



VLDB2020

GridDB: A Distributed SQL time series database for IoT and Big Data

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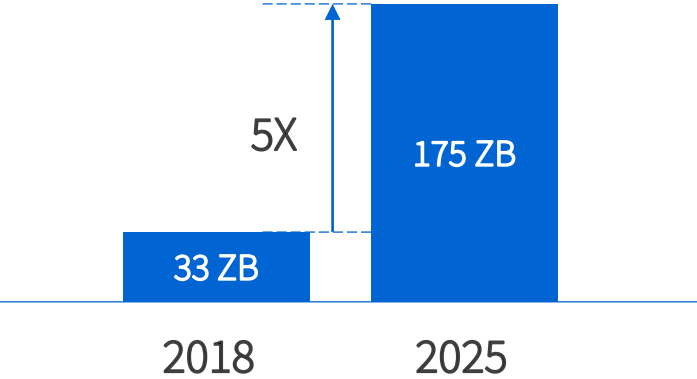
Toshiba Digital Solutions Corporation
2020.09.04

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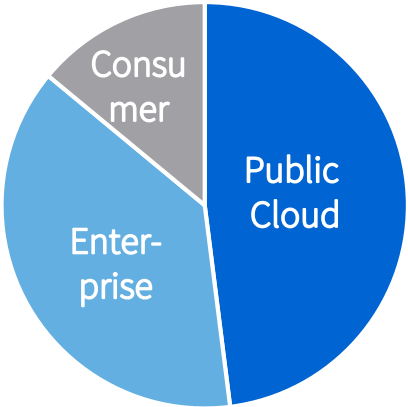
01 State of Data

1 Data Growth



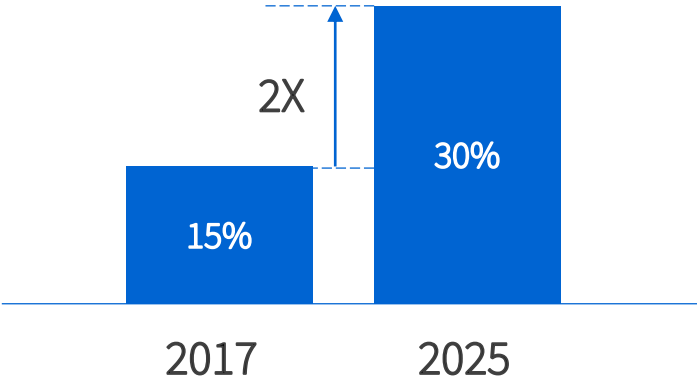
Global DataSphere will grow to 175 ZB by 2025

