PIPELINE ORCHESTRATION USING MICROSERVICES

A TICKET TO APP MODERNIZATION

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WOMEN IN STATISTICS AT DATA SCIENCE

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DATA ENGINEER

DEVELOPS, CONSTRUCTS, TESTS AND MAINTAINS ARCHITECTURES FOR
BIG DATA PIPELINES
CLEANS, MASSAGES AND ORGANIZES BIG DATA

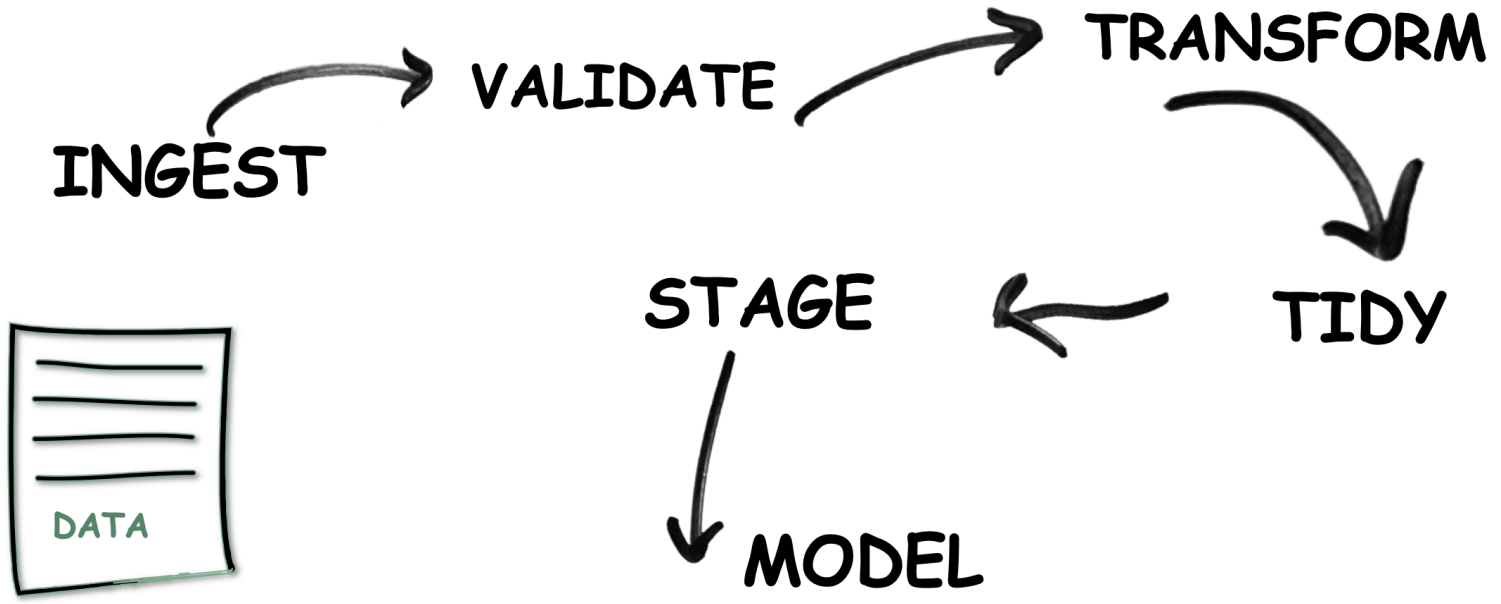
DATA SCIENTIST

PERFORMS DESCRIPTIVE STATISTICS AND ANALYSIS TO DEVELOP MODERN INSIGHTS, BUILD MODELS AND SOLVE A BUSINESS NEED

https://www.ibm.com/us-en/marketplace/omni-channel-fulfillment

WATSON ORDER OPTIMIZER

- A COGNITIVE ANALYTIC ENGINE THAT ENHANCES EXISTING ORDER MANAGEMENT SYSTEMS BY PROVIDING A "BIG DATA BRAIN" TO ORDER MANAGEMENT AND INVENTORY VISIBILITY SYSTEMS.
- RETAILERS ARE BETTER ABLE TO UNDERSTAND AND ACT ON CHANGES IN THE MARKET AS THEY OCCUR
- MILLIONS OF DATA LINES PER HOUR FOR DIFFERENT DATA FEEDS

