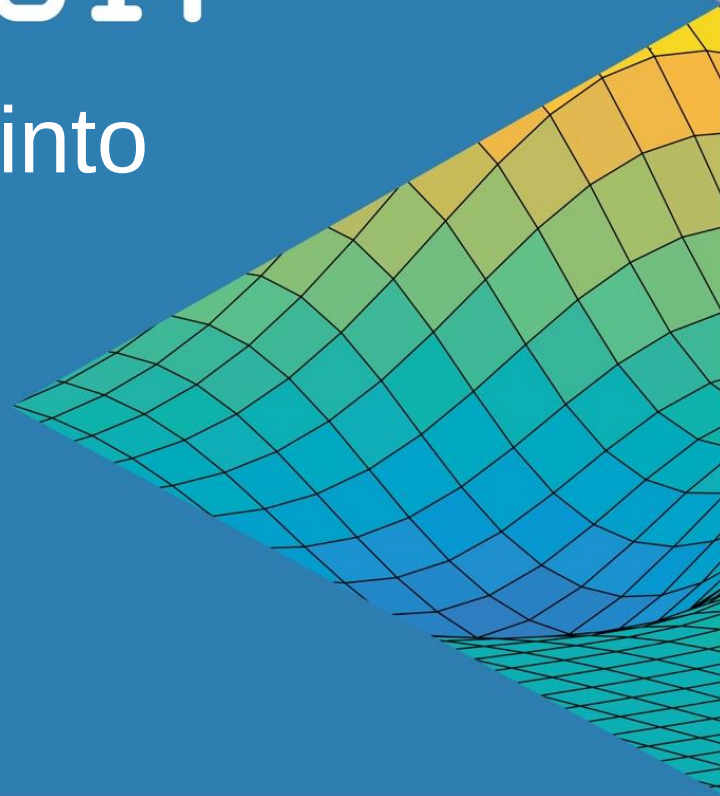


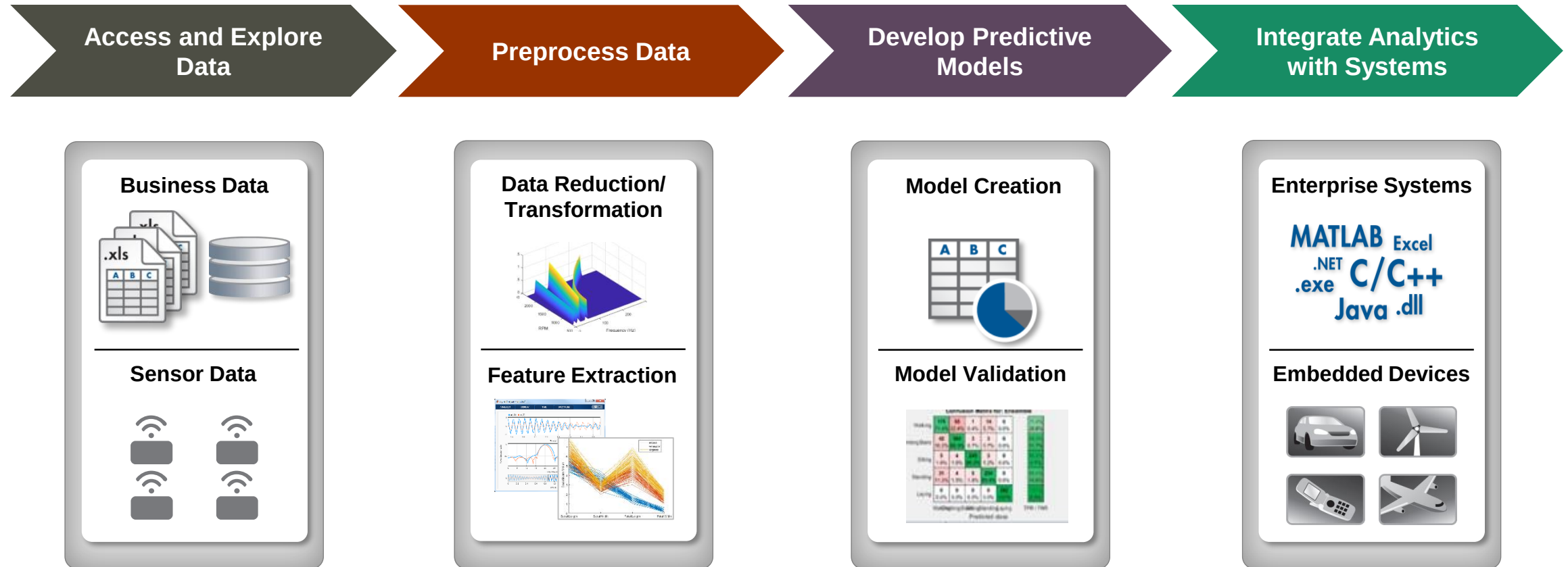
MATLAB EXPO 2017

Integrate MATLAB Analytics into
Enterprise Applications

Ionut Barbu, Application Engineer

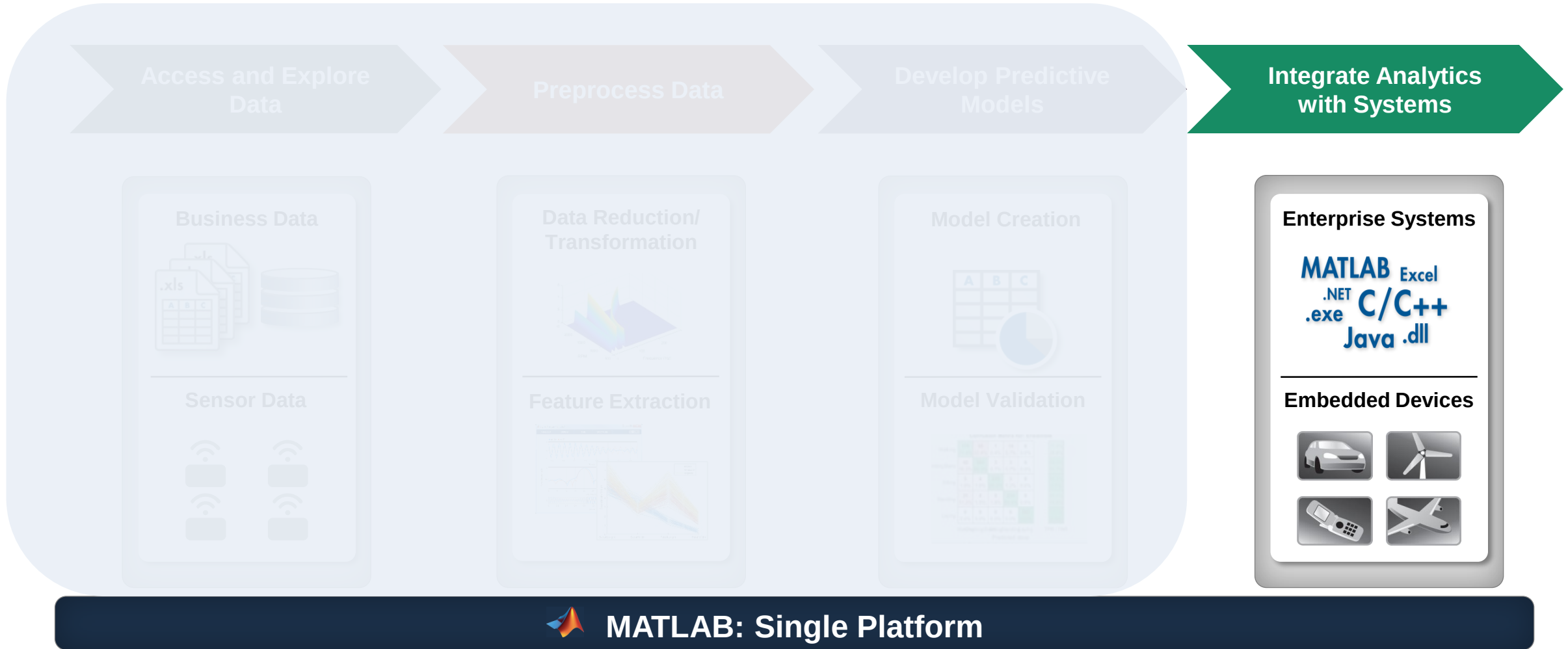


Data Analytics Workflow



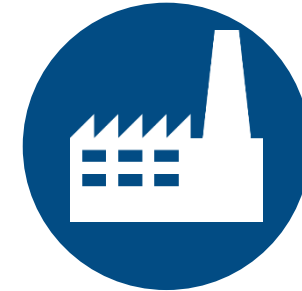
 **MATLAB: Single Platform**

Data Analytics Workflow

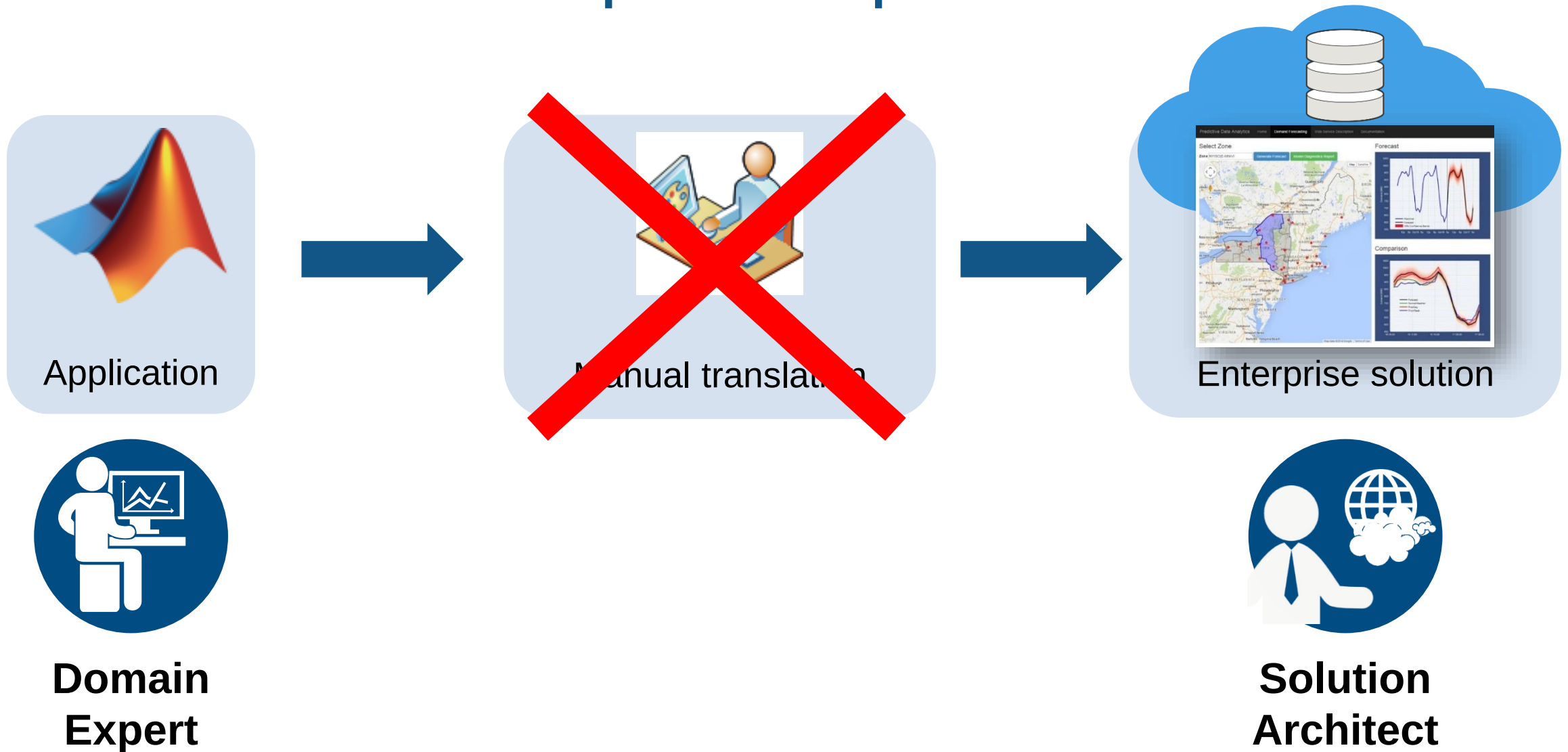


Challenges

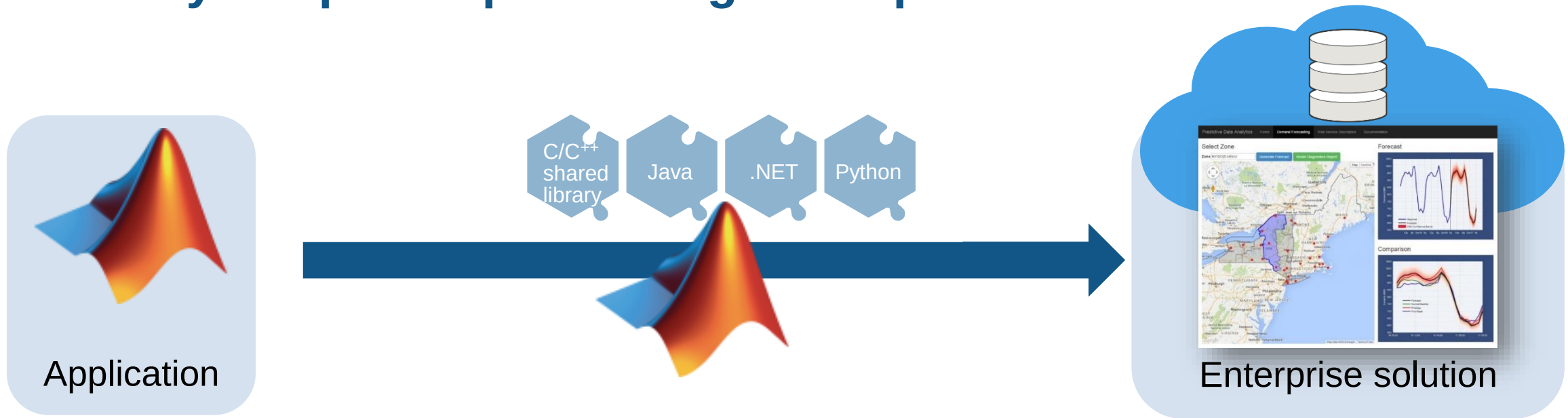
- Bridge the gap between multiple disciplines
- Integrate solutions to enterprise scale frameworks
- Deliver fast results with large volumes of data



Different tools for development and productization



What if you speed up the integration process?