2 Data Storage



More data will be stored in public cloud than traditional data centers

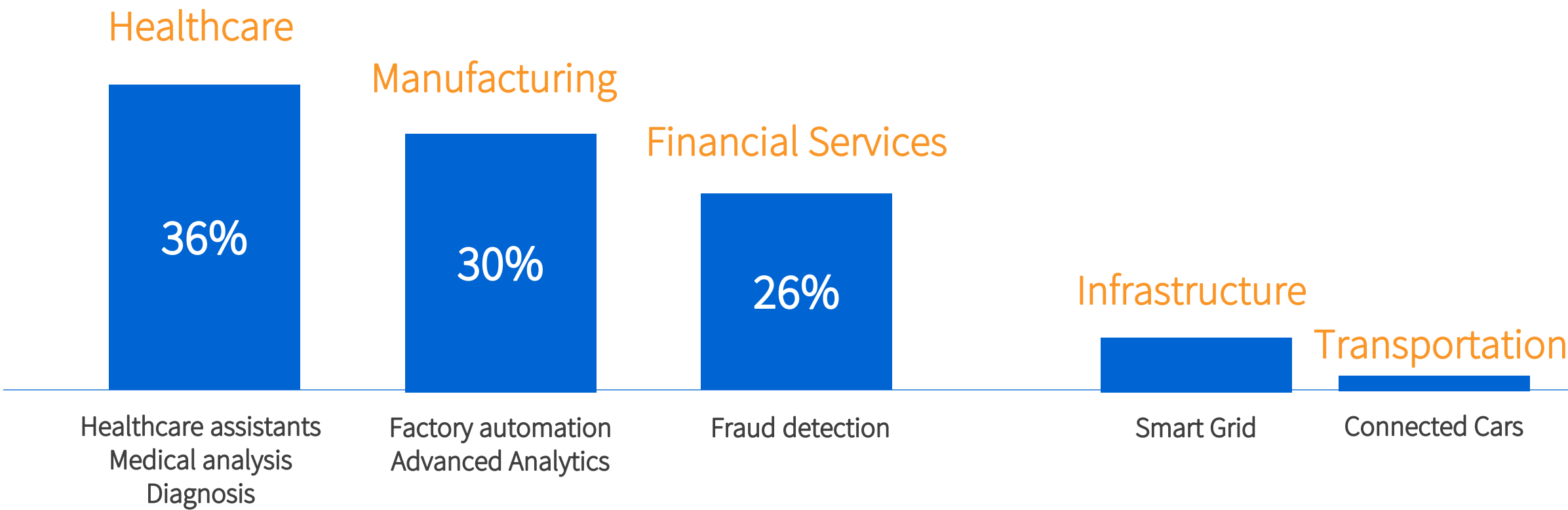
3 Data Type



30% of data will be created in Real Time

Bytes < Kilobyte < Megabyte < Gigabyte < Terabyte < Petabyte < Exabyte < Zettabyte
Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