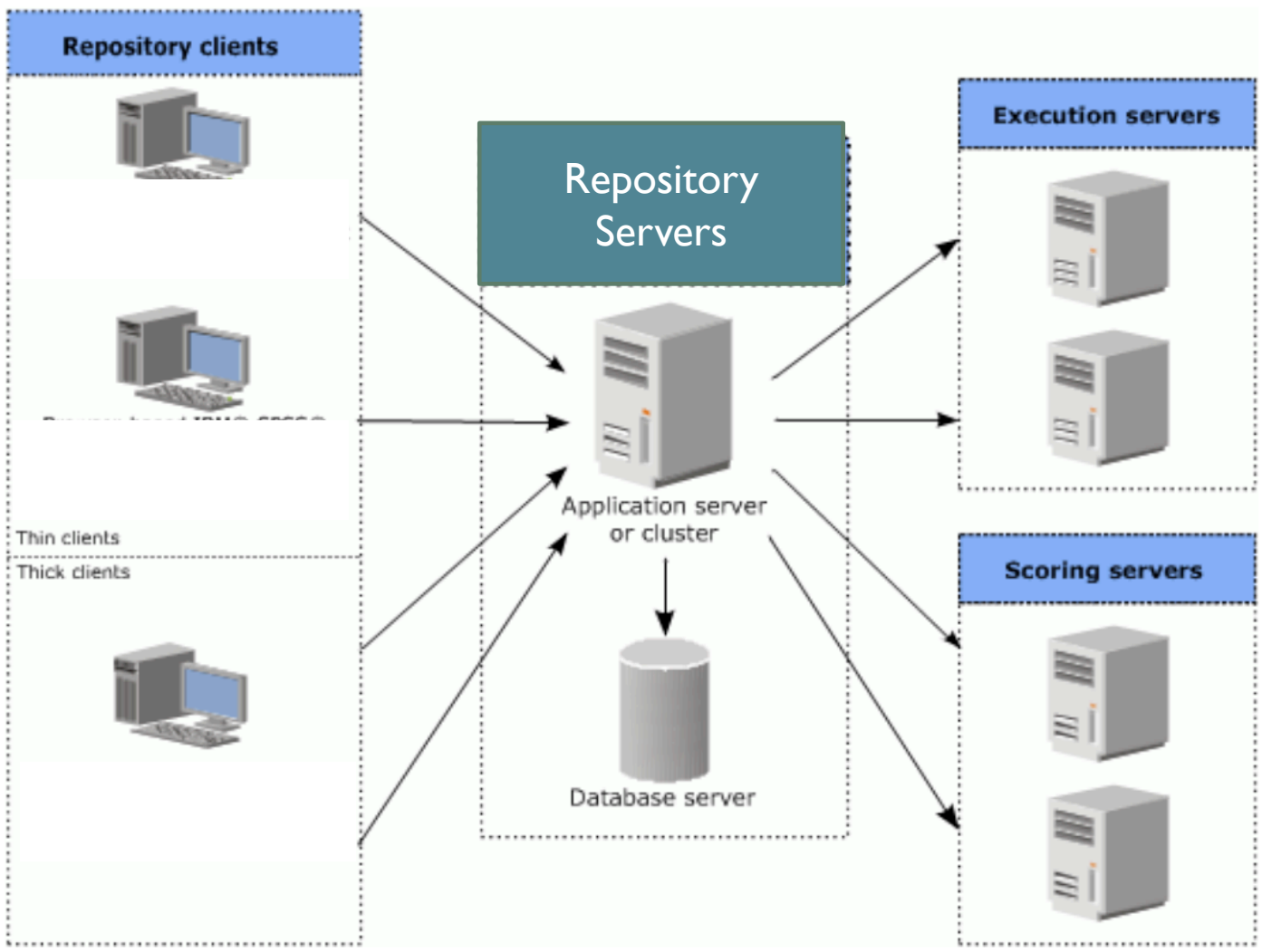


DATA PIPELINE

AGENDA

- MANAGING DATA PIPELINES IN AN AI SOLUTION
- PROBLEMS FACED WITH MONOLITHIC TOOL USED TO MANAGE OUR PIPELINE
- MICROSERVICES INSTEAD OF MONOLITHIC ARCHITECTURES
- LEARNINGS THAT UNFOLDED IN OUR JOURNEY AND ROLL OUT STRATEGY

