Making MATLAB Data Analytics Accessible Across The Enterprise

July 2nd 2020 | Online

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AUTOMOTIVE
CONFERENCE 2020

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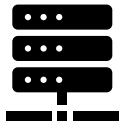
Key takeaways

- Data for decision making should be available throughout the Enterprise
  - Not only engineers need data – decision makers of all sorts need data
- Large volumes of data require new paradigms
  - Scaling out is necessary

Compute  People 

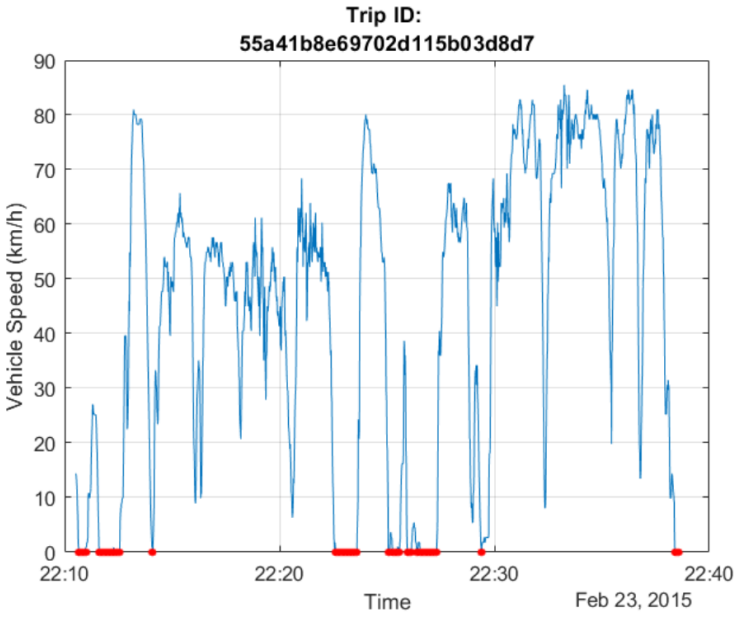
- The diversity of systems require interoperability of tools
  - MathWorks integrates with many different frameworks

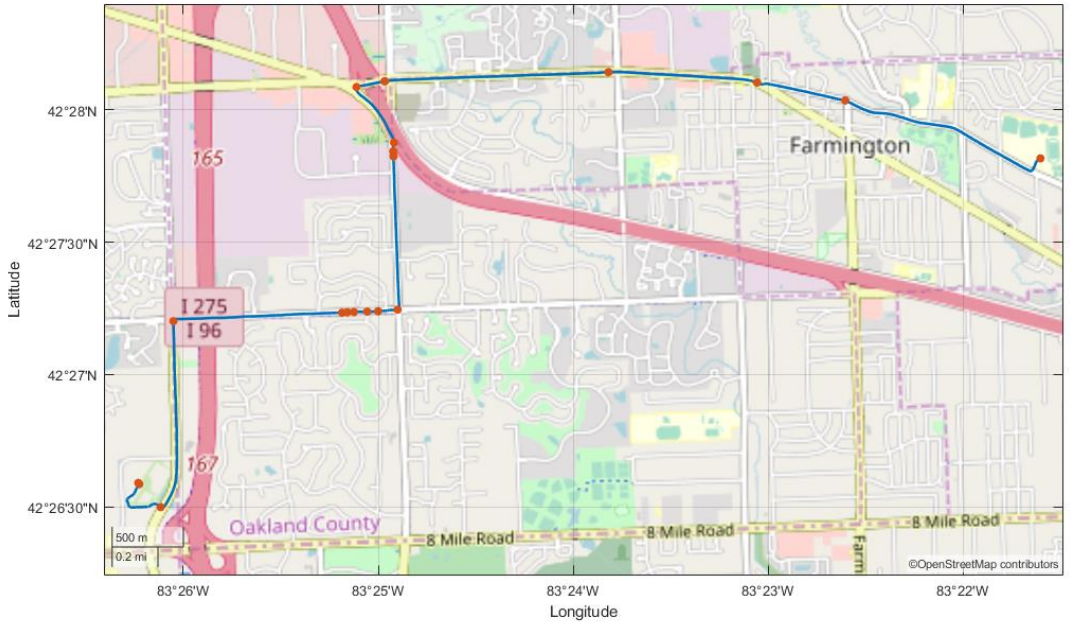
Automotive use case

Access and Explore Data → Preprocess Data → Analyze Data → Develop Algorithms & Models → Operationalize Models

