent

Ask something to the agent to get started

Edit system prompt

Which stores were delivered late yesterday?



Submit

Record

Press **Enter** or click the button to submit

Converation with AI Agent

Supply Chain Specialist Assistant

How many shipments have been created the first day of the month?
08/07/2025 07:11

Supply Chain Agent (supply-agent-hackathon)
6248
08/07/2025 07:11

How many shipments are delivered per day? List me all the days
07/07/2025 17:39

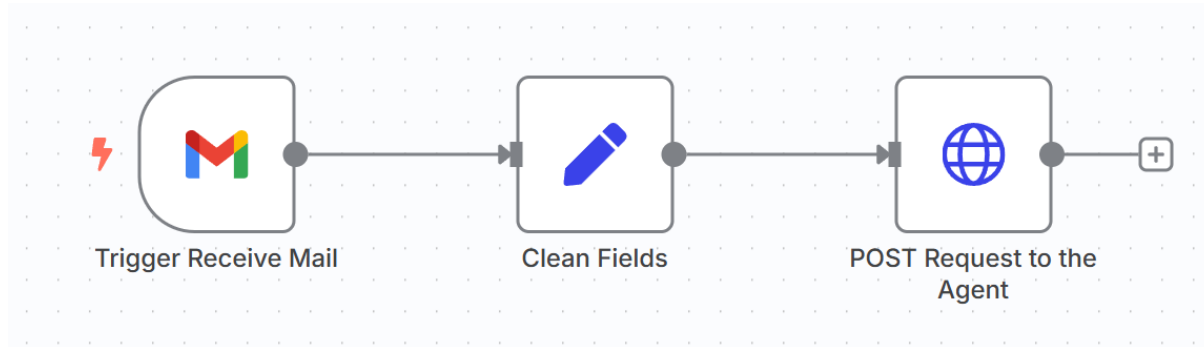
Supply Chain Agent (supply-agent-hackathon)
The number of shipments delivered per day is as follows:
[{'Delivery Date': '2025-07-04', 'num_shipments': 2403},

Email Request - Architecture

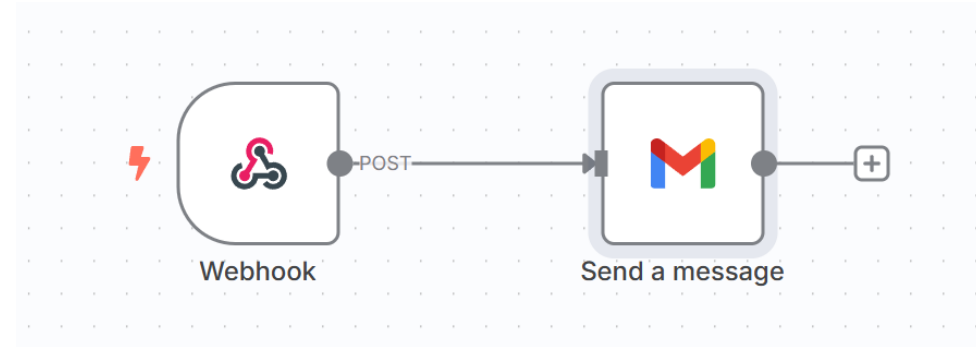
Users can send an email to logigreenbot@gmail.com to ask operational questions about the database. They will receive an answer after a few seconds.

The orchestration relies on **two n8n workflows** to:

- **Step 1:** collect the request using the Gmail node and send it to the agent via POST request to backend
- **Step 2:** receive the answer (via POST request) and mail it to the sender using the Gmail node