A MONOLITH PIPELINE ORCHESTRATOR LIKE THIS…



ROGUE PROCESSES

UNRESPONSIVENESS

FREQUENT OUTAGES

CUMBERSOME RE-STARTS

Apache Airflow

Luigi

Azkaban

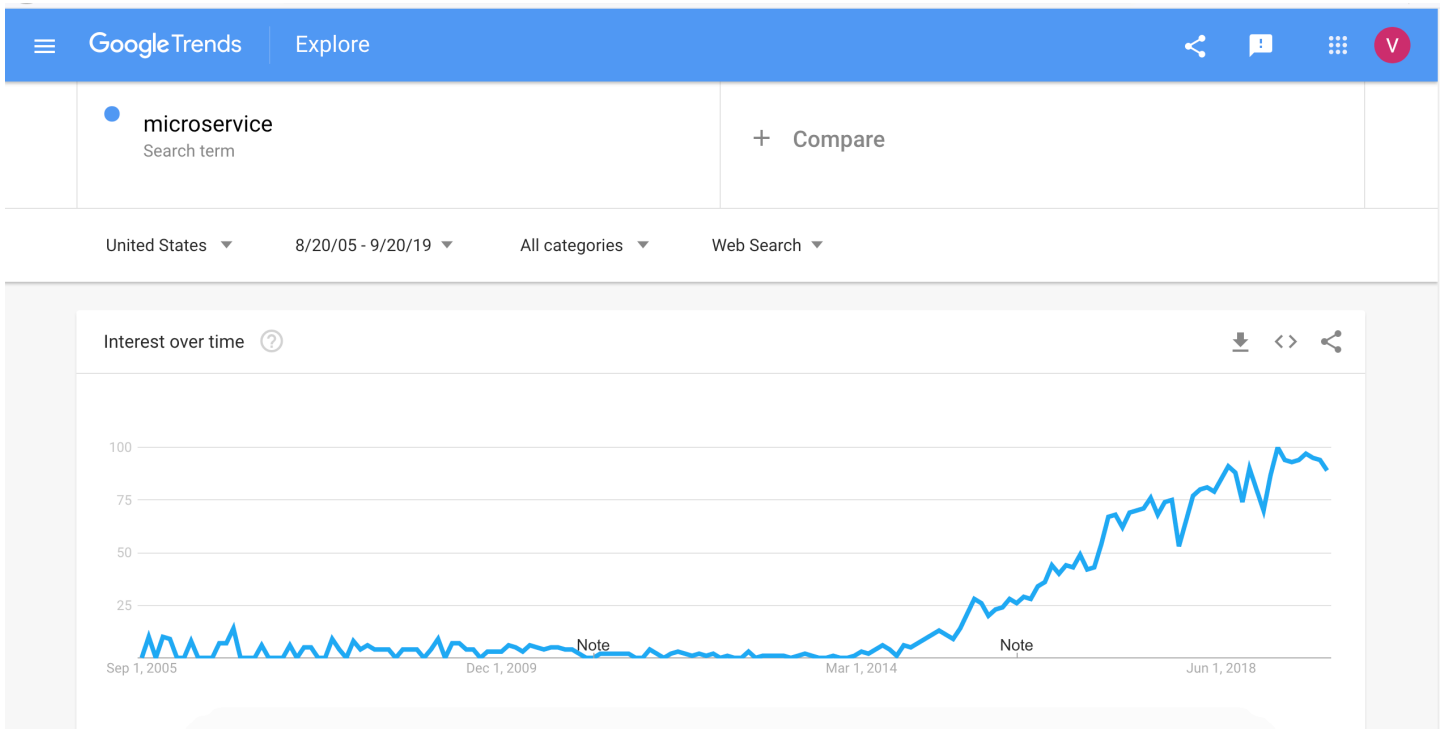