Automotive

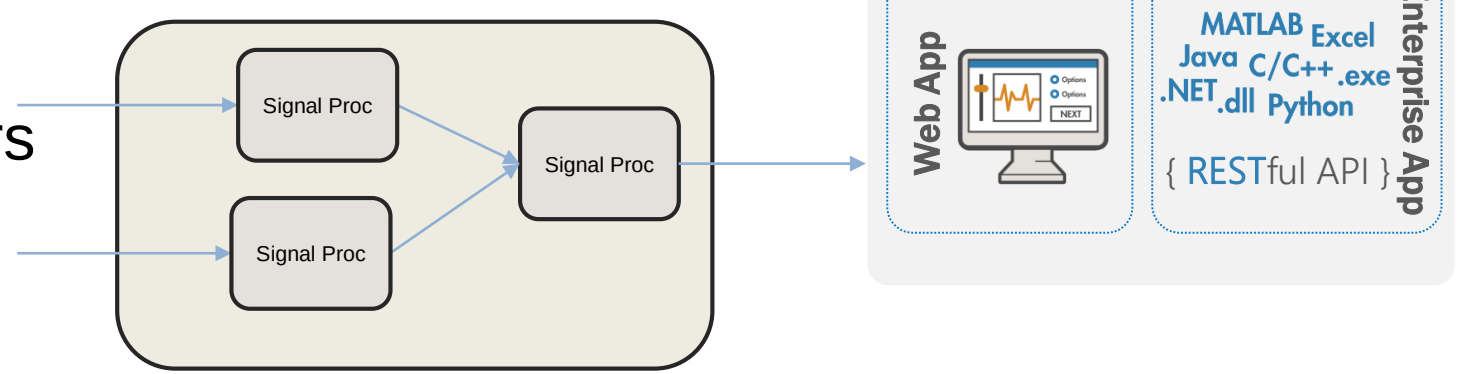
- Vehicles
- Engines
- Controllers



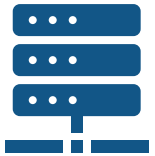


Motivating factors for enterprise accessibility of Data Analytics

- Not all users of data are engineers
- Reuse among engineers

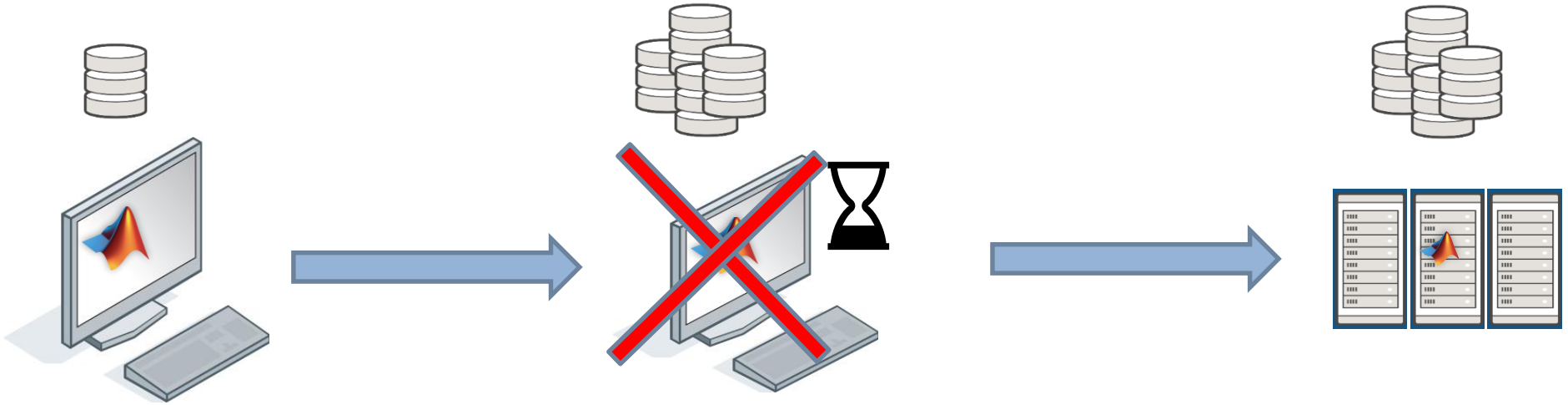


Processing data



Access and Explore Data | Preprocess Data | Analyze Data | Develop Algorithms & Models | Operationalize Models

