AI IMPACT ON

TECH SALARIES

Bad Boys Club

Alan Valbuena - Ariel Buenfil - Damaris Dzul - Diego Monroy - Paulina Chiquete - Sergio Barrera

OVERVIEW

This project presents a comprehensive data engineering solution designed to analyze the impact of artificial intelligence (particularly the ChatGPT boom starting November 2022) on technology sector salaries worldwide. The solution encompasses a multi-service architecture that processes, stores, analyzes, and visualizes 65,117 salary records spanning 2020-2025.

SYSTEM ARCHITECTURE

- API Service (Flask) → CRUD + analytics endpoints.
- Web Service (HTML) → Interactive dashboard.
- Injector Service → ETL pipelines (CSV/JSON processing).
- PostgreSQL → Structured data (salaries, users).
- MongoDB → Semi-structured data (metadata, sessions).

Benefits: scalability, modularity, and portable deployment.

MICROSERVICE - DBS

PORT: 27017

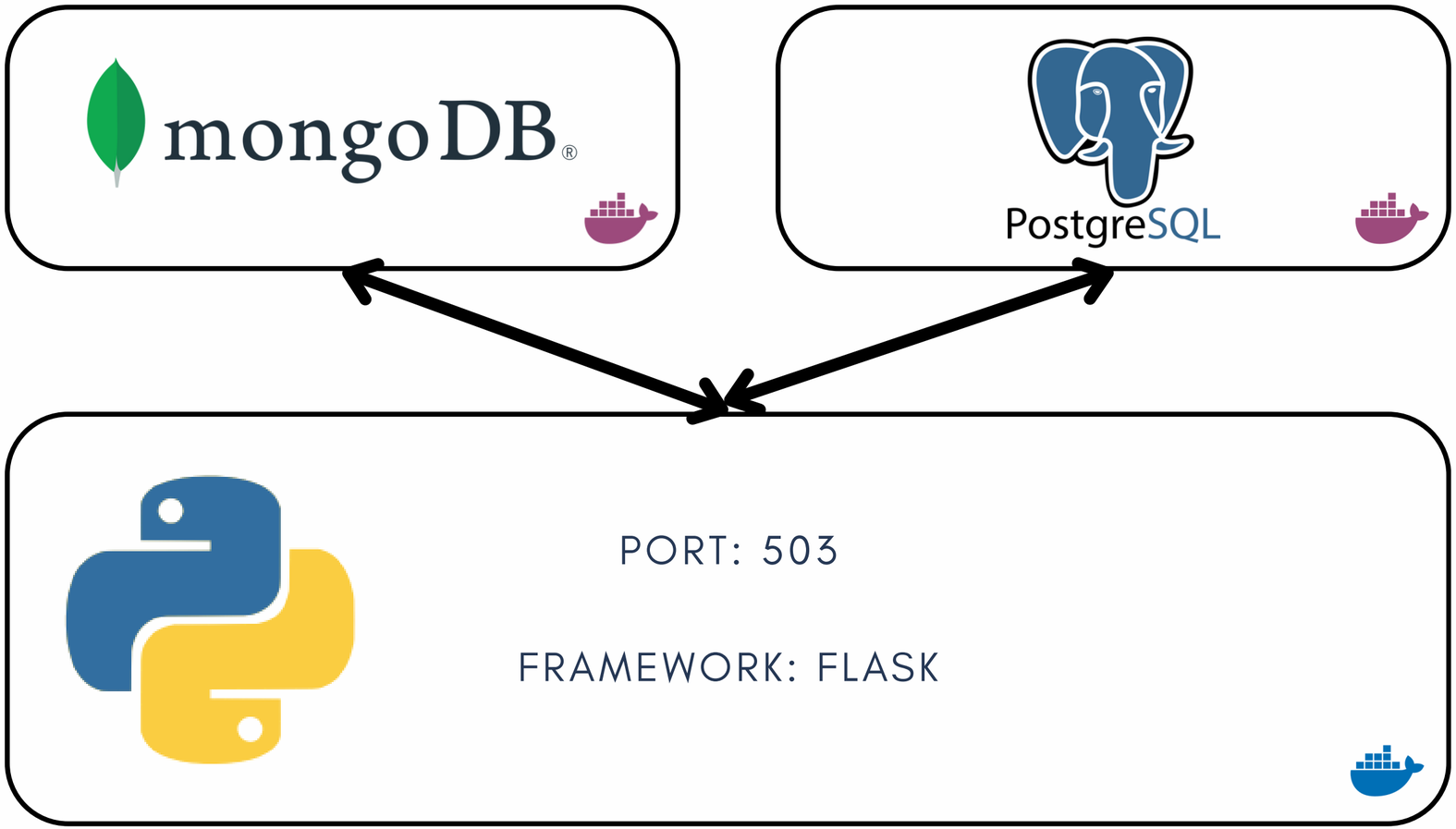
VOLUMES:
- MONGO_DATA