Step 1: n8n workflow to receive user request by email



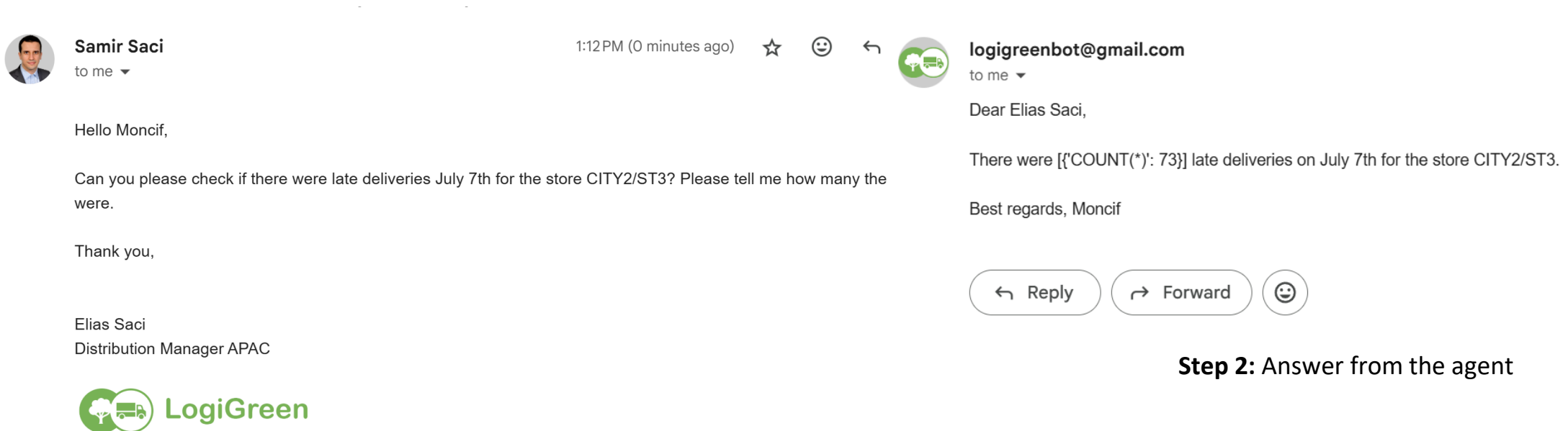
Step 2: n8n workflow to collect the answer from the agent and send it to the user

Email Request – Scenario of Usage

Let us imagine you are the supply planner in charge of **CITY2/ST3** located in **CITY2**.

You received a message from your manager asking if there **were late deliveries for this store yesterday**.

No problem! Just forward the email to the agent and it will answer you.



Step 2: Answer from the agent

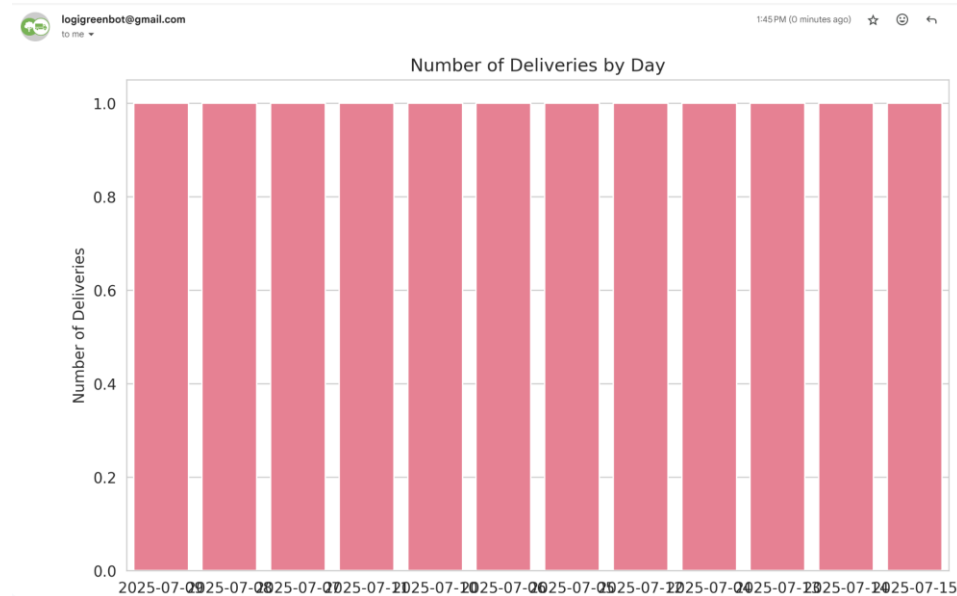
Step 1: Email from the distribution manager that we will forward

Email Request – Recurring Reports

We have setup, using CRON jobs, recurring reports that are sent by email:

Every week the agent is asked to collect the number of orders delivered the last 7 days:

- The code agent is using **SQL to collect data** and **Python** to generate a bar plot