with automatic deployment



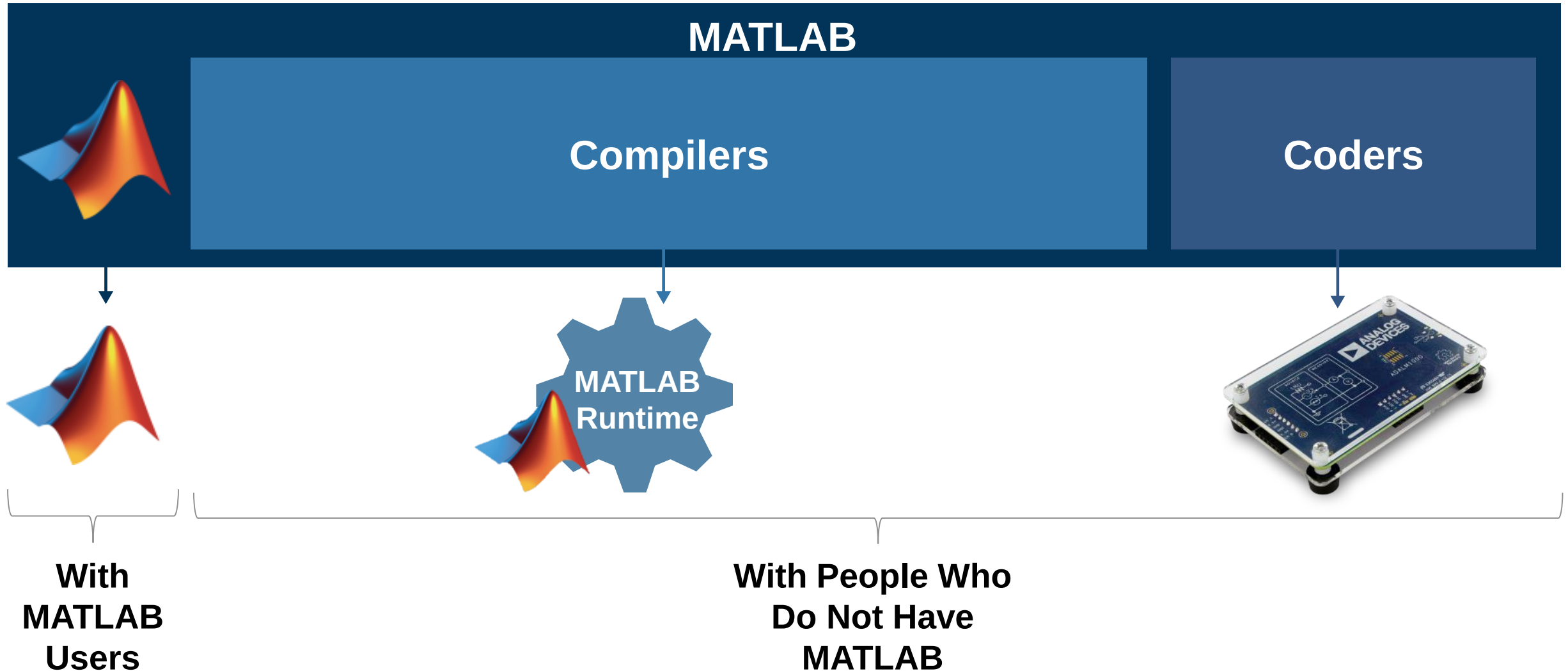
**Domain
Expert**



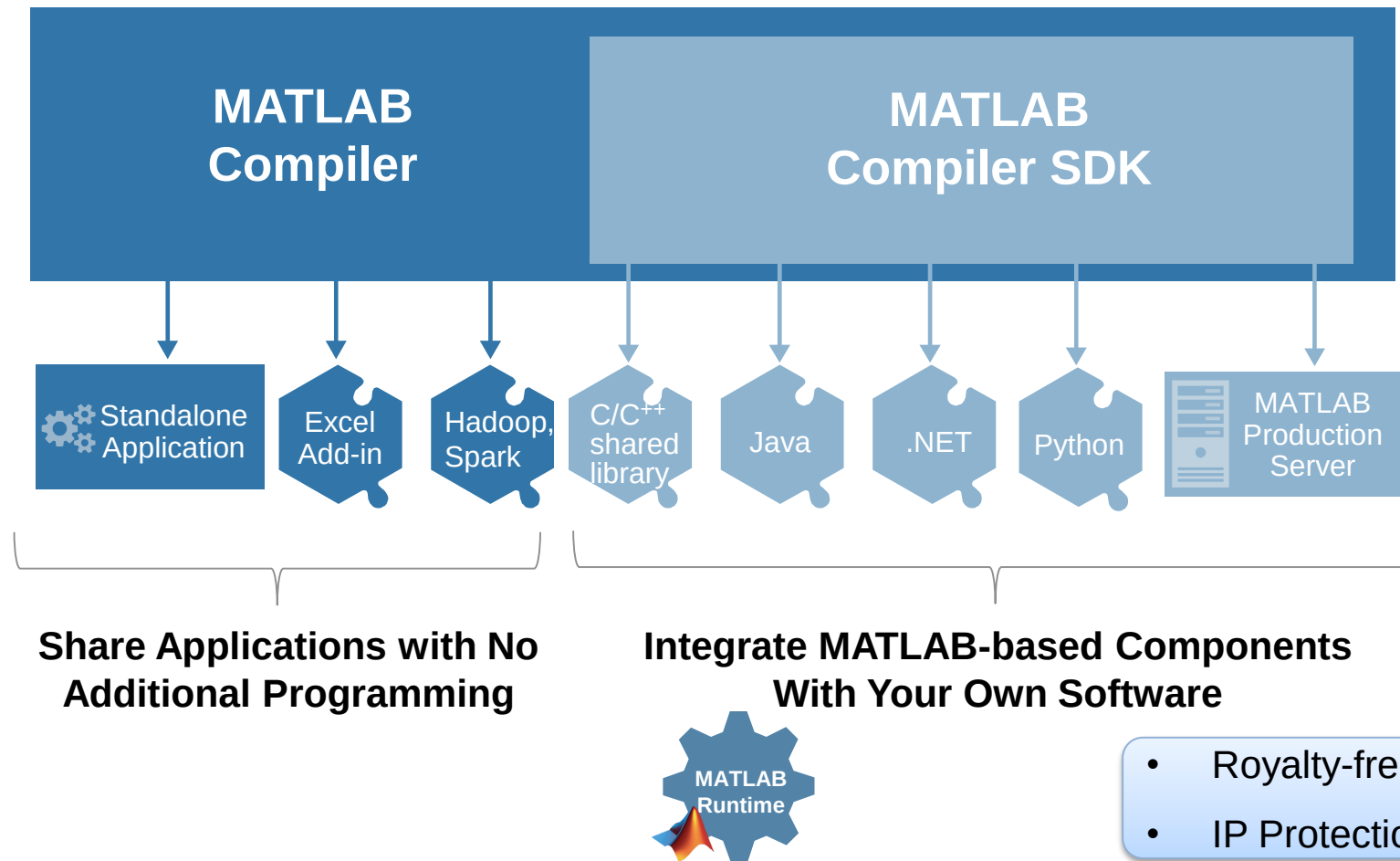
**Solution
Architect**

Sharing and Deploying MATLAB Applications

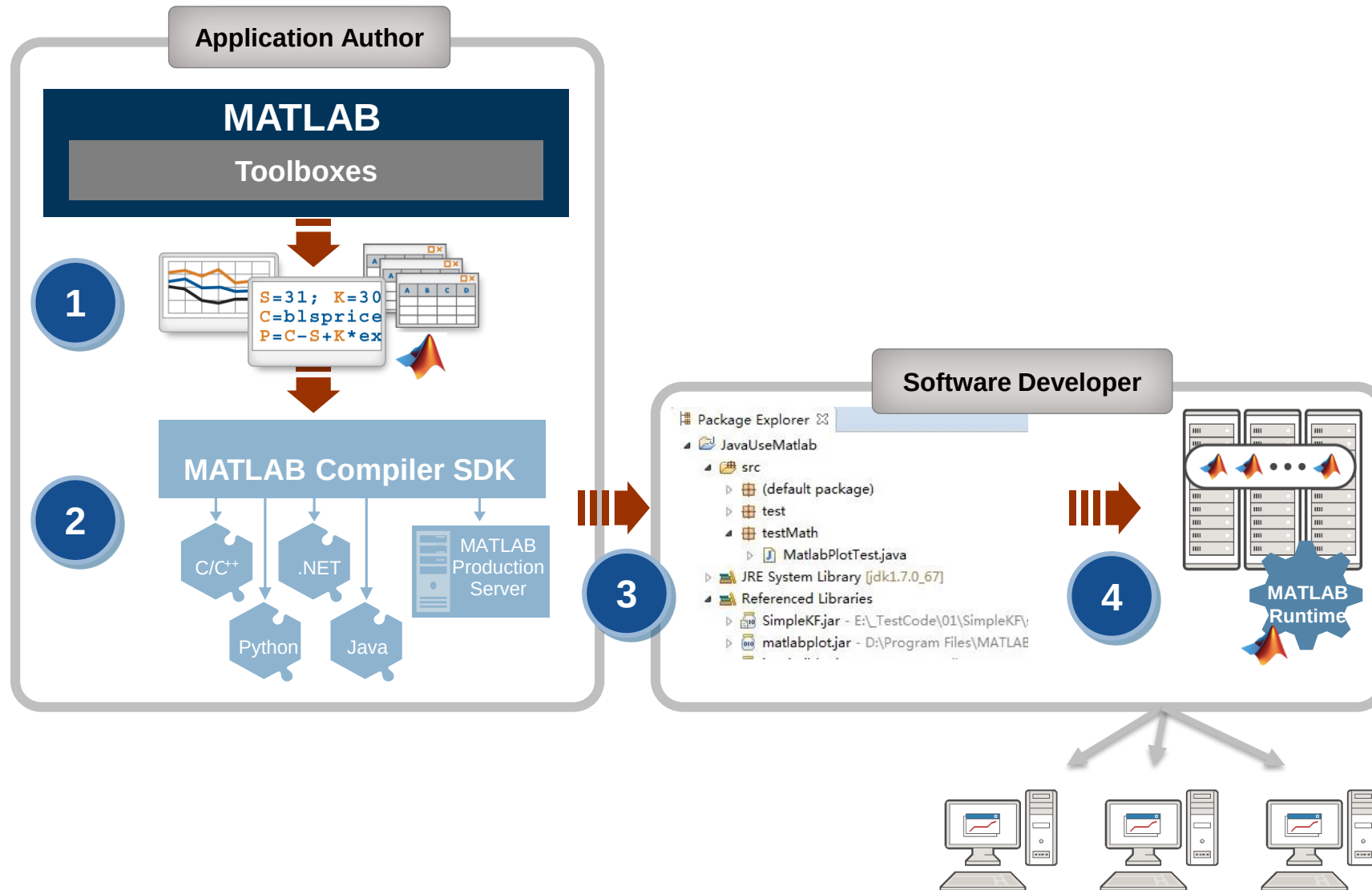