Growth in Connected IoT devices



Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

Toshiba builds mission critical system to customers in a variety of industries

Energy



- Calculation of Wheeling Charges
- Remote monitoring of solar power generation

Manufacturing



- Monitoring industrial equipment
- Increasing factory productivity

Transportation



- Railway transportation solutions
- Remote monitoring of train operation

Logistics



- Monitoring & analysis of distribution truckloads
- Asset tracking

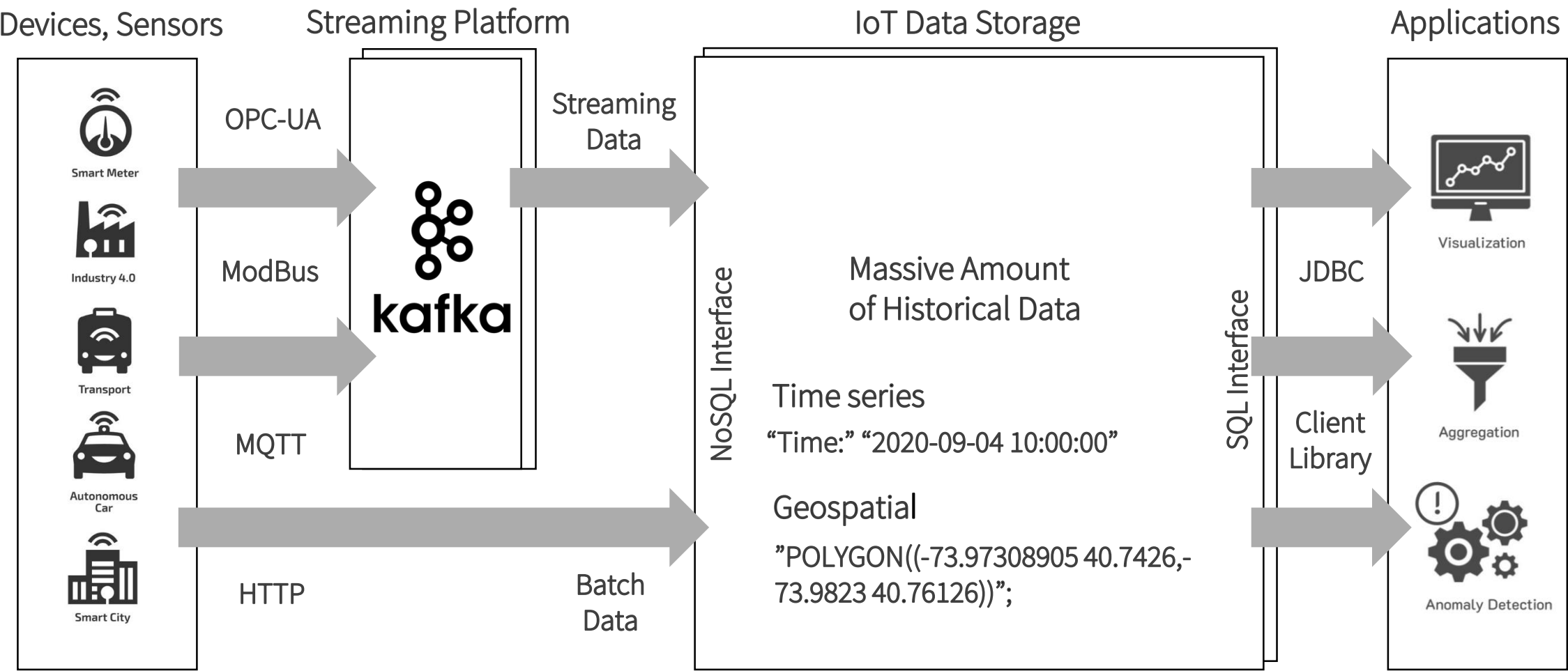
Community



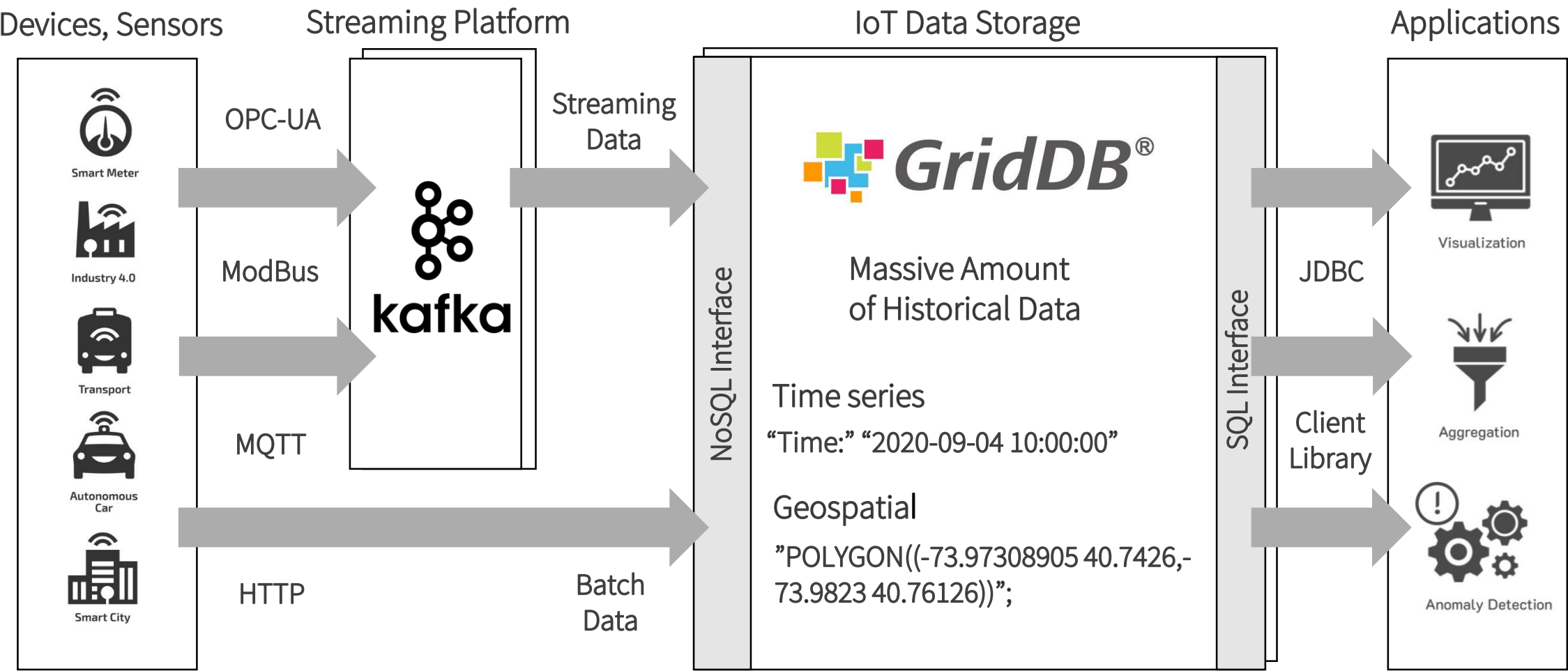
- Integrated management of houses, building, factory facilities, etc.

A purpose built database is required to manage this massive amount of IoT data

02 IIoT Reference Architecture



02 IIoT Reference Architecture



03 IIoT Data Storage

Distributed SQL architecture



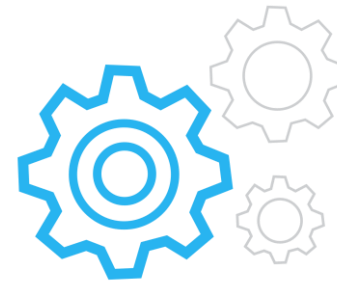
Connect to a variety of 3rd party applications via JDBC and speed up your ingestion performance with the NoSQL interface

Petabyte-Scale Performance



Elastically scale to the petabyte level as your time series data grows without sacrificing performance

Highly Available



GridDB cluster automatically heals itself in the case of failure with no downtime