Example of Visualization built with the code agent to generate visuals

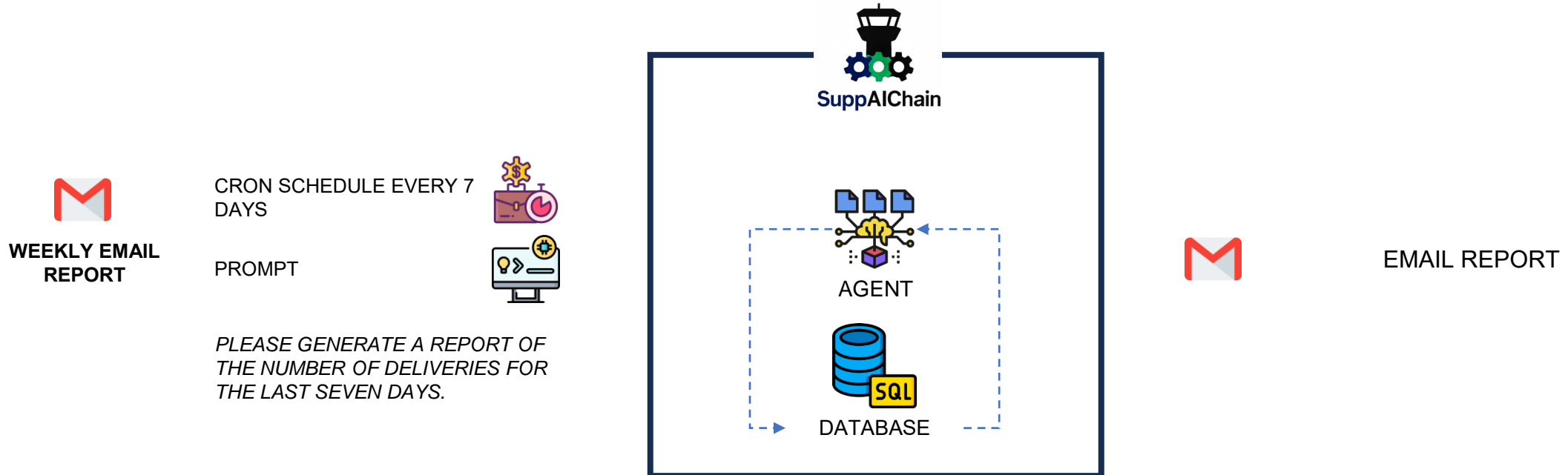
WIP: the Agent still requires some calibration

Email Reporting - Architecture

We can setup recurring reports that will send to operational teams to check specific metrics on a frequent basis.

For instance, we have setup a weekly report of the number of delivered the last seven days.

This report is generated by the conversational agent that **will write a written report** and the **code agent that will generate visualizations using Python**.





Try it!



Try it! – Chat Interface

Access the app here: [Follow the link](#)

Step 1: Write your question in the chatbox.

(Example: How many orders have been delivered yesterday?)

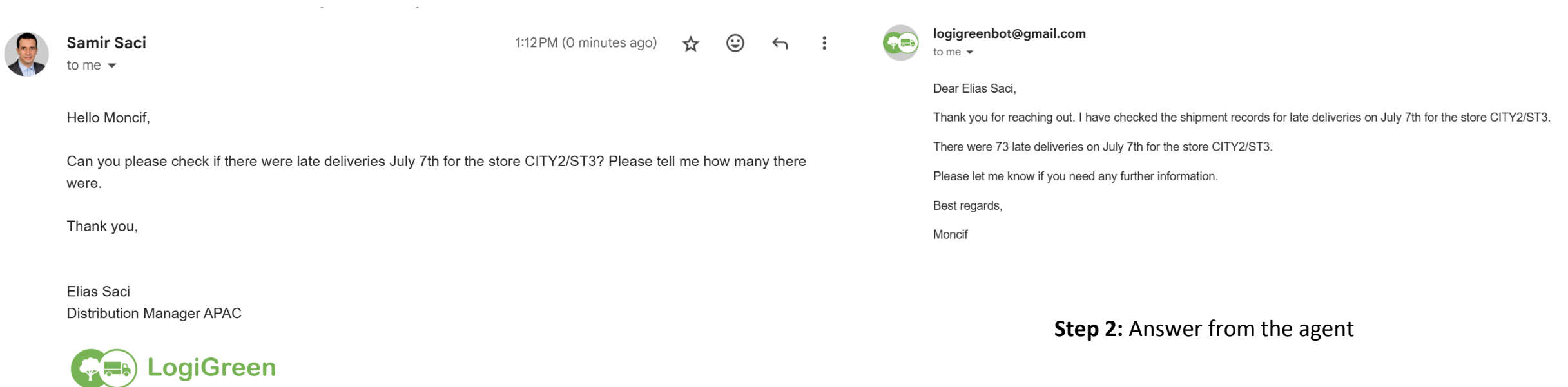
Step 2: Check the answer below

The screenshot displays the 'SupplAI Chain Control Tower' web application. At the top, there is a navigation bar with the SupplAIChain logo, the title 'SupplAI Chain Control Tower', and buttons for 'Prompt' and 'Import Schema'. The main heading is 'Smart Control Tower Agent', followed by the instruction 'Ask something to the agent to get started' and an 'Edit system prompt' button. A large text input box contains the example question: 'How many orders have been delivered yesterday?'. Below the input box are 'Submit' and 'Record' buttons. A hint below the buttons says 'Press Enter or click the button to submit'. The bottom section, titled 'Conversation with AI Agent' and 'Supply Chain Specialist Assistant', shows a chat log. The user's question is in a blue bubble with a timestamp of '08/07/2025 12:13'. The agent's response, in a light blue bubble, is '6255'.