Write Your Programs Once, Then Share to Different Targets



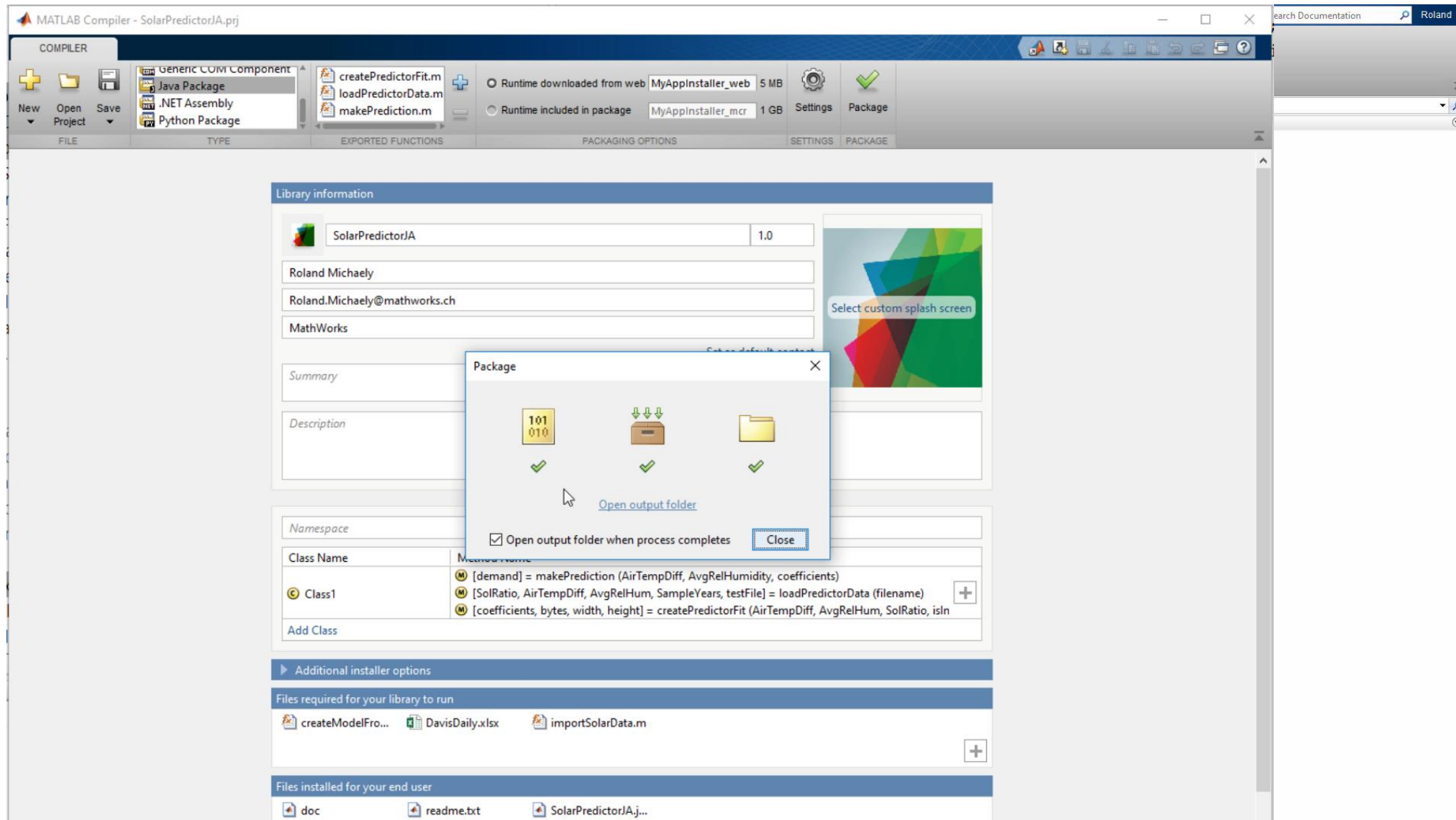
Share with People Who Do Not Have MATLAB



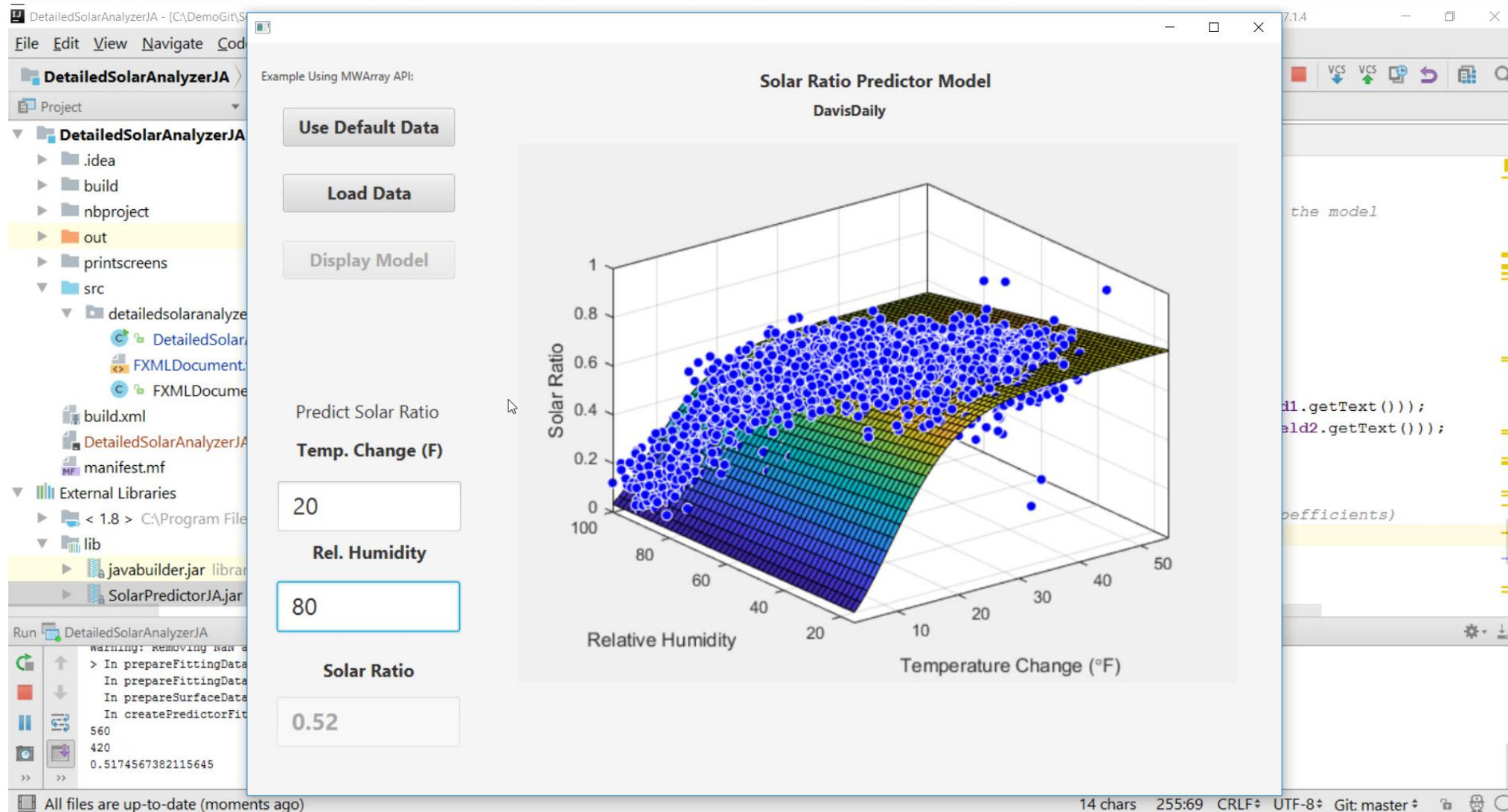
Integrate MATLAB-based Components With Your Own Software