CHOOSING A PIPELINE ORCHESTRATOR FOR OUR BIG DATA PIPELINE

LET'S WRITE OUR OWN PIPELINE MANAGER

USE MICROSERVICES

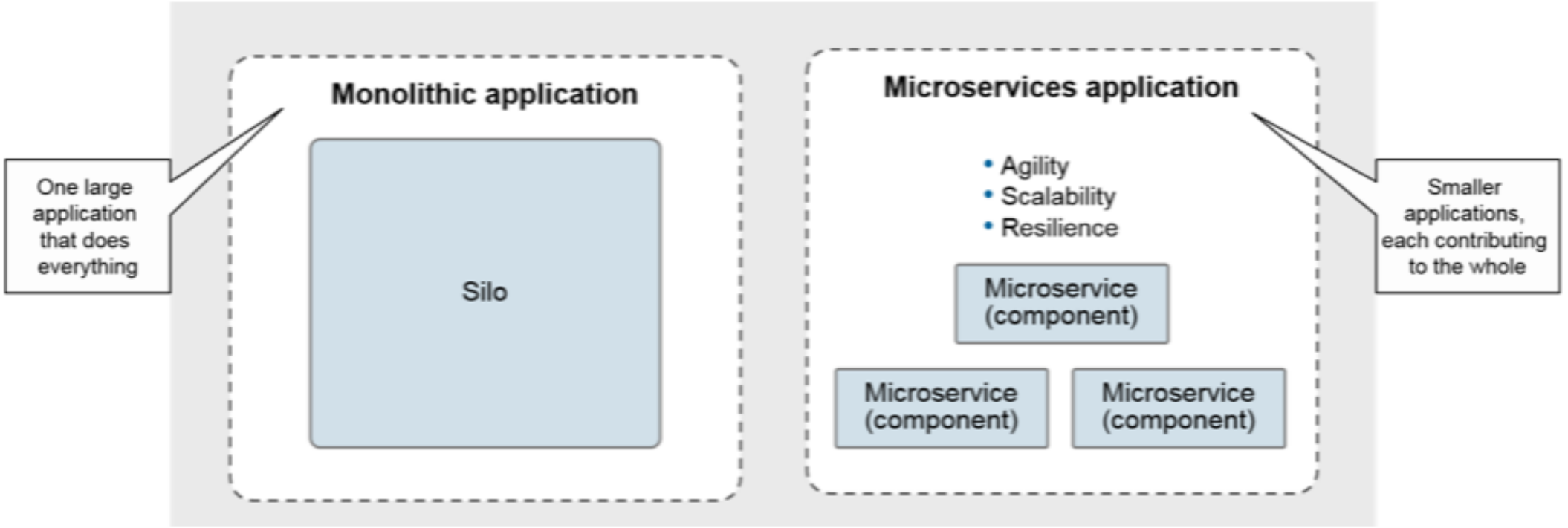
MICROSERVICES

- Microservices are not new

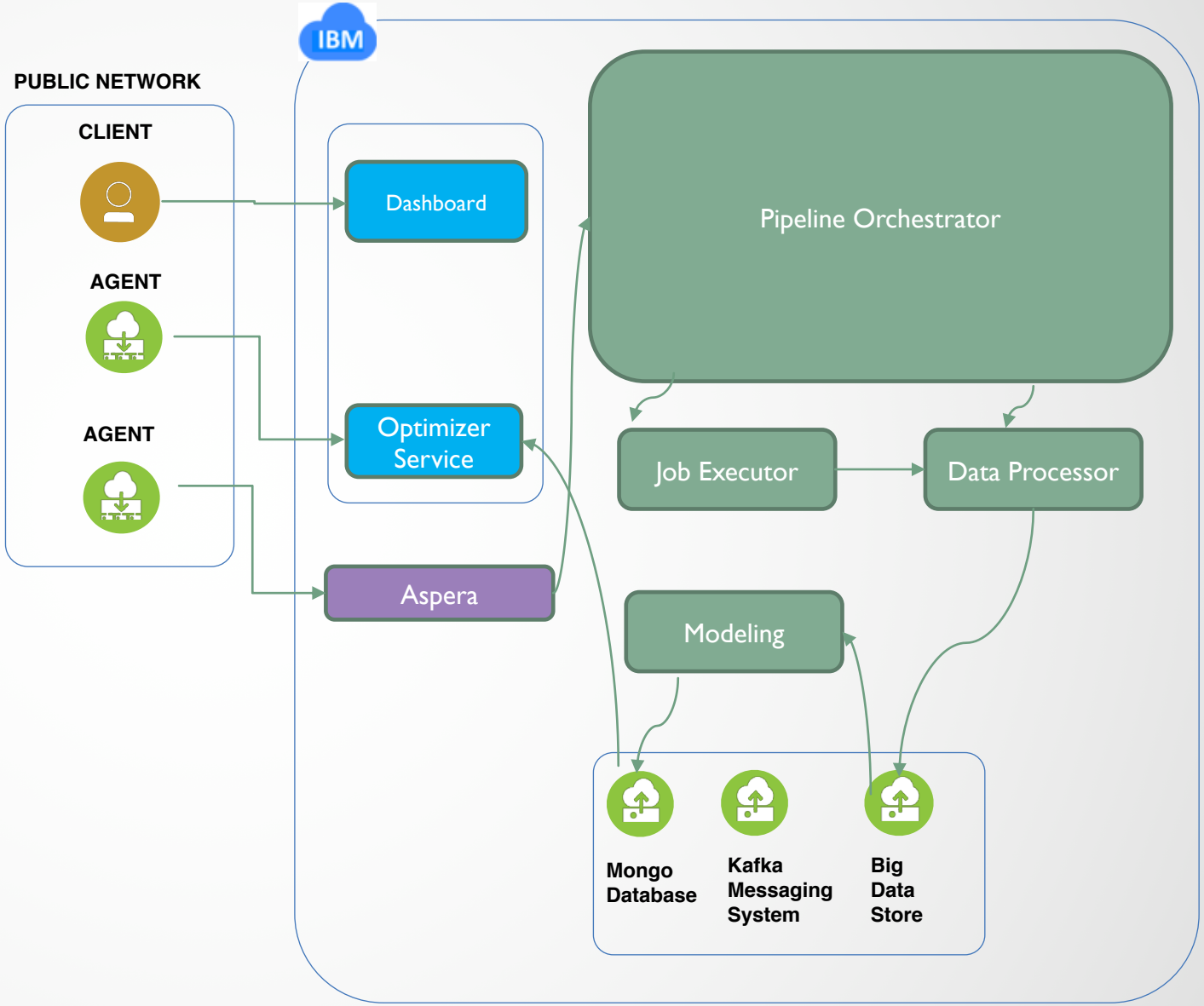