Time Series Data Management



Take control of your time series data with data retention policy and perform aggregation in GridDB

04 Use Cases

Predictive Maintenance

Preserve your historical data and perform regression or classification modeling to predict equipment failure

Digital Twin

Create digital replicas of your equipment by storing sensor data in GridDB, performing data analysis and visualizing your data

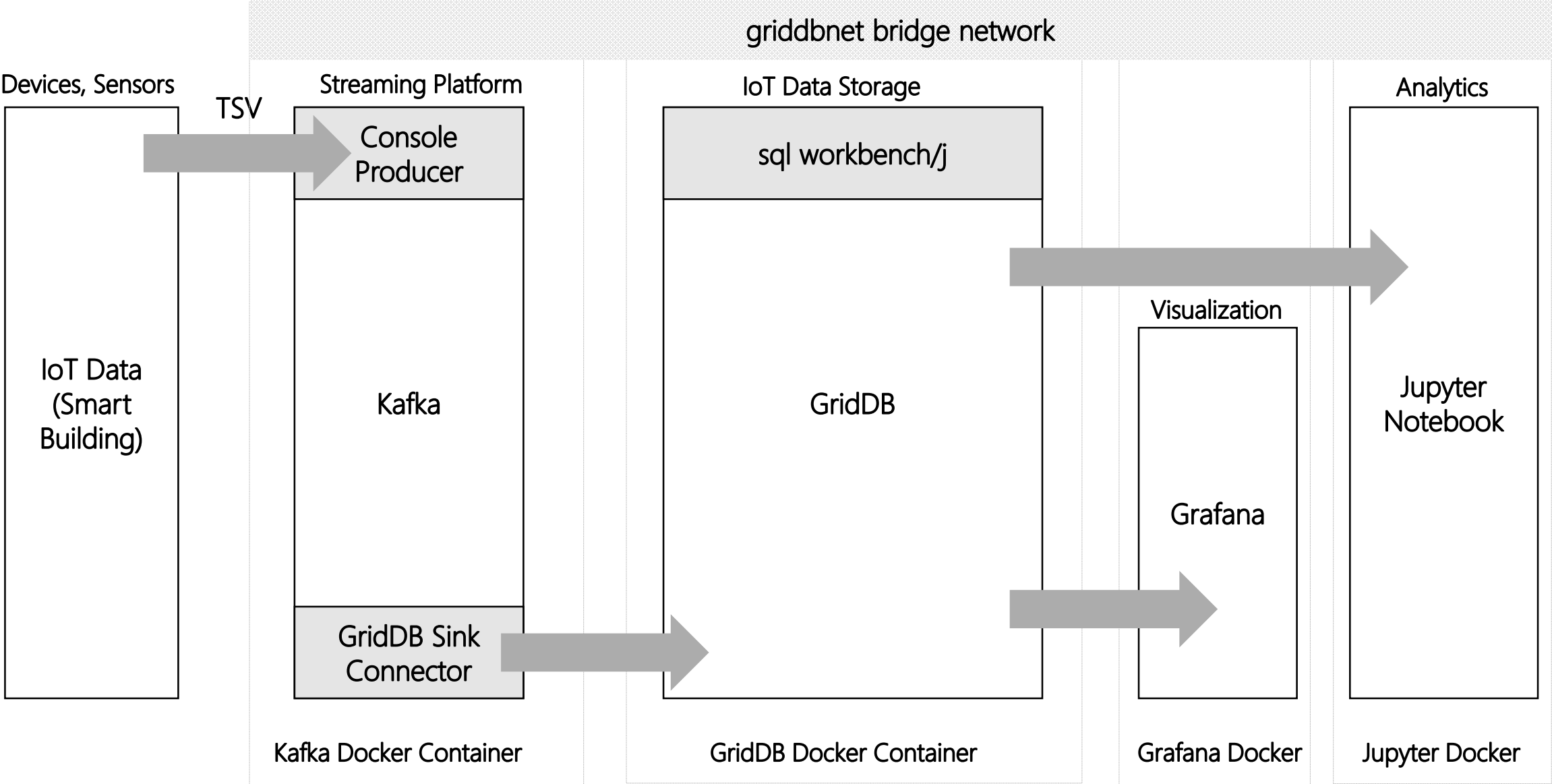
Smart Metering

Monitor and control energy consumption by collecting smart meter data, and adjust pricing according to demands

Asset Tracking/Monitoring

Track and monitor your asset by storing time series and geospatial data of your devices, and perform real time analytics and decision-making

05 Demo



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Thank you