Using MATLAB Compiler SDK to create Java Classes



Using MATLAB Compiler SDK to create Java Classes

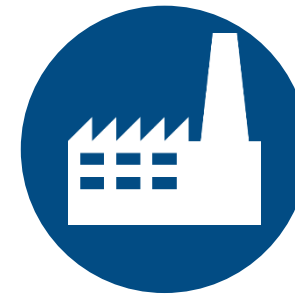


MATLAB *and* MATLAB Production Server

is the **easiest** and most **productive** environment to *take your enterprise analytics or Internet of Things solution* from **idea** to **production**

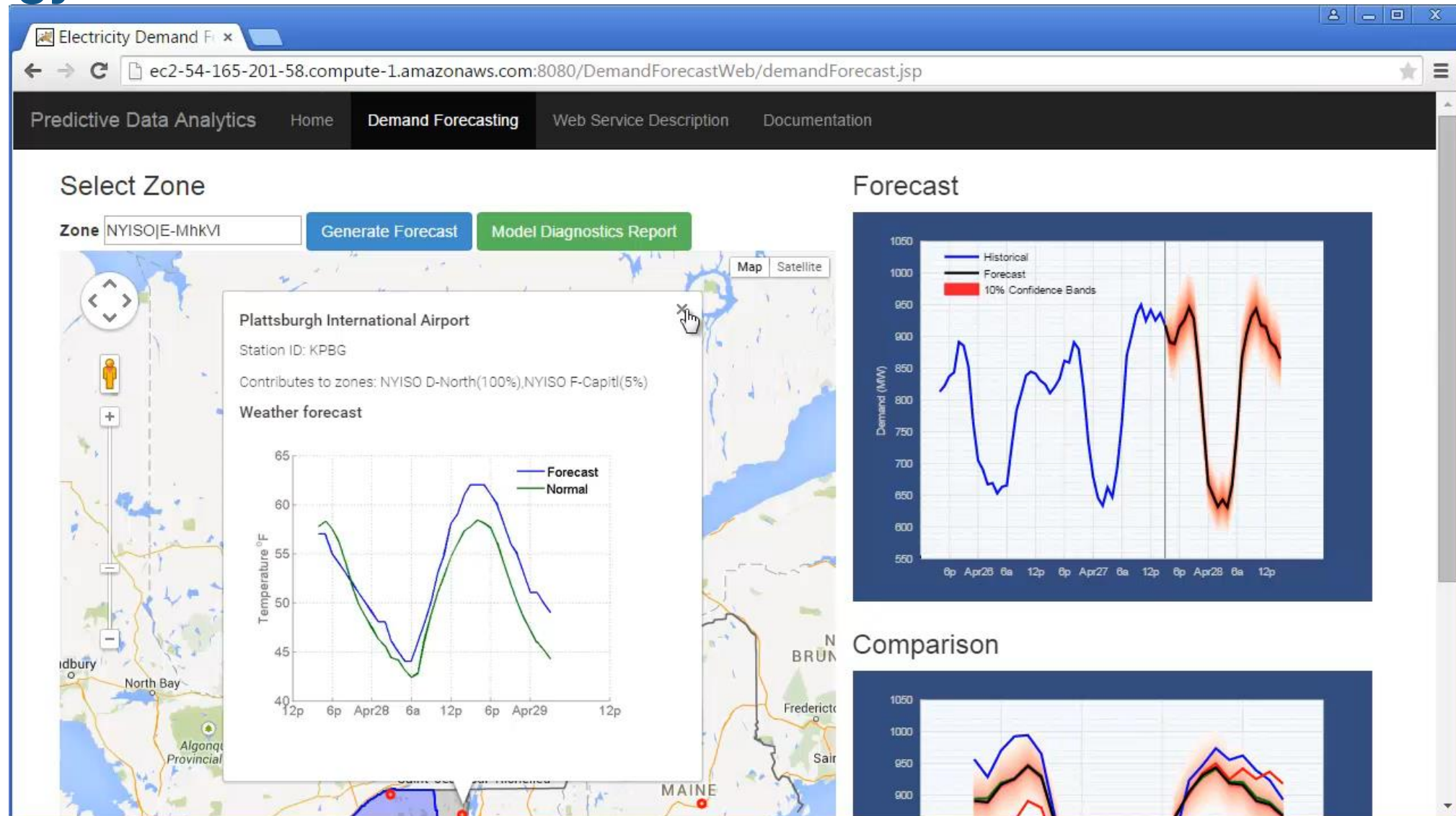


Idea

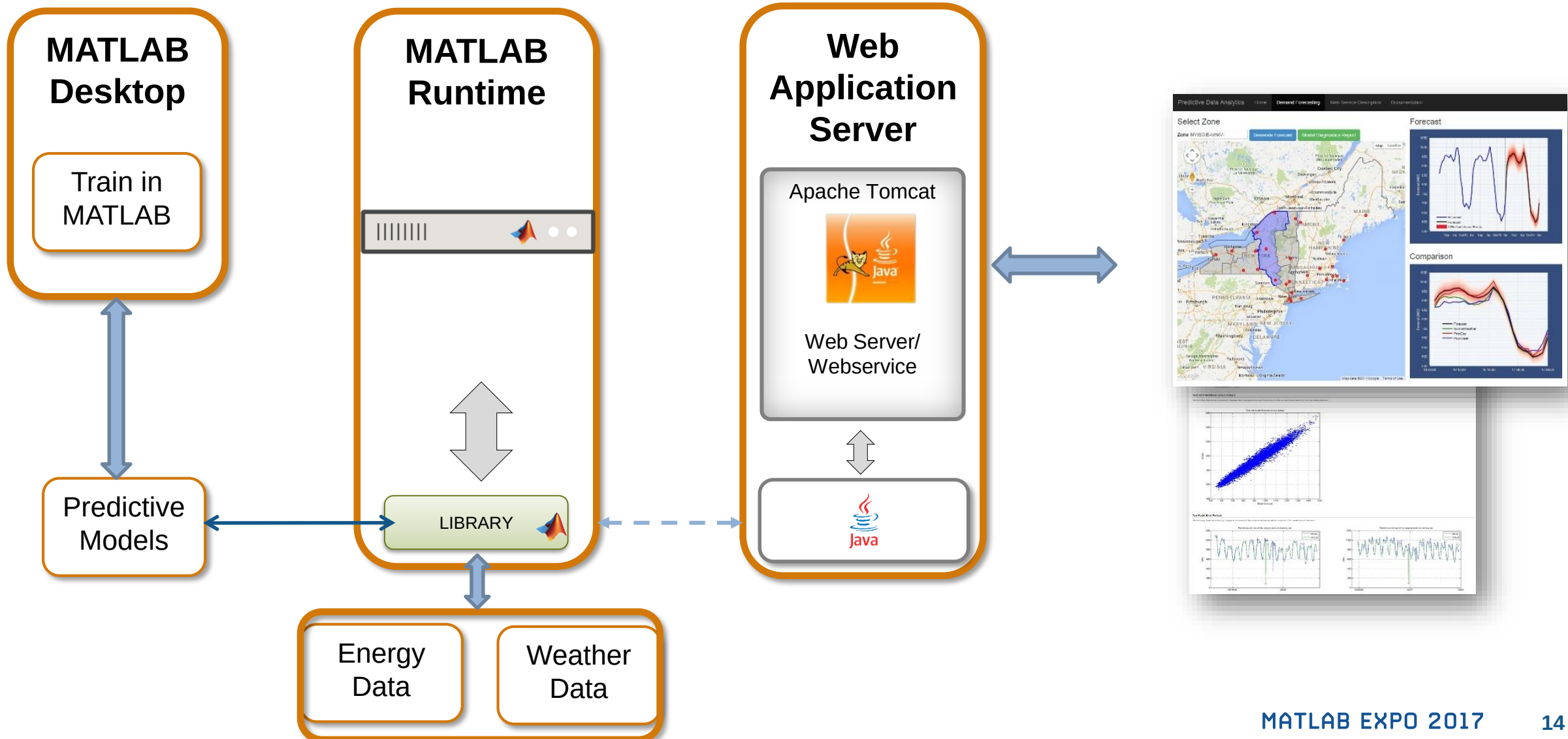