- MONGO-INIT.JS

PORT: 5432

VOLUMES:
- POSTGRES_DATA

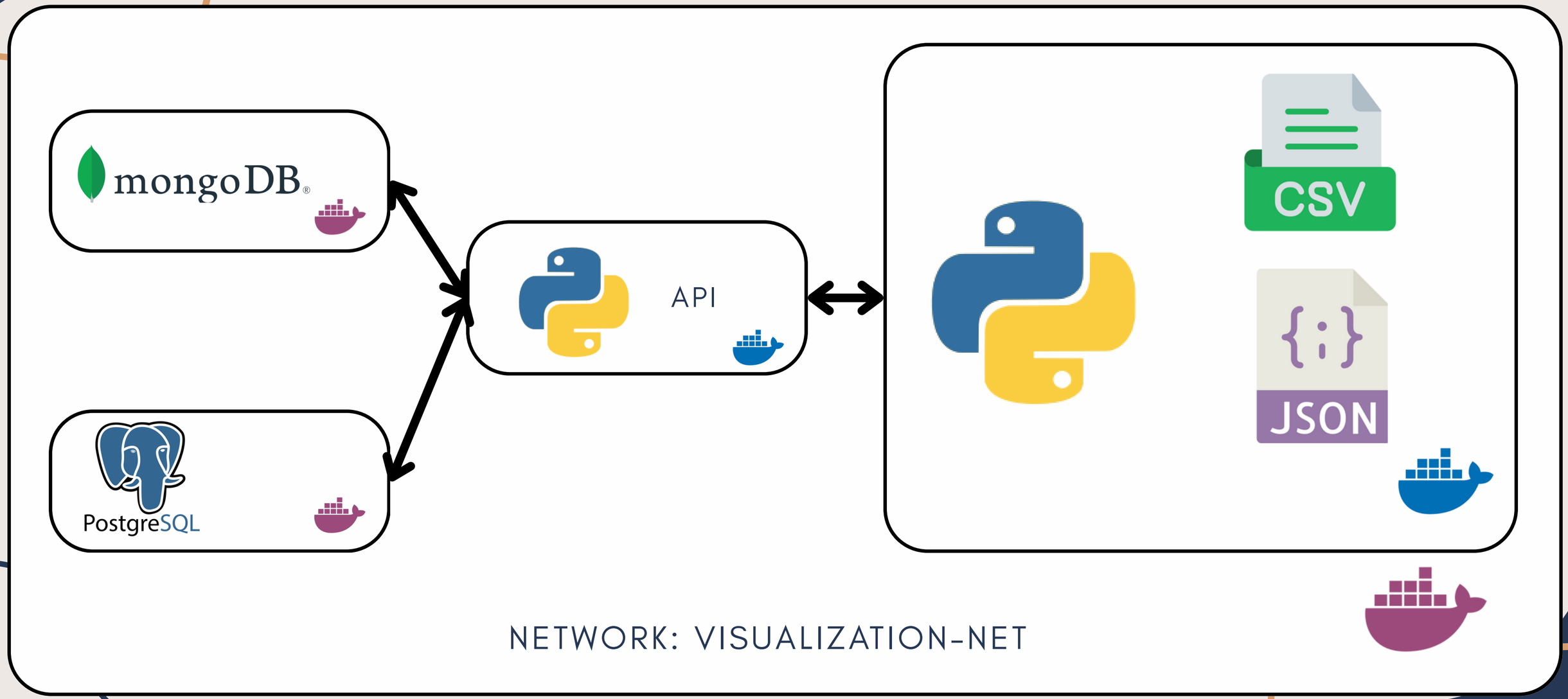
NETWORK: VISUALIZATION-NET

MICROSERVICE - API



NETWORK: VISUALIZATION-NET

MICROSERVICE - INJECTOR



SUBMISSION METHODS

MICROSERVICE - INJECTOR

```python
import os
import timeit
from dotenv import load_dotenv
from Scripts.Portfolio.json_process import NoSQL_Process
from Scripts.Portfolio.csv_process import SQL_Process
from Scripts.Project.csv_process import SQL_Process_Proyecto
from Scripts.Project.utils import benchmark_class_methods
from Scripts.Project.utils import save_benchmark_data

if __name__ == "__main__":

    load_dotenv()

    send_postgres_proyecto_A = SQL_Process_Proyecto('A', 'tech_salaries_v2')
    send_postgres_proyecto_B = SQL_Process_Proyecto('B', 'tech_salaries_v2')
    send_postgres_proyecto_C = SQL_Process_Proyecto('C', 'tech_salaries_v2')
    send_postgres_proyecto_D = SQL_Process_Proyecto('D', 'tech_salaries_v2')