MICROSERVICES TO THE RESCUE

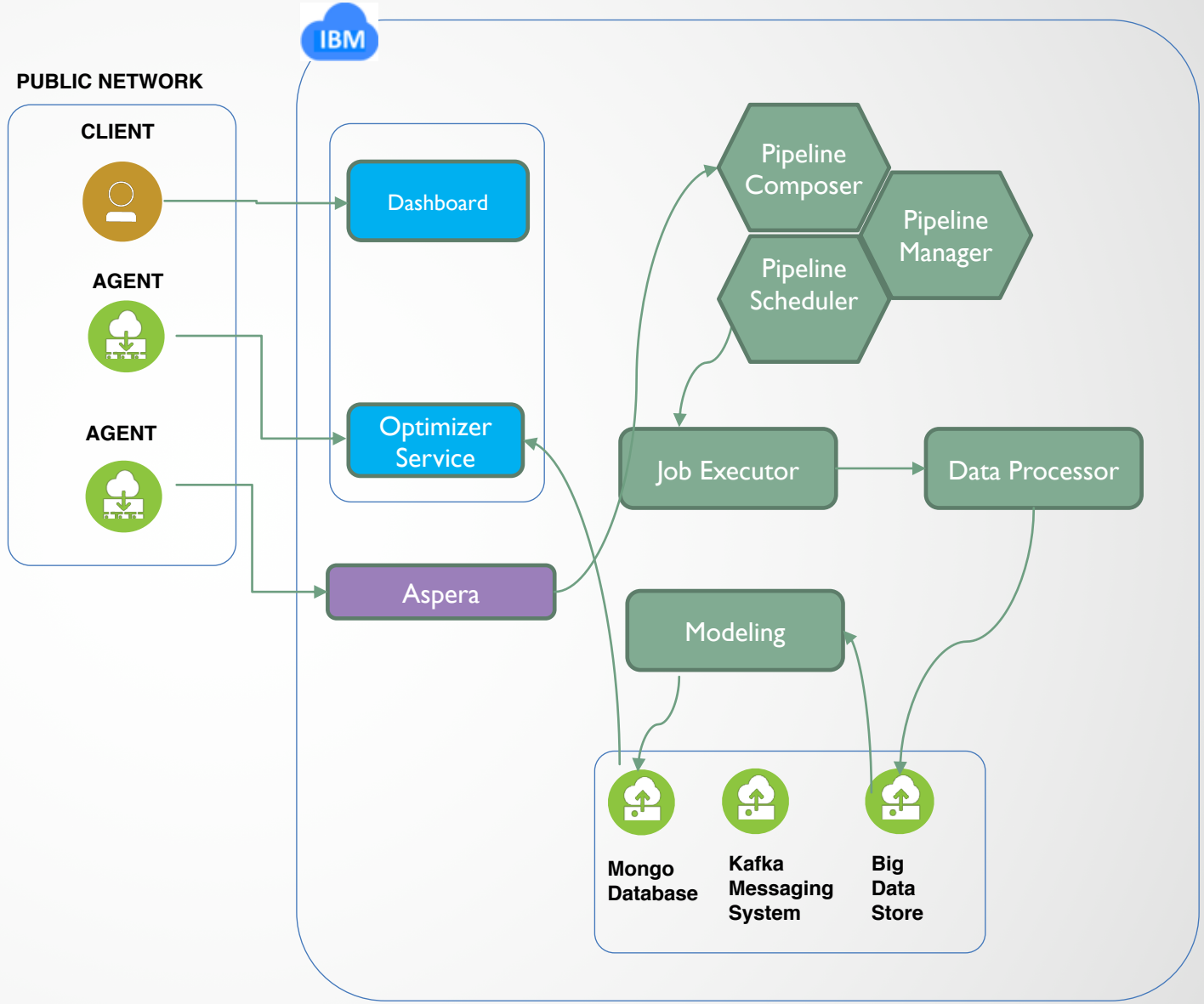
Microservices is breaking down one large objective into its parts, and having those parts be accomplished independently.