Production

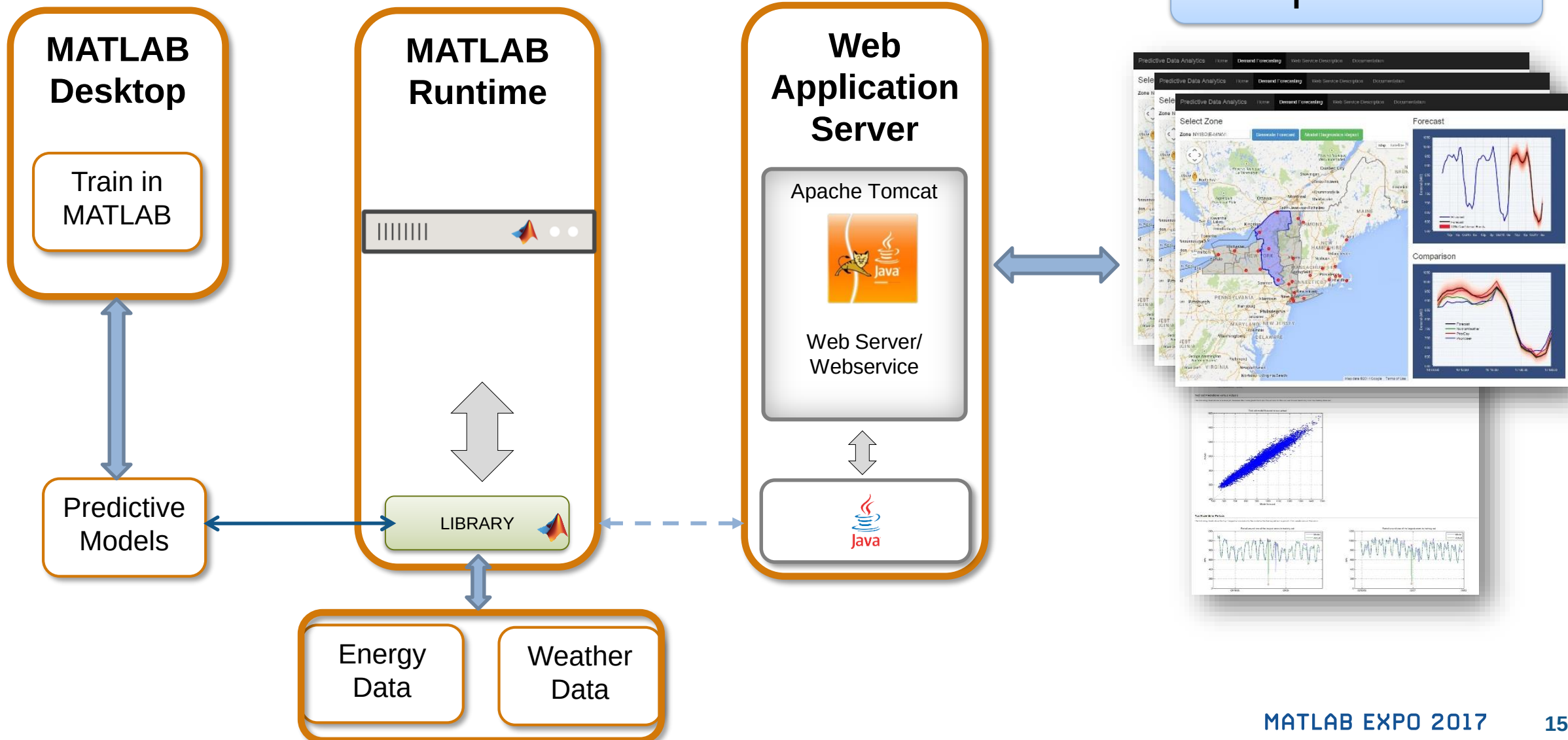
Energy Load Forecast



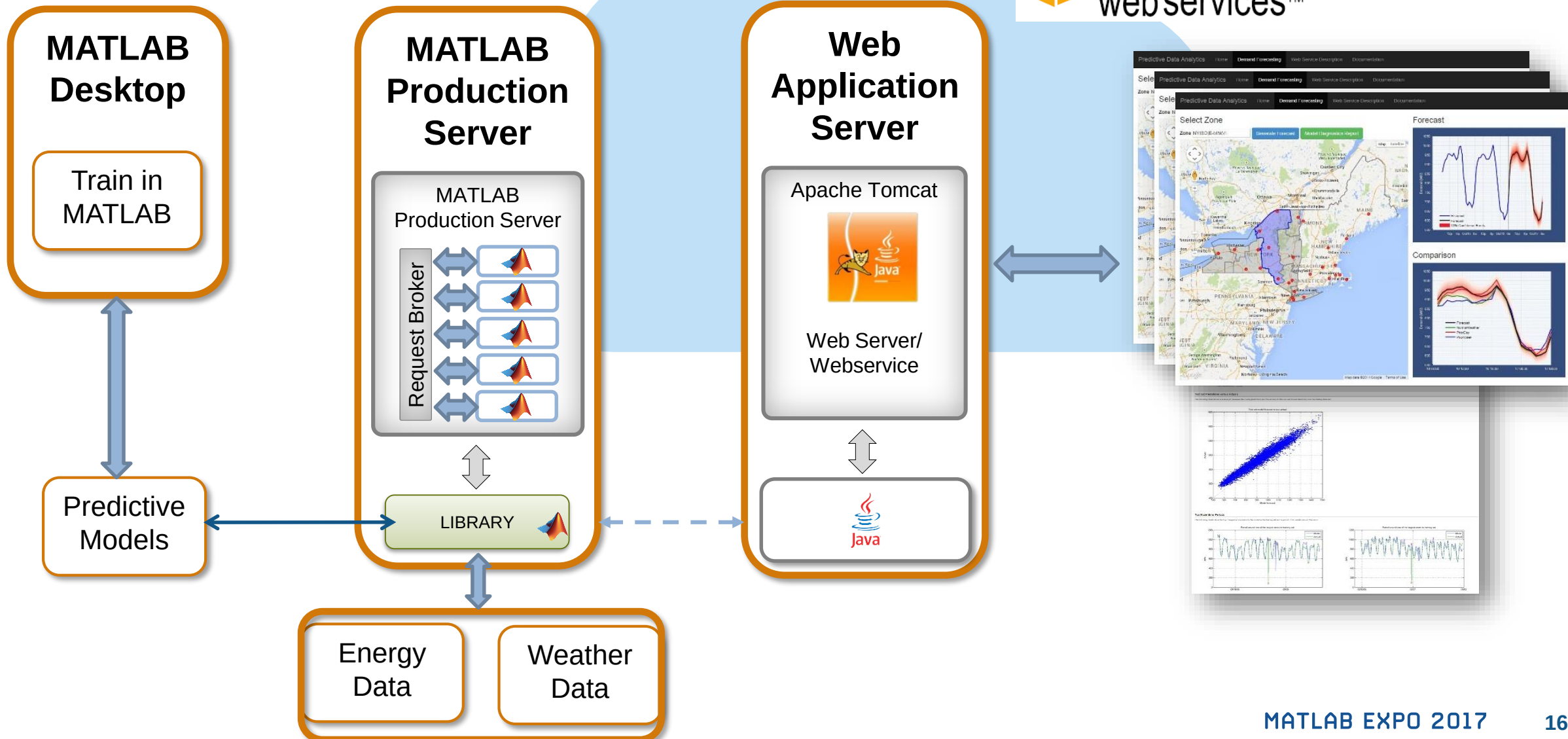
Energy Load Forecast



Energy Load Forecast



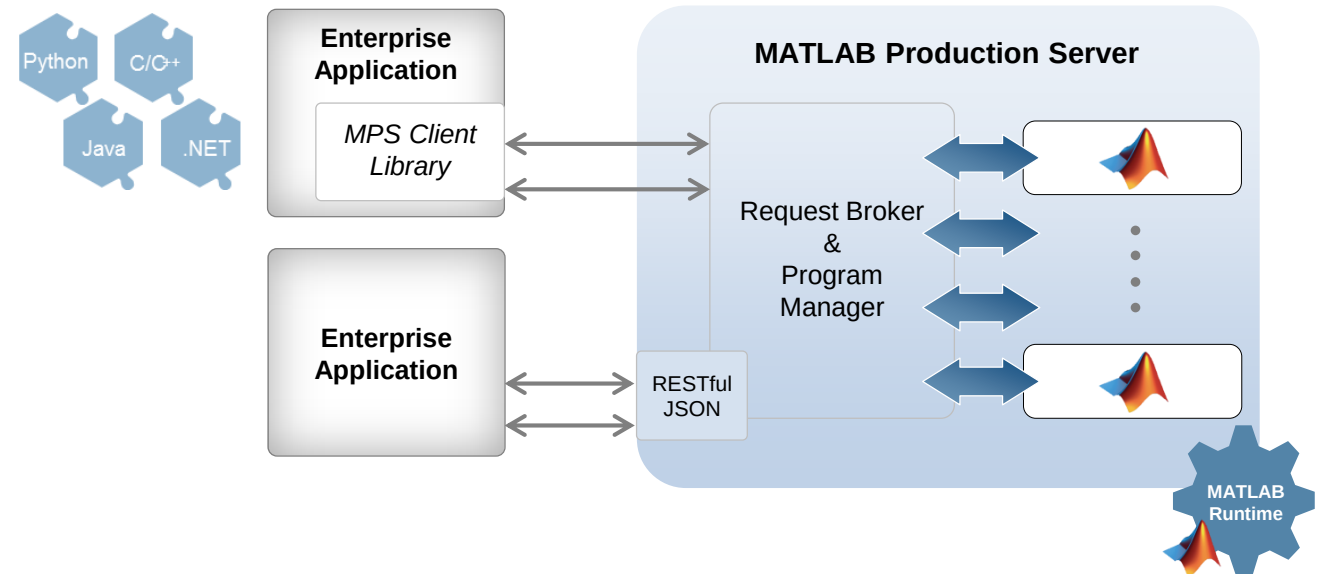
Energy Load Forecast



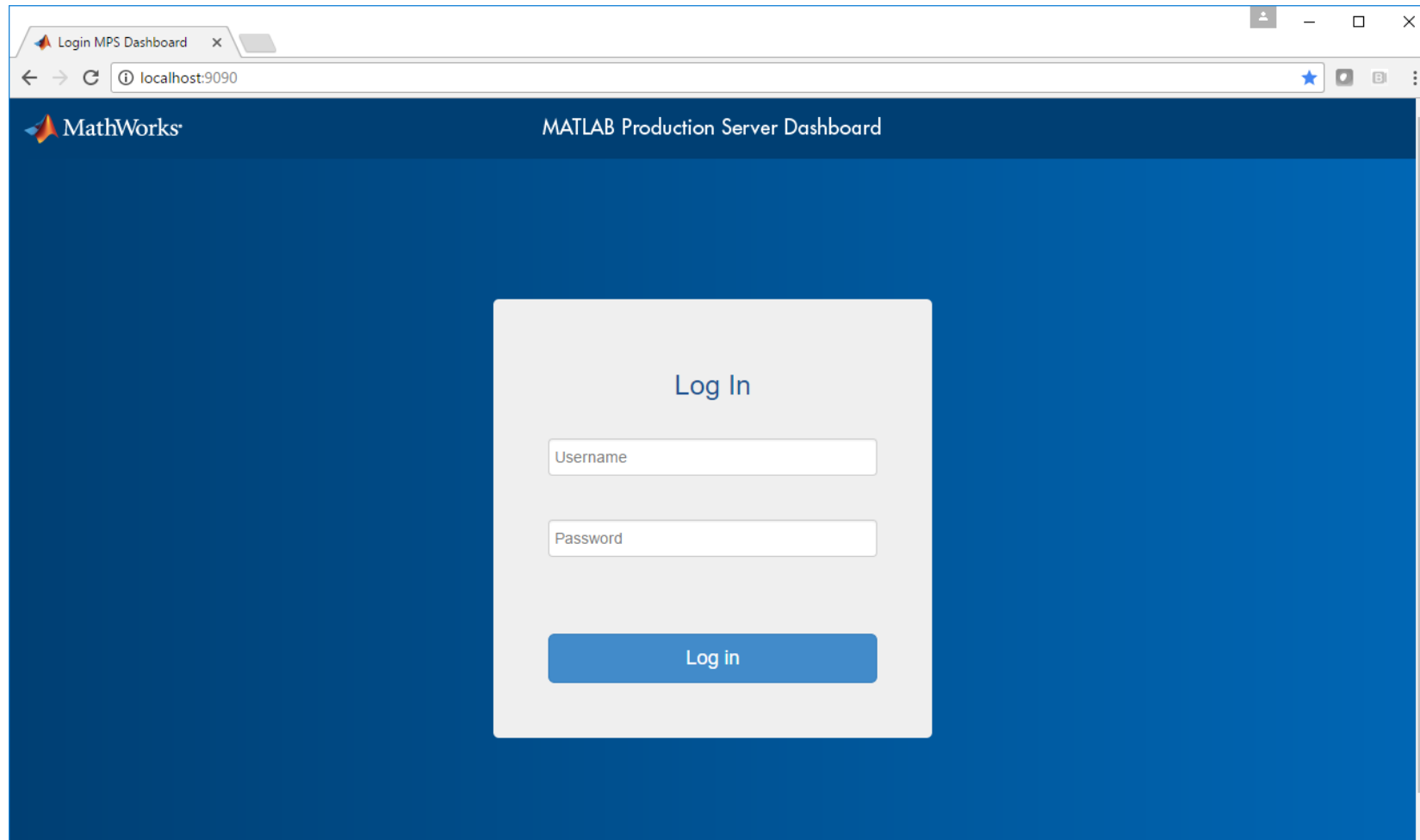
MATLAB Production Server

Enterprise Class Framework For Running Packaged MATLAB Programs

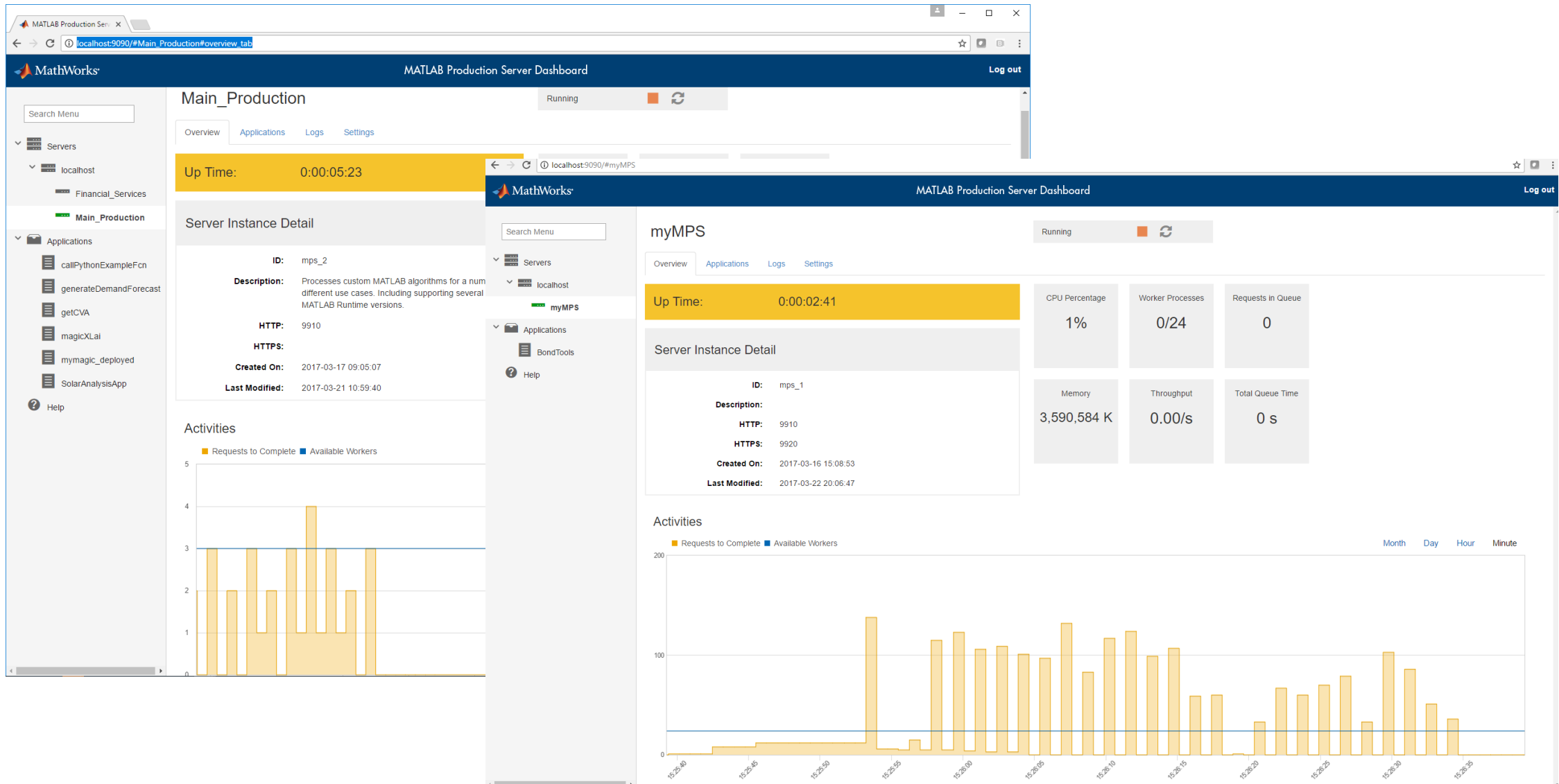