    send_postgres_proyecto_A.procesar()
    send_postgres_proyecto_B.procesar()
    send_postgres_proyecto_C.procesar()
    send_postgres_proyecto_D.procesar()
    print("¡Registros subidos!")
```

SUBMISSION METHODS

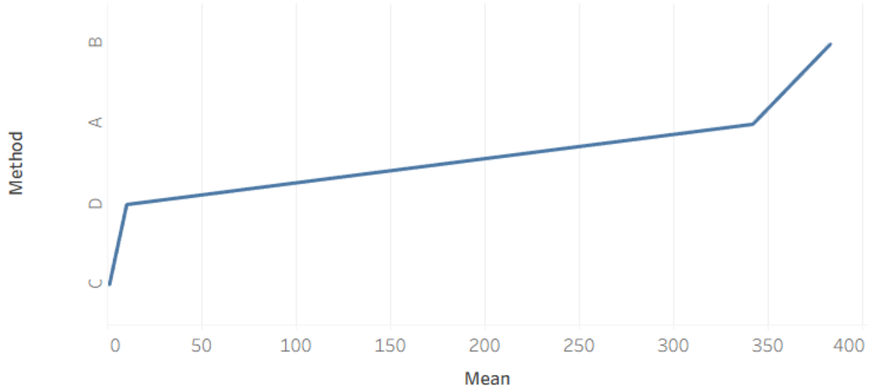
MICROSERVICE - INJECTOR

- **A**: PROCESAR EL DATASET REGISTRO POR REGISTRO, VALIDAR EL TIPO DE DATO QUE ES Y SI TODO ESTA BIEN, SUBIRLO AL API IGUAL REGISTRO POR REGISTRO.
- **B**: PROCESAR EL DATASET COMO UN DATAFRAME, CONVERTIR LA COLUMNA A UN TIPO DE DATO ESPECIFICO Y LUEGO PROCESAR EL DATAFRAME FILA POR FILA PARA SUBIRLO AL API
- **C**: PROCESAR EL DATASET COMO UN DATAFRAME, CONVERTIR LA COLUMNA A UN TIPO DE DATO ESPECIFICO, SUBIRLO AL API CON UNA SOLA LLAMADA, SUBIENDO TODO EL DATAFRAME COMO LISTA DENTRO DEL PAYLOAD.
- **D**: PROCESAR EL DATASET COMO UN DATAFRAME, CONVERTIR LA COLUMNA A UN TIPO DE DATO ESPECIFICO, SUBIR AL API POR BLOQUES DE 50 REGISTROS (POR PONER UN EJEMPLO)