Try it! – Email Interface

Send an email to logigreenbot@gmail.com with your request in the body.

The answer will be sent back to you.



Step 1: Email with the request in the body

Step 2: Answer from the agent



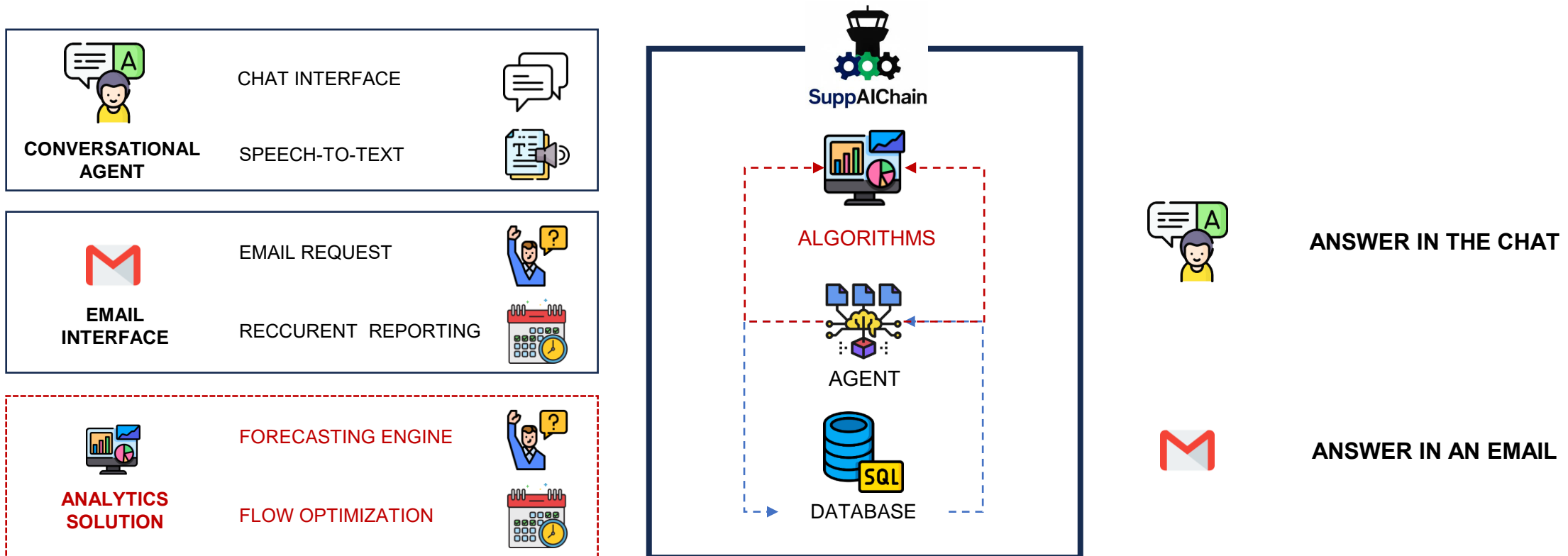
Potential



SuppAI Chain Control Tower - Potential

We have built the core of the tool that provides descriptive analytics as-a-service to distribution planners with the conversational agent (and code agent) accessing the database to answer questions and generate email reports.

The next step is to include prescriptive, diagnostic and predictive analytics by equipping the agent with advanced algorithms that will use the data available to generate insights that could be provided in the chat or by email.





Our Team





Samir Saci

Supply Chain Engineer / Data Scientist

- ✓ 9+ years of experience in Supply Chain Performance Optimization in Asia and Europe
- ✓ Data Scientist specialized in Forecasting and Process Optimization
- ✓ Costs Reduction, Sustainability
- ✓ Founder of the startup LogiGreen. We design AI & Analytics solutions to help companies reduce the environmental footprint and cost of their supply chain.



Linkedin Profile: [Samir SACI](#)



Elias Saci

Full Stack Developer

- ✓ 5+ years of experience as a full stack developer with 15+ projects in web2 / web3
- ✓ Co-founder of the startup Logigreen specialized in the deployment of analytics solutions
- ✓ Graduated from 42 School in Software Engineering and Sorbonne University in Finance
- ✓ Involved in multiple projects using GenAI to boost productivity in web development



Linkedin Profile: [Elias SACI](#)



Moncif El-Mouden

Software Engineer

- ✓ Software Engineer with 3 years experience in the Banking Industry
- ✓ Experienced AI developers with a track records of 5+ hackathon
- ✓ Future PhD. Candidate in AI applied to Economics and Law
- ✓ Startup founder in AI for Cybersecurity



Profile: [Moncif El-Mouden](#)



Thank you!