- Server software
 - Manages packaged MATLAB programs and worker pool
- MATLAB Runtime libraries
 - Single server can use runtimes from different releases
- RESTful JSON interface and lightweight client library (C/C++, .NET, Python, and Java)



Manage Your Server Instances Using a Dashboard Interface



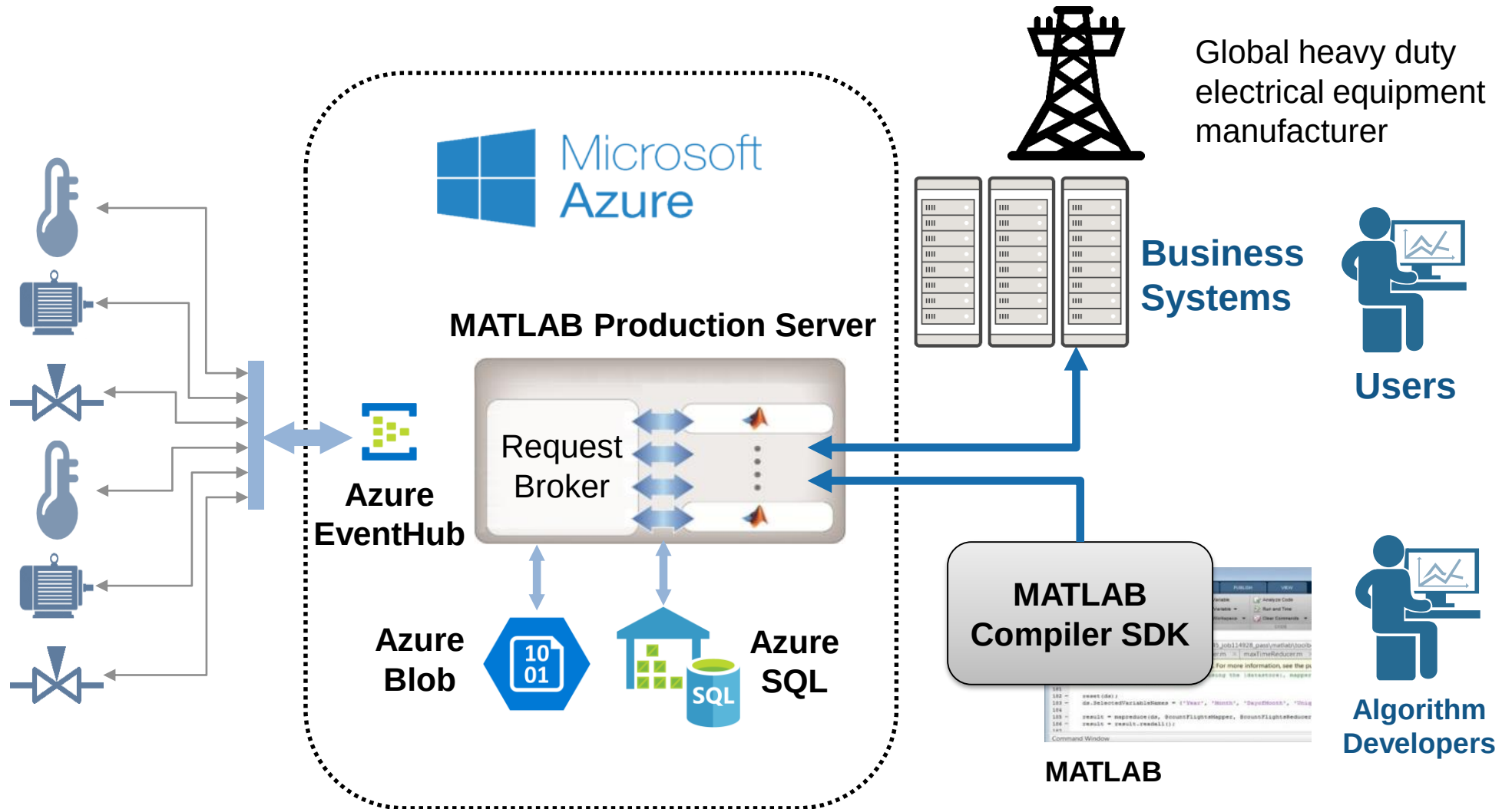
Manage Your Server Instances Using a Dashboard Interface