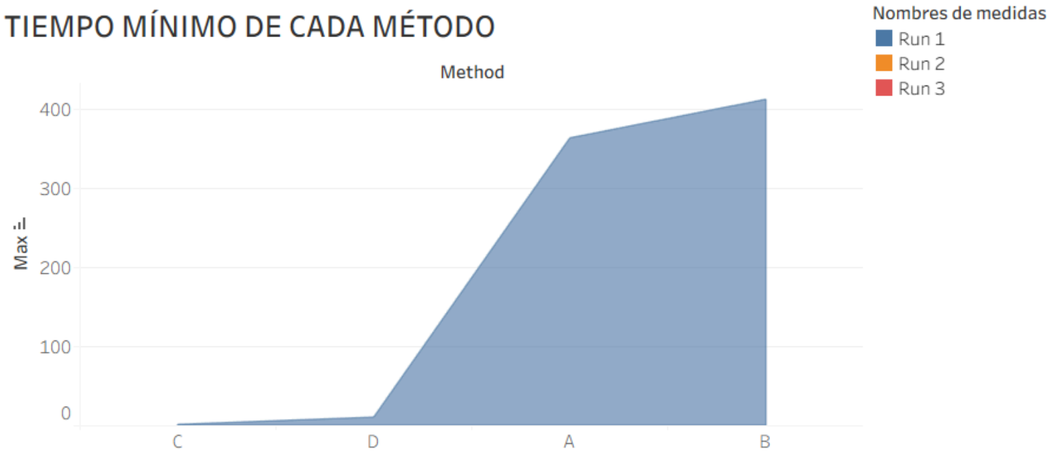
BENCHMARKING

MICROSERVICE - INJECTOR

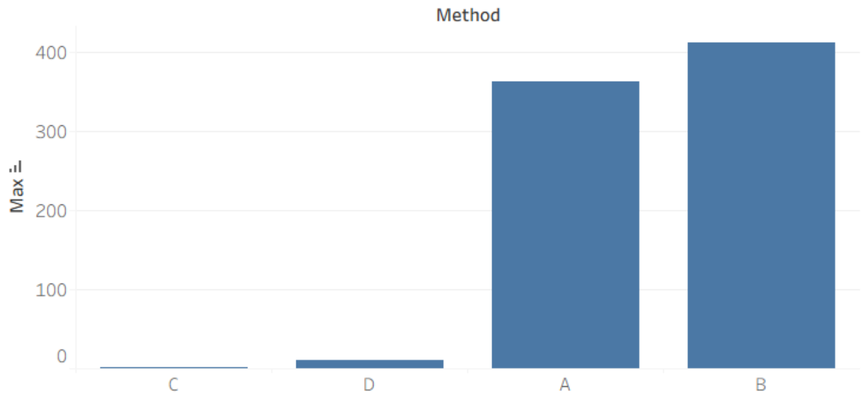
PROMEDIO DE EJECUCIÓN DE MÉTODOS



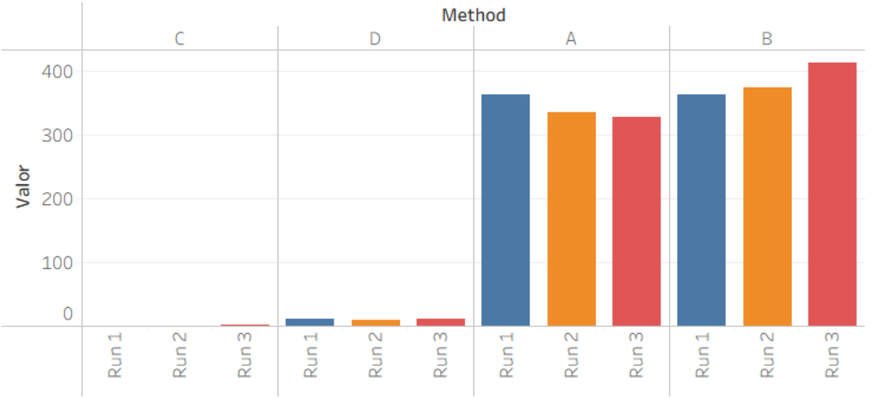
TIEMPO MÍNIMO DE CADA MÉTODO



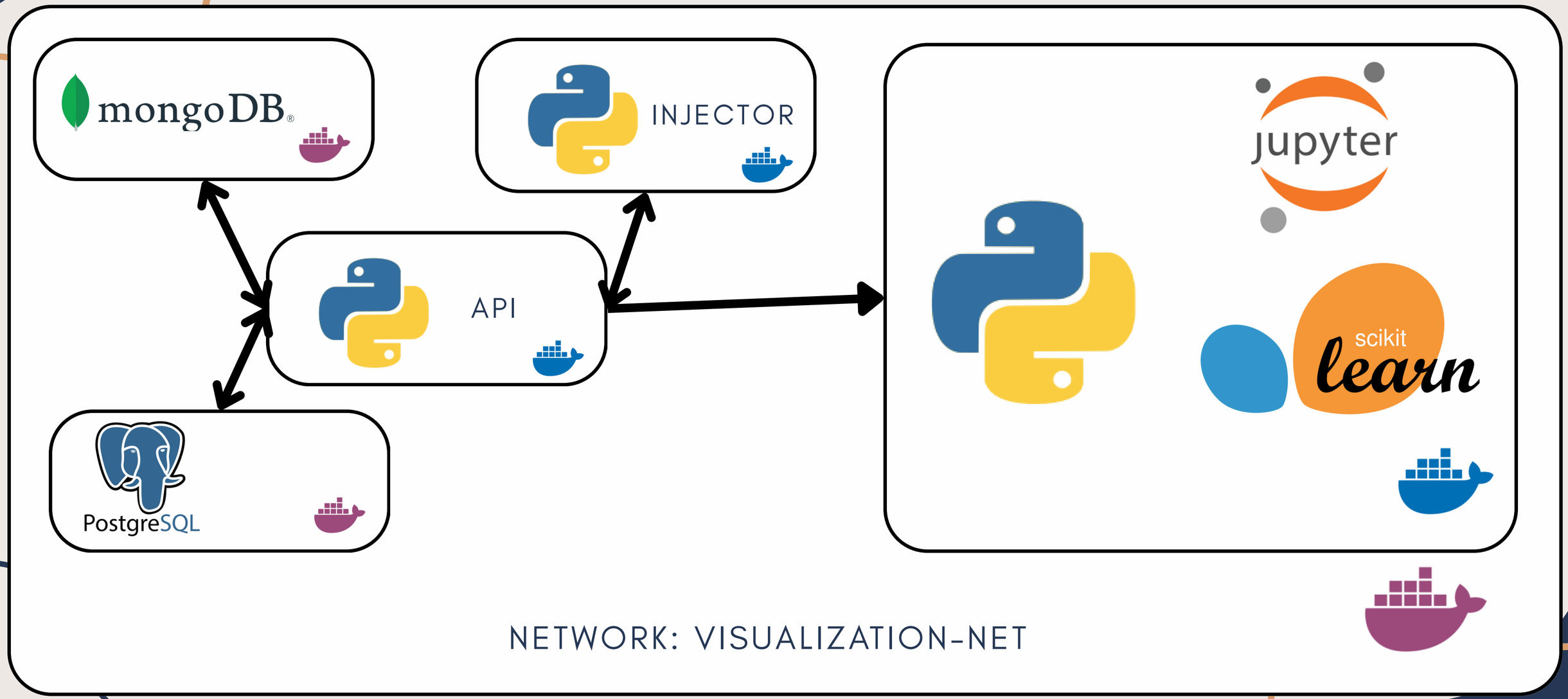
TIEMPO MÁXIMO DE CADA MÉTODO



COMPARACIÓN DE CADA EJECUCIÓN POR MÉTODO



MICROSERVICE - ML



Exploratory Data Analysis

Comprehensive methodology examining key variables across experience, geography, and work arrangements

Key Variables

- Salary in USD
- Employment year (2020-2025)
- Experience level
- Company size & location
- Remote work modality

