

# Integrating Python and MATLAB