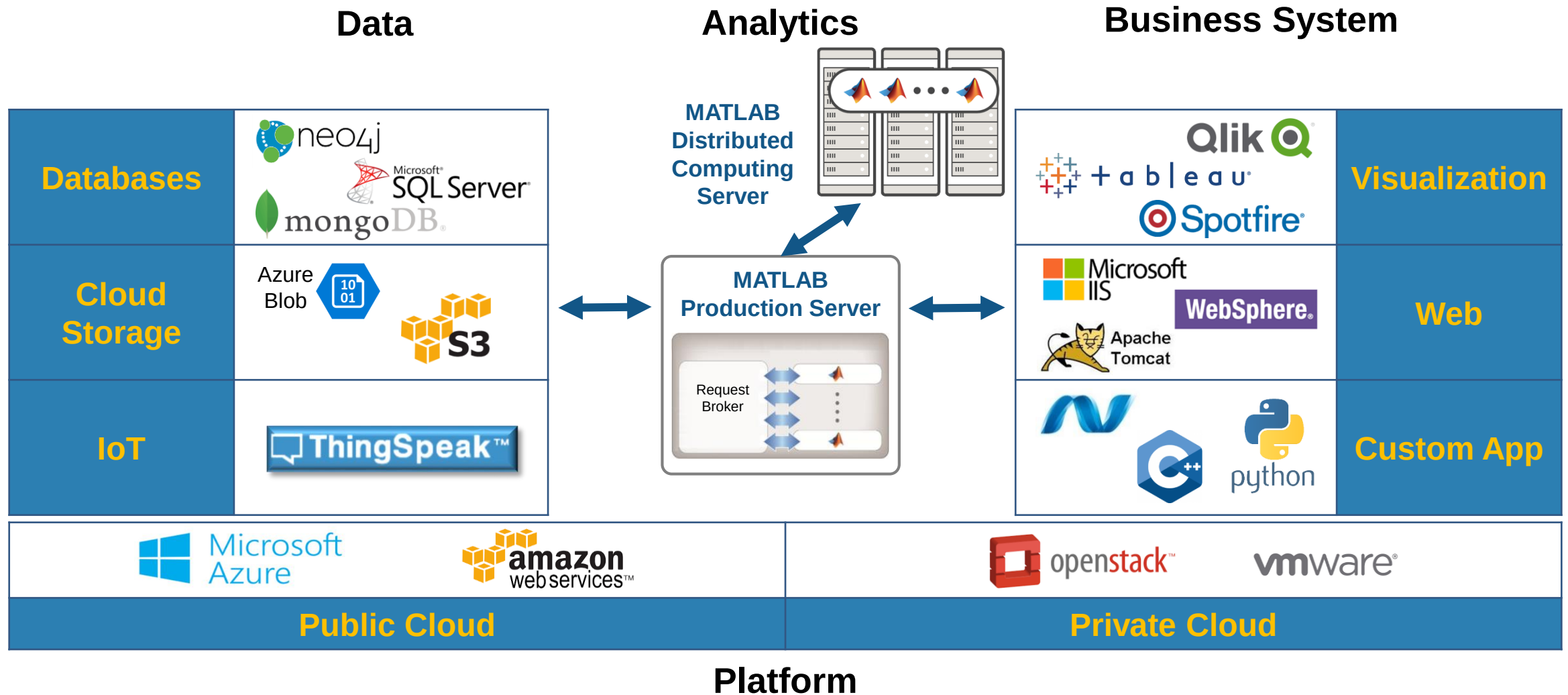
Building Automation IoT Analytics on Azure

Building/HVAC automation control system

- Variety of sensors and controls
- Networked communication
- Data reduction



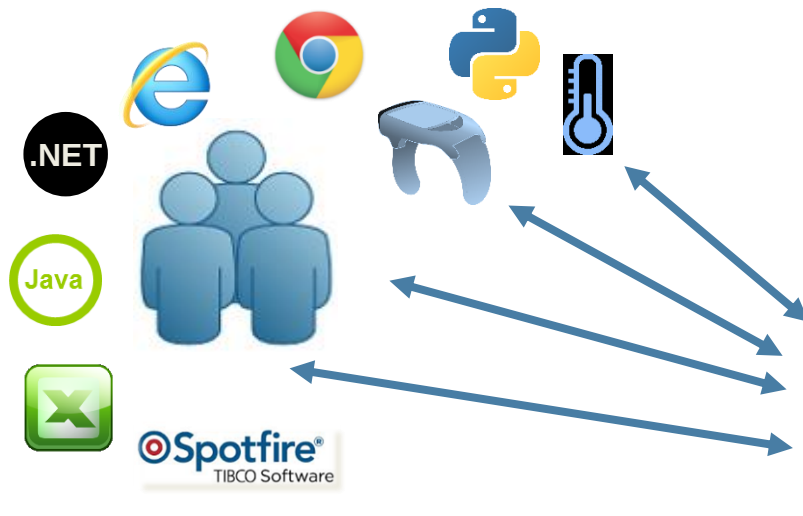
Technology Stack



Front-end Scalability

Application server for MATLAB

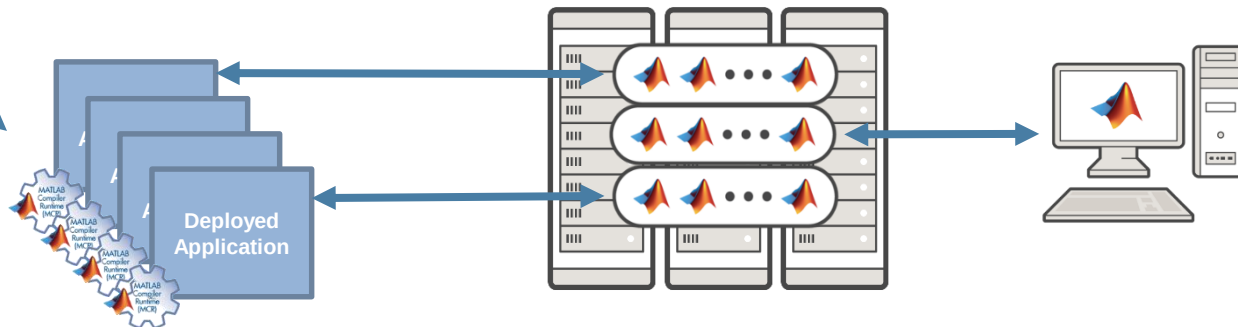
- Manage large numbers of requests to run deployed MATLAB programs



Back-end Scalability

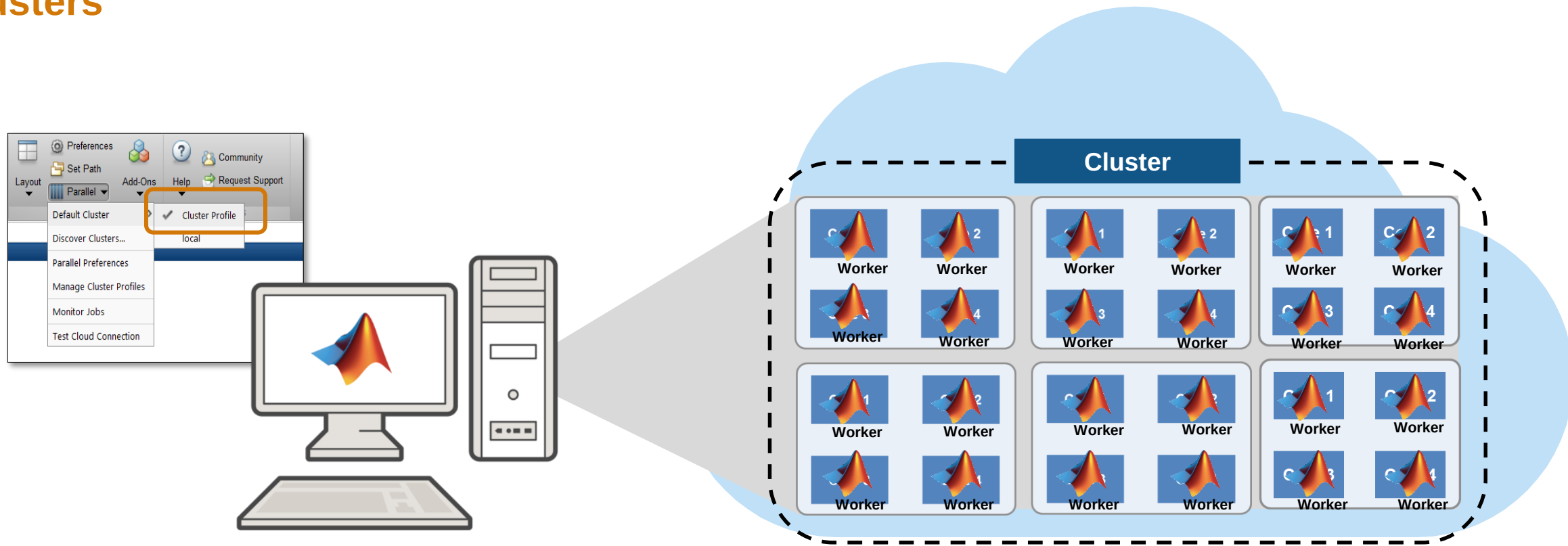
Cluster framework for MATLAB

- Speed up computationally intensive programs on computer clusters, clouds, and grids