Data Quality

Excellent foundation

- 0 null values
- 0 duplicate rows
- Robust dataset

55.8%

Senior Level

Experienced professionals drive salary averages

90.6%

US-Based

Companies located in United States

96%

Medium Size

Companies with 50-250 employees

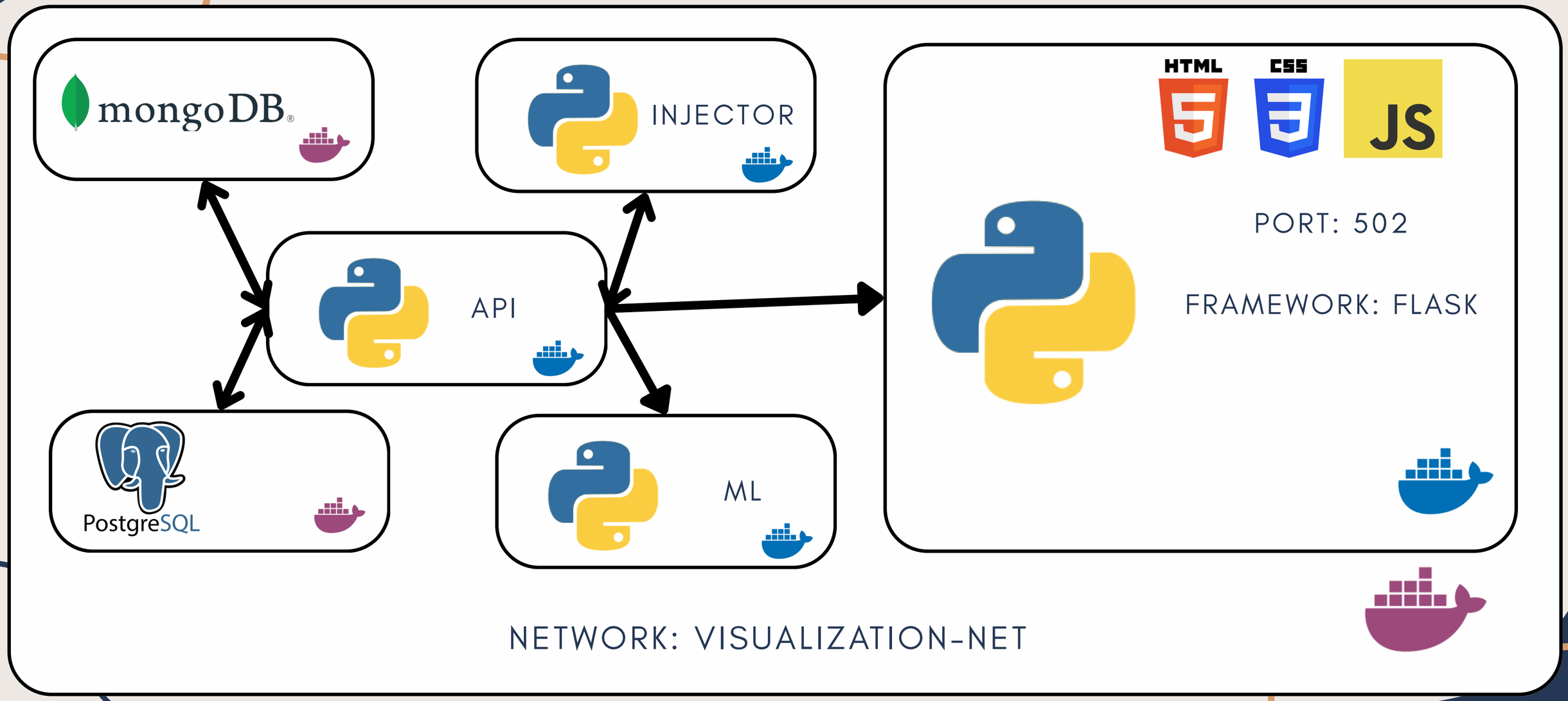
79.4%

On-Site

Traditional in-office arrangements

> Findings represent U.S. tech market within medium-sized businesses - traditional, full-time, in-office employees

MICROSERVICE - WEB



DEMO

Conclusions

This analysis, based on 65,117 salary records processed using modern data architecture, demonstrates something fundamental: major technological disruptions not only change what we do—they change how much it is worth doing. The launch of ChatGPT was the catalyst, but the real impact lies in how organizations and professionals responded to that moment.

The question is no longer “How will AI affect us?”—that question has already been answered by the data. The right question now is, “How will we adapt to the next wave of innovation that will inevitably come?”

Because if this analysis has taught us anything, it's that in technology, the only constant is change—and those who anticipate it not only survive, they thrive.

Thank you.