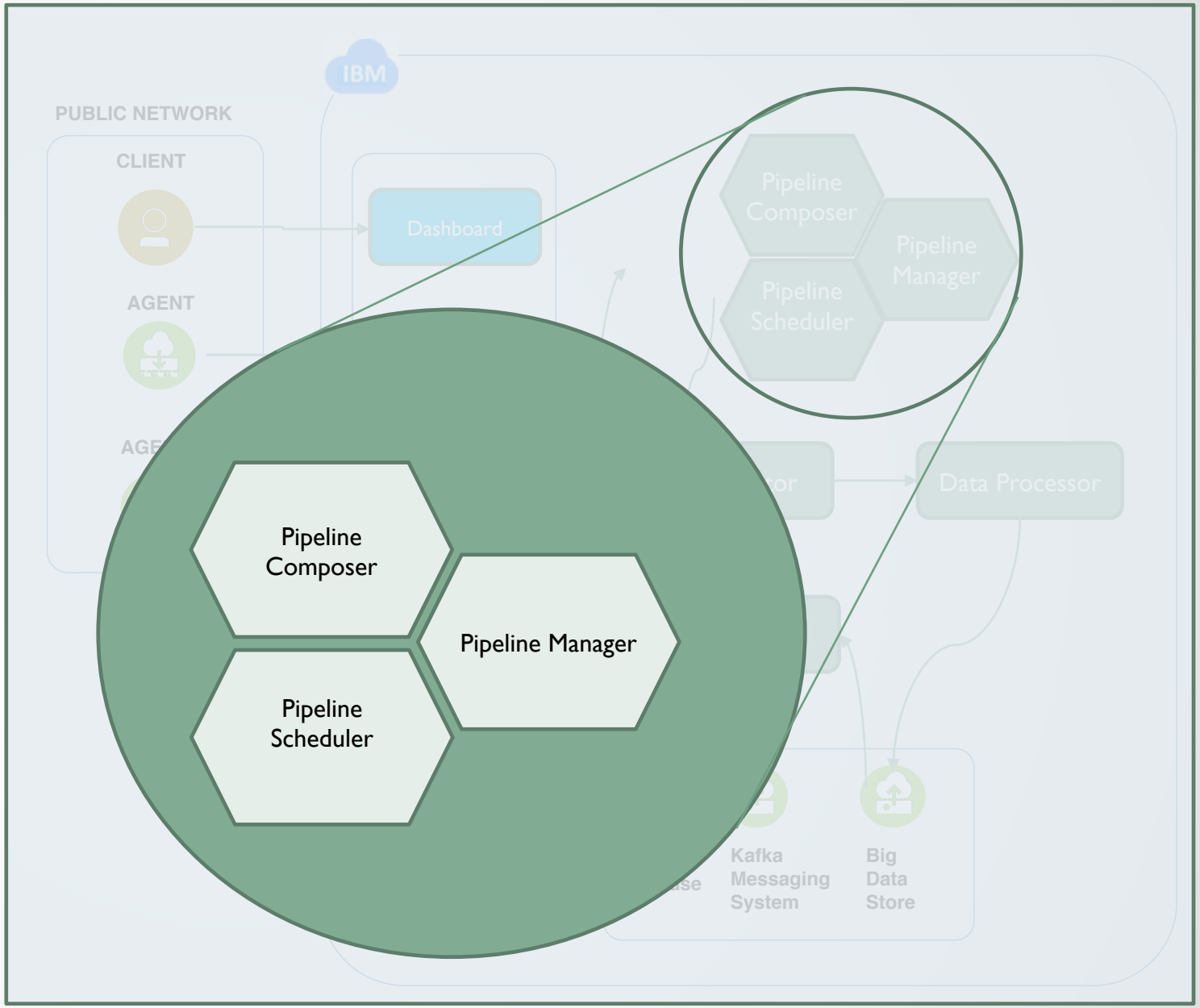
CLOUD ARCHITECTURE



MONOLITH …REPLACED WITH MICROSERVICE

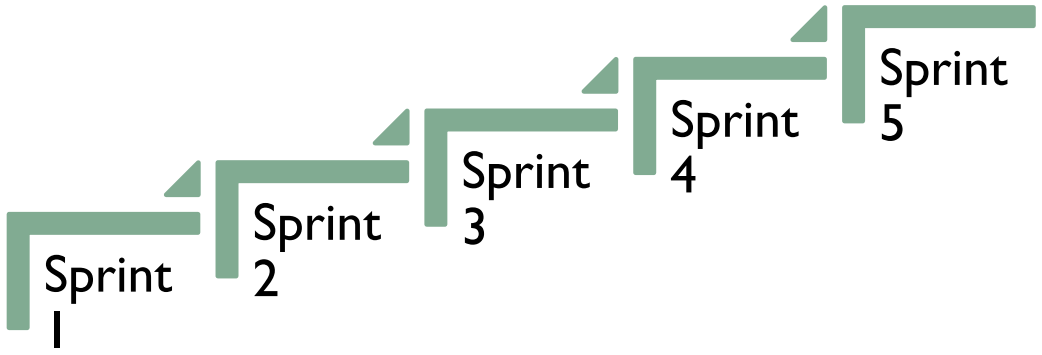


CHARACTERISTICS OF MICROSERVICES



CAPABILITIES DELIVERED IN SPRINTS

- 1. Pipeline Manager
- 2. Pipeline Composer
- 3. Pipeline Scheduler
- 4. Load Balancing and High Availability of each service
- 5. Scaling and Monitoring of each service