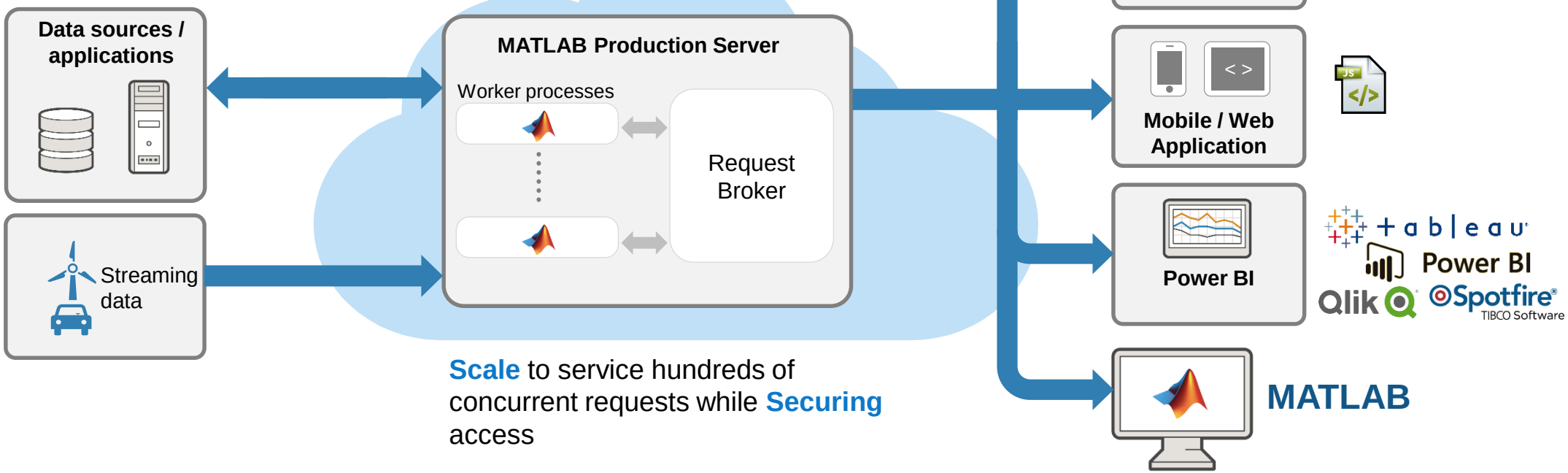
- Exploratory work on a desktop
- Big Data cannot be processed on a single machine



Processing data

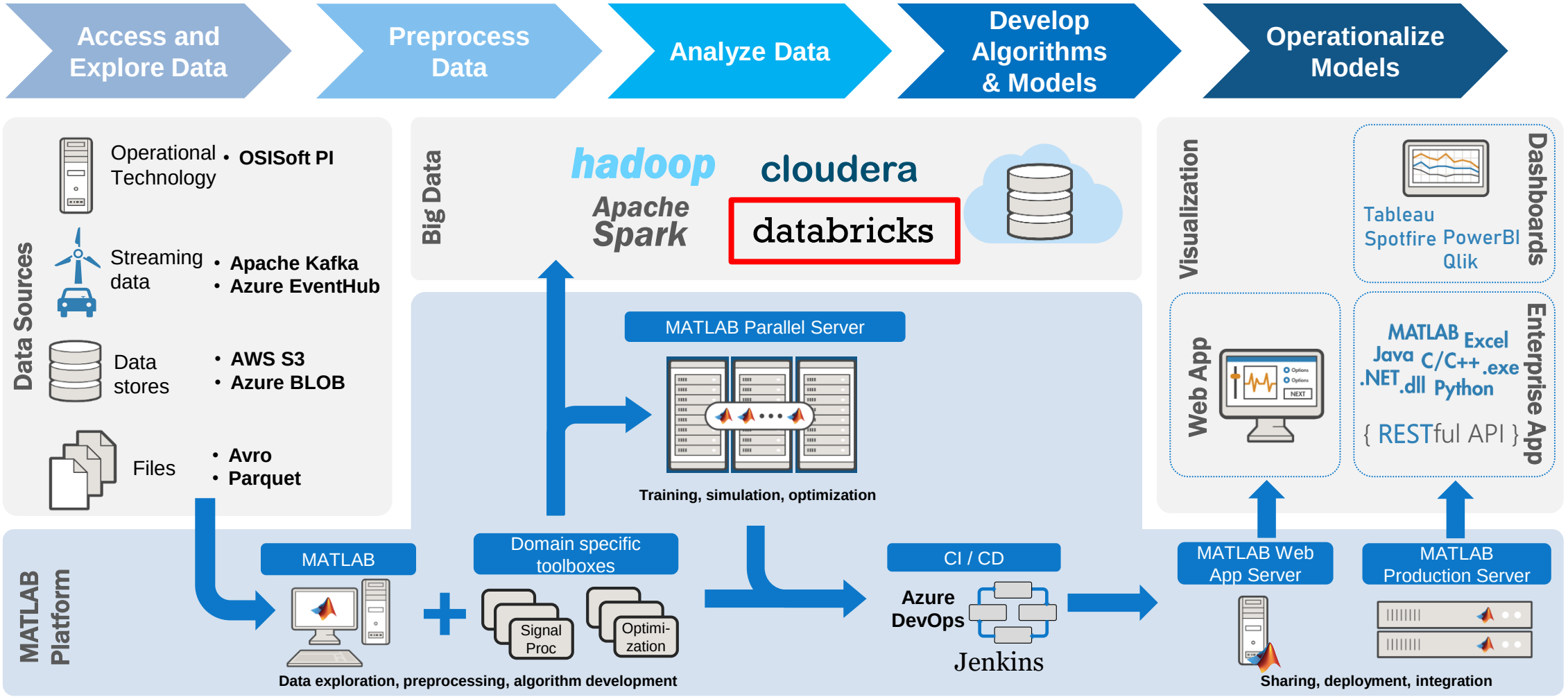
Integrate with a broad array of databases, data stores and streaming services