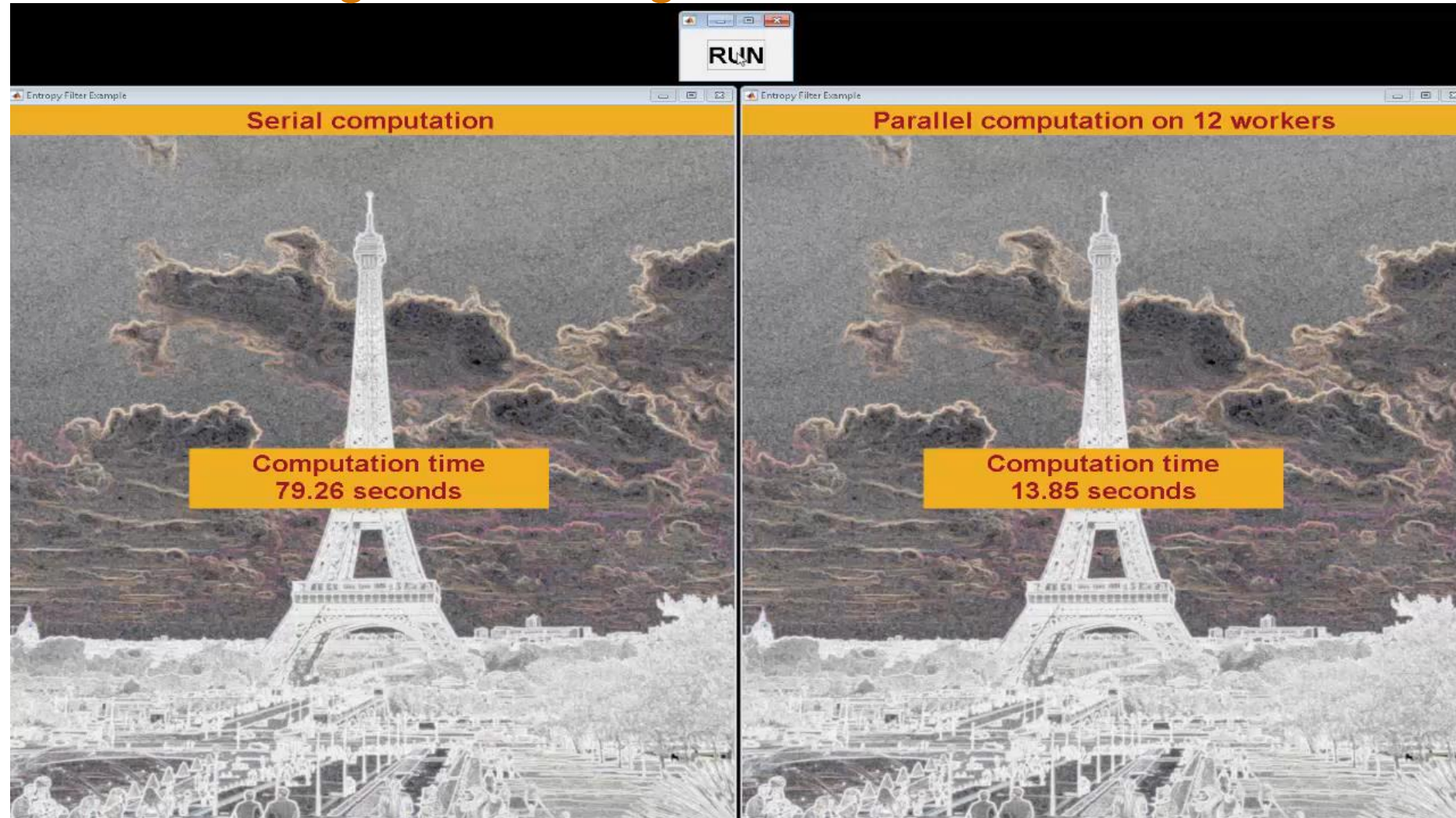
Parallel Computing Paradigm

Clusters

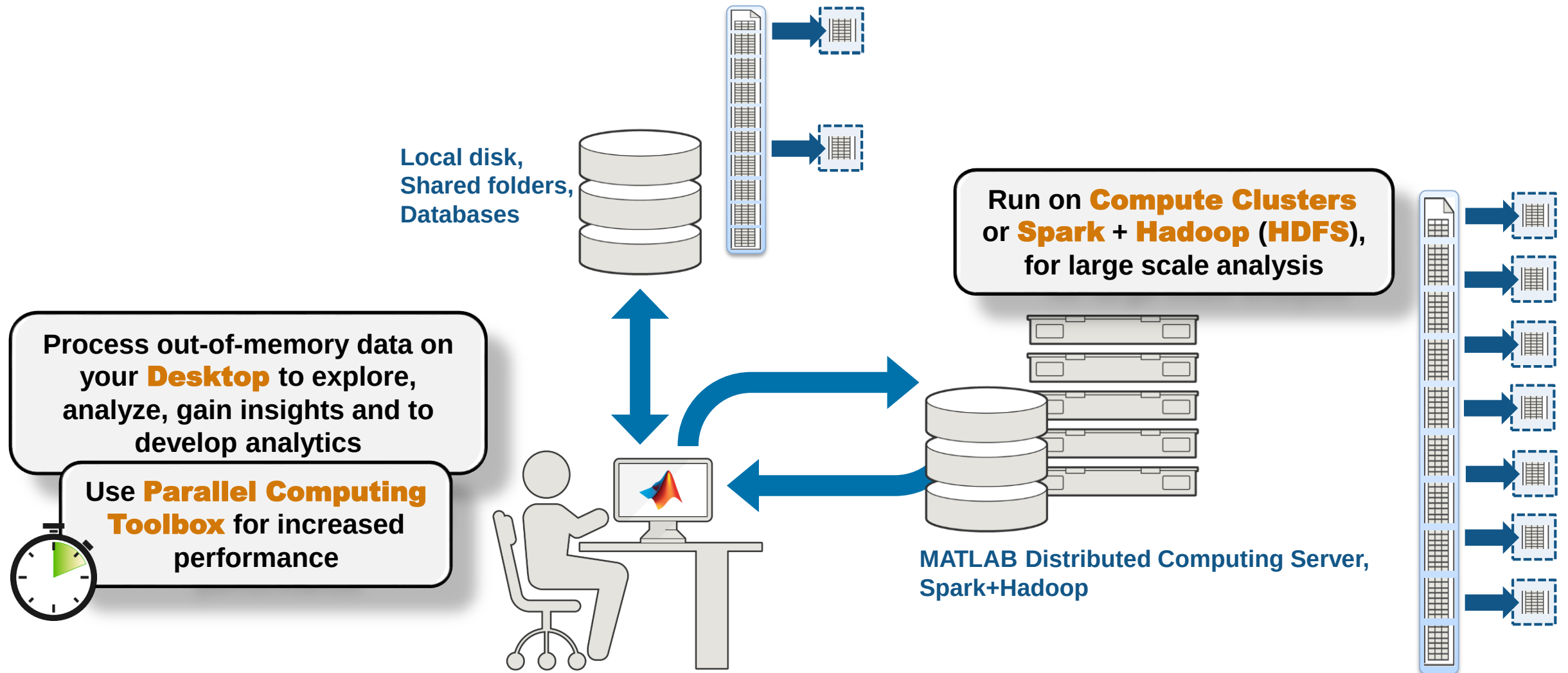


Speed-up using Multiple Cores on the Cloud

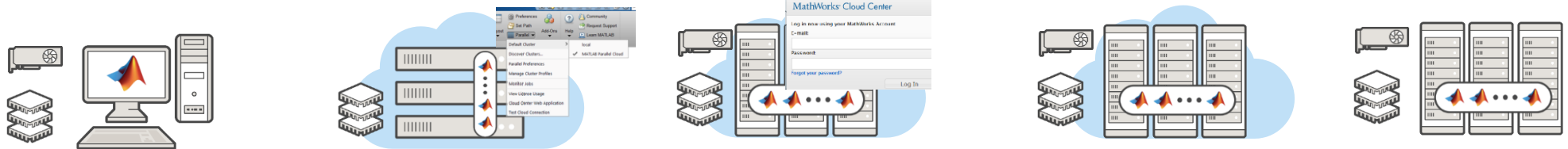
High Resolution Image Processing



Big Data Workflow



Scale your Applications Beyond the Desktop



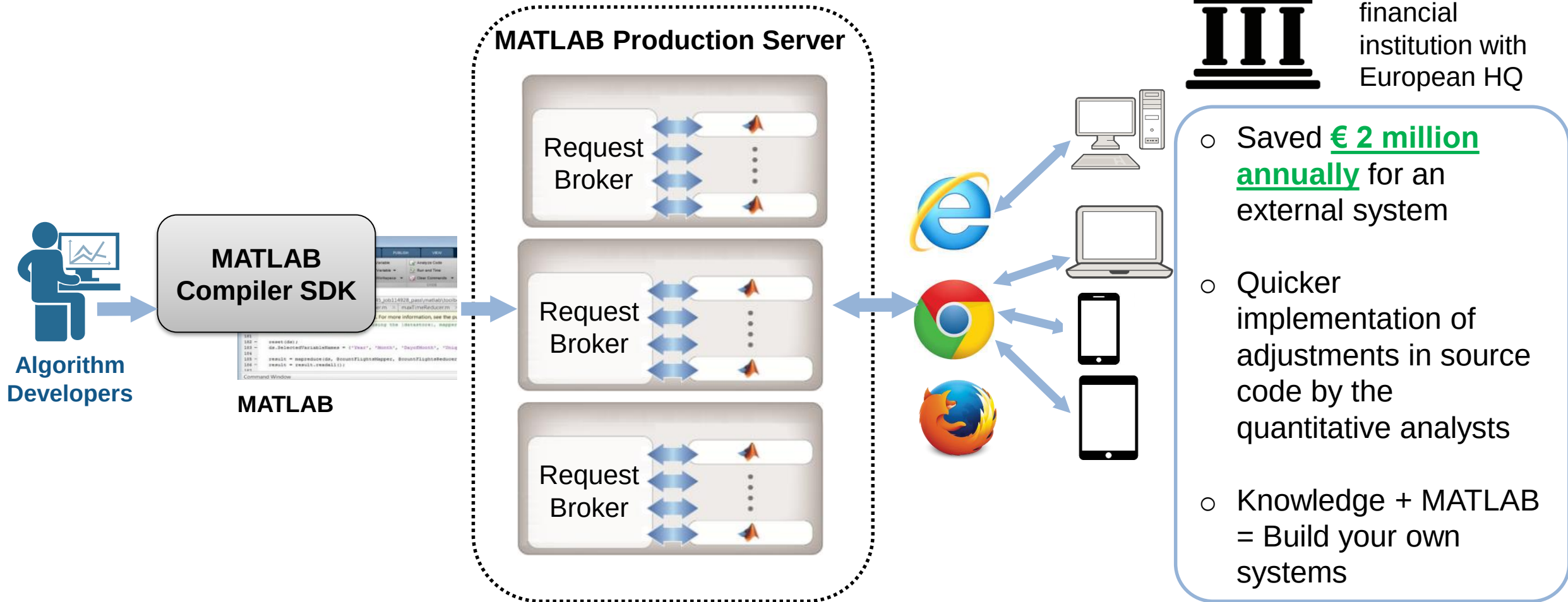
Option	Parallel Computing Toolbox	MATLAB Parallel Cloud	MATLAB Distributed Computing Server for Amazon EC2	MATLAB Distributed Computing Server for Custom Cloud	MATLAB Distributed Computing Server
Description	Explicit desktop scaling	Single-user, basic scaling to cloud	Scale to EC2 with some customization	Scale to custom cloud	Scale to clusters
Maximum workers	No limit	16	256	No limit	No limit
Hardware	Desktop	MathWorks Compute Cloud	Amazon EC2	Amazon EC2, Microsoft Azure, Others	Any
Availability	Worldwide	United States and Canada	United States, Canada and other select countries in Europe	Worldwide	Worldwide

Learn More: [Parallel Computing on the Cloud](#)

Customer Example: Financial Customer Advisory Service



Global financial institution with European HQ



How to get started?

Public

On-Site

- Data Analytics
- Application Development
- Code Generation

MATLAB[®]

Data Analytics

Data Processing and
visualization
Statistics
Machine Learning
Optimization Techniques
Parallel Computing

Application-Specific

Control System Design
Signal Processing
Communication Systems
LTE Systems

Application Development

Programming Techniques
Building Interactive
Applications
Object-Oriented Programming

Code Generation

MATLAB Coder
Interfacing with C-code

Computational Finance

Risk Management
Time-Series Modelling

Signal Processing

Using MATLAB
Using Simulink

Image and Video Processing

Image Processing
Computer Vision

SIMULINK[®]

Model-Based Design

Implementing MBD Workflow
Model Management and
Architecture
Verification and Validation

Code Generation

Rapid Prototyping and HIL-
Simulation
Embedded Systems
FPGA Design
Generating HDL Code
Xilinx Zynq SoCs
AUTOSAR

STATEFLOW[®]

Event-Based Modeling

Code Integration

Integrating C and MATLAB

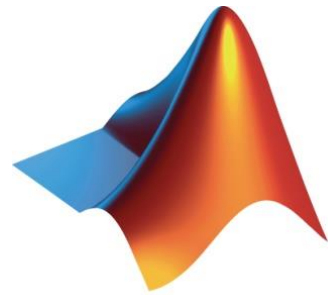
Simscape[™]

General Simscape[™]
Simscape Multibody[™]
Simscape Driveline[™]
Simscape Fluids[™]
Simscape Power Systems[™]

Polyspace[®]

Polyspace Code Prover[™]

<https://nl.mathworks.com/services/training.html>



MathWorks®

Accelerating the pace of engineering and science

© 2017 The MathWorks, Inc. MATLAB and Simulink are registered trademarks of The MathWorks, Inc. See www.mathworks.com/trademarks for a list of additional trademarks. Other product or brand names may be trademarks or registered trademarks of their respective holders.