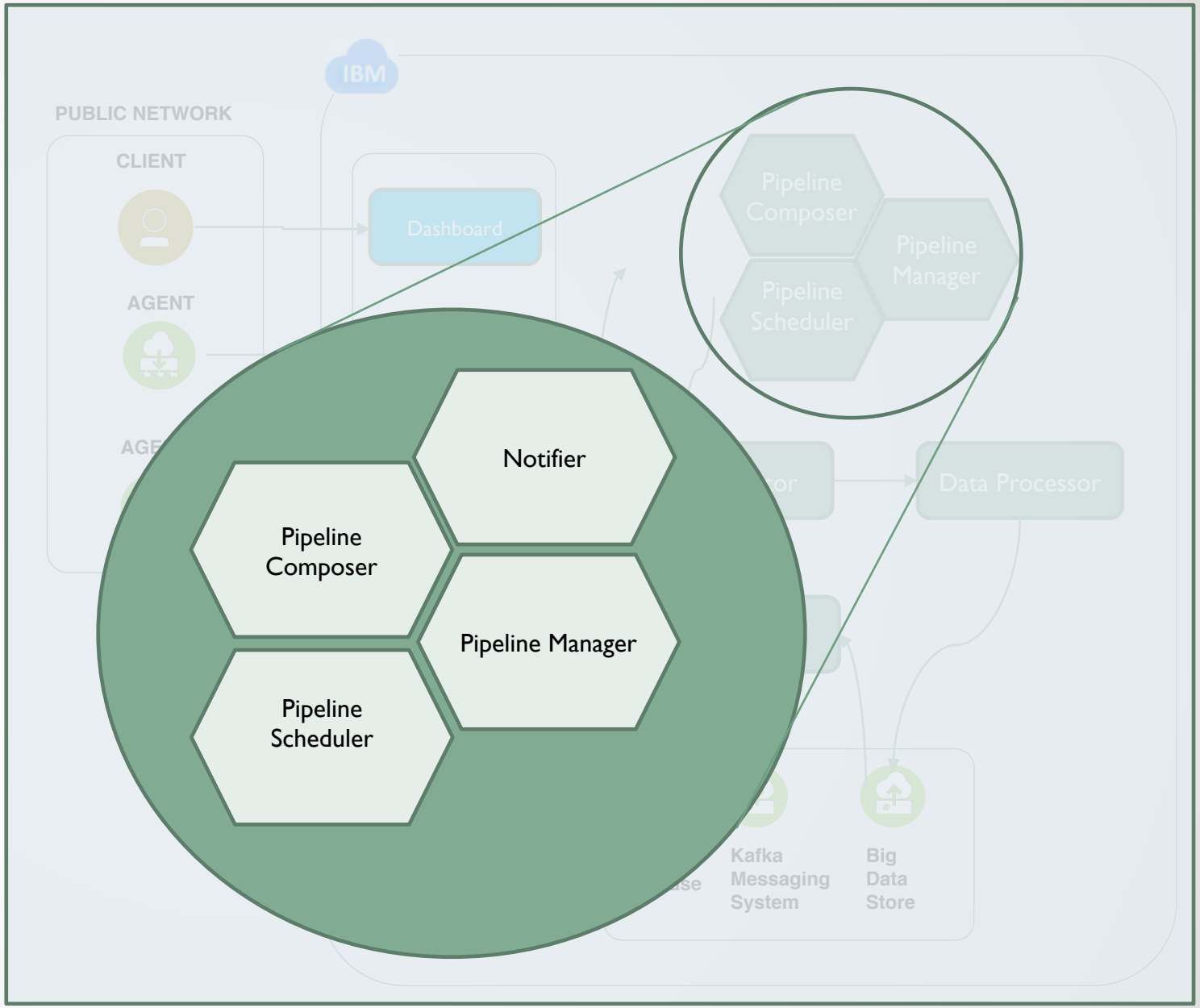


HOLD ON ! FORGOT SOMETHING

- 6. Notification on Failures in the pipeline

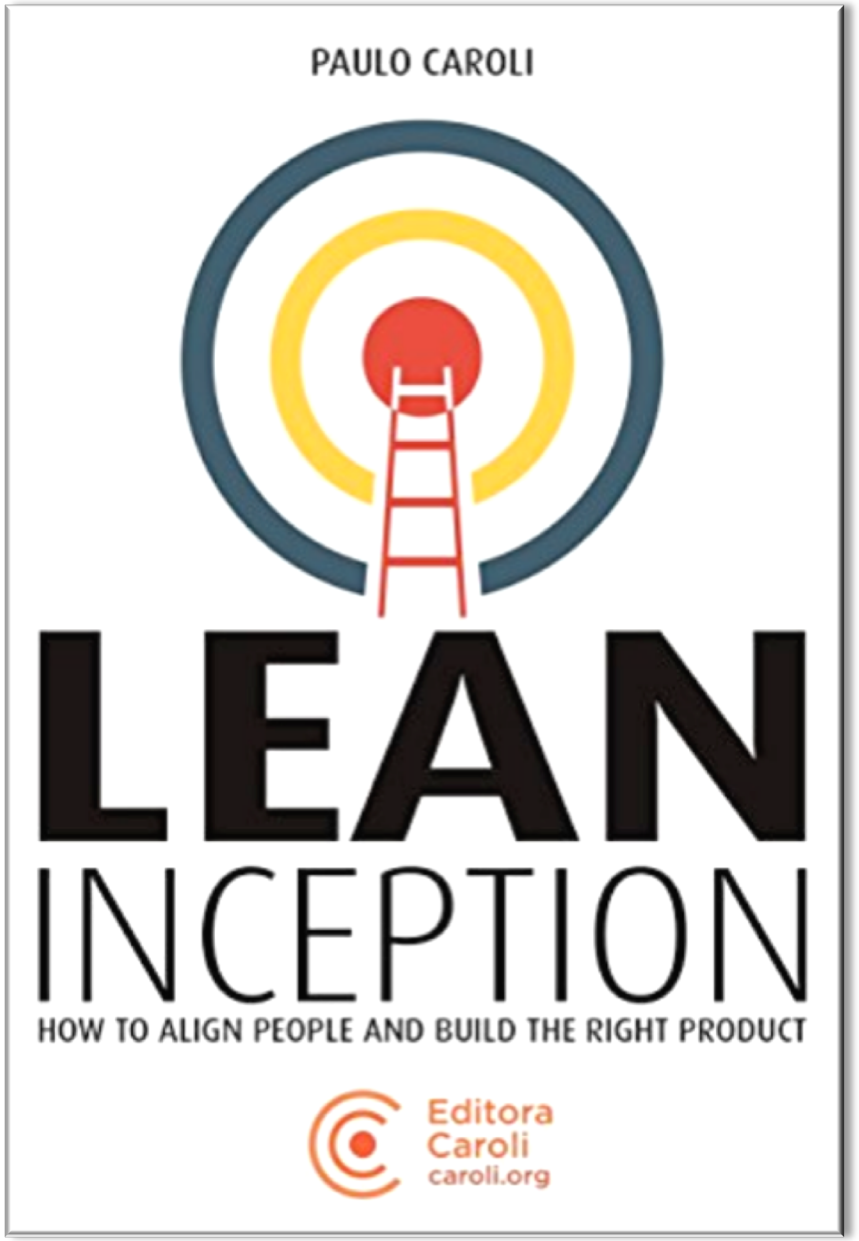
Sprint 6

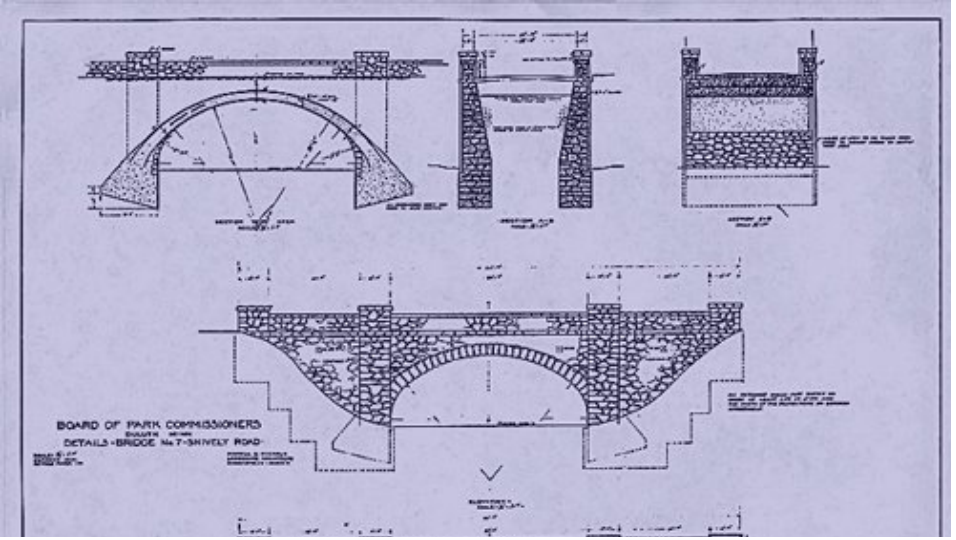
THE NEW MICROSERVICE



READ AND PRACTICE

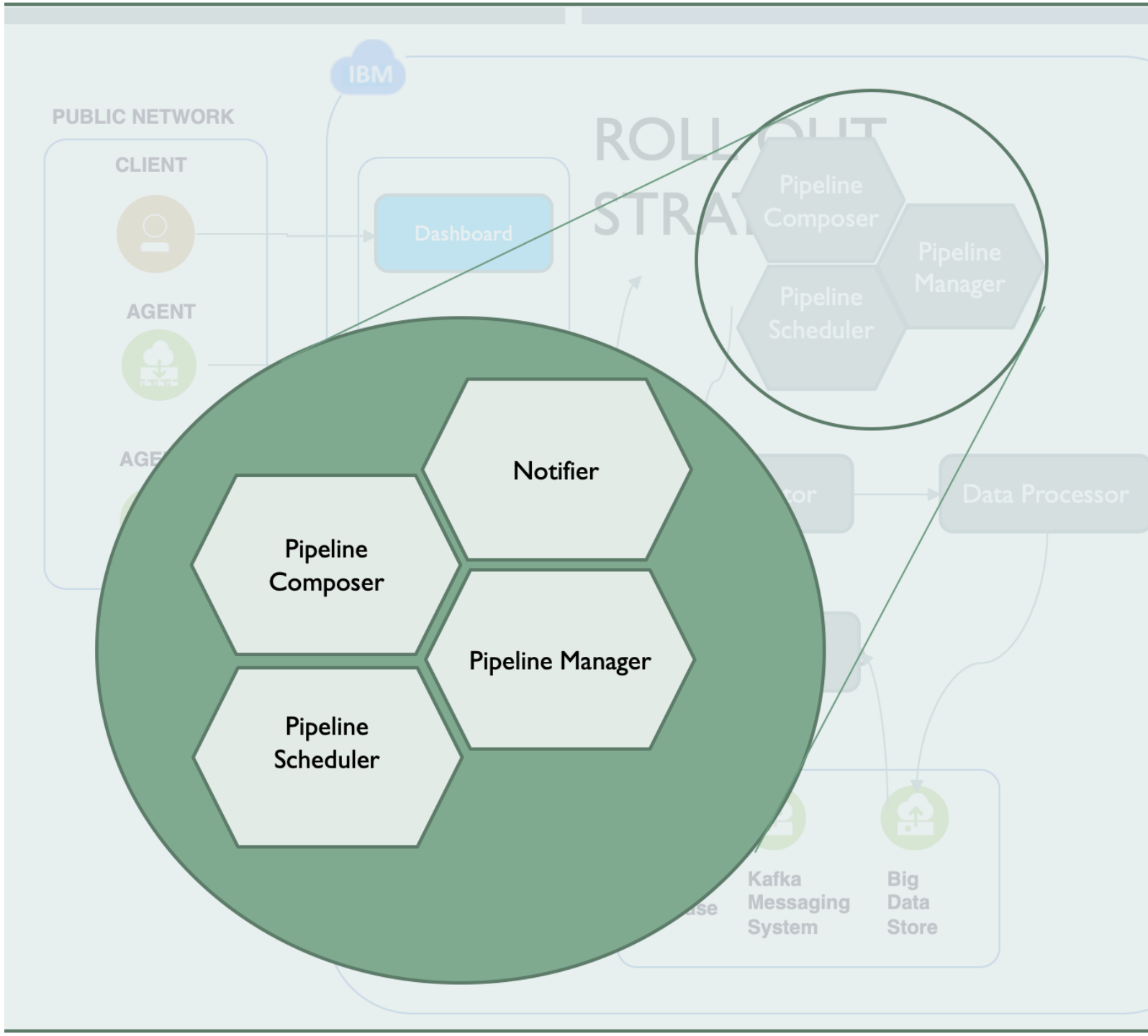
- Agile Software Development like construction projects





START WITH A BLUE PRINT

- Credits : https://www.caroli.org/en/agile-bridge-analogy/



DELIVER FULL VALUE

- Credits : https://www.caroli.org/en/agile-bridge-analogy/

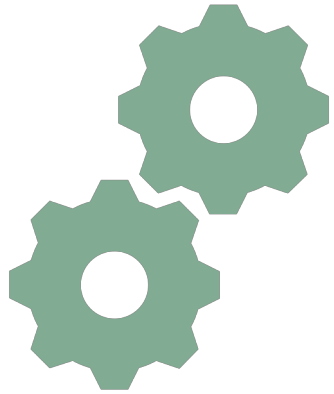
BRIDGE GETS STRONGER

- Feature Switches
- Traffic Throttles

https://www.caroli.org/en/agile-bridge-analogy/

NEXT PHASES

- Increase Robustness of Notification Service
- User Interface for Pipeline orchestrator
- Audit of the pipeline to check for anomalies and data quality



KEY TAKEAWAYS

Implement	Implement Safely
Automate	Automate early and often using continuous integration
Use	Use feature switches and traffic throttles
Encourage	Encourage separation and independence while maintaining communication

Q & A

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