Access from a wide range of enterprise applications

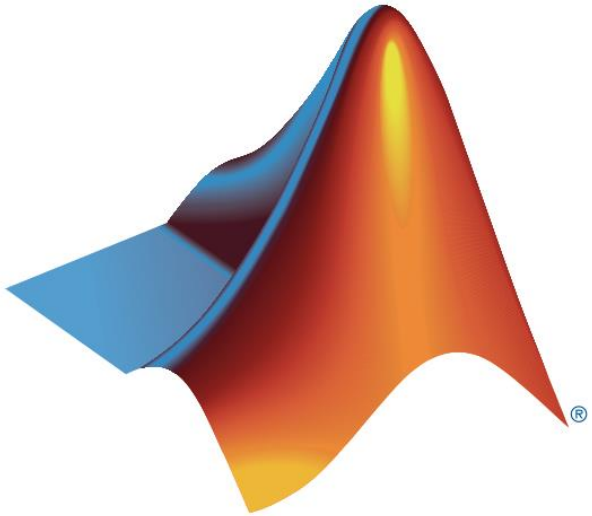


Scale to service hundreds of concurrent requests while **Securing** access

MathWorks provides a comprehensive end-to-end solution Data Analytics in the Enterprise



Live Demonstration



databricks

MATLAB R2020a

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C: ▸ EI ▸ Platforms ▸ databricks ▸ Software ▸ MATLAB ▸ public ▸ examples ▸ MAC2020

Live Editor - C:\EI\Platforms\databricks\Software\MATLAB\public\examples\MAC2020\MAC2020_Demo.mlx

MAC2020_Demo.mlx

MAC Europe 2020 - Demo - Making MATLAB Data Analytics Accessible Across Enterprise

This demo show 3 different workflows with MATLAB and Databricks.

1. Communicating with Databricks
2. Data Exploration using Databricks-Connect and Spark
3. Data Engineering on Databricks

Part 1: Communicating with Databricks

We can easily work with data on Databricks directly from the MATLAB desktop

```
db = databricks.DBFS();
files = db.ls('/public/fleetdata/files')
```

We can directly download a file, to work with it in MATLAB

```
db.download('/public/fleetdata/files/data_01.parquet')
```

```
.........
ans = 'C:\EI\Platforms\databricks\Software\MATLAB\public\examples\MAC2020\data_01.parquet'
```

and perform other filesystem tasks

```
% Create a directory
% db.mkdir('/public/data')

% Remove a file
% db.rm('/public/fleetdata/file_01.parquet')

% Upload a file
% db.upload('trip_01.mat', '/public/fleetdata/mat')
```

Part 2: Exploration using Databricks-Connect and Spark

MATLAB users can use databricks-connect to connect to the Spark cluster to explore datasets. The tooling allows users to slice / dice and query data by leveraging the distributed compute cluster that works with the storage to expose the datasets via a Spark API.

```
inputLocation = '/public/fleetdata/files/*.parquet';
```

UTF-8 script

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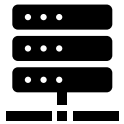
Compute  People 

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Q&A

Please contact us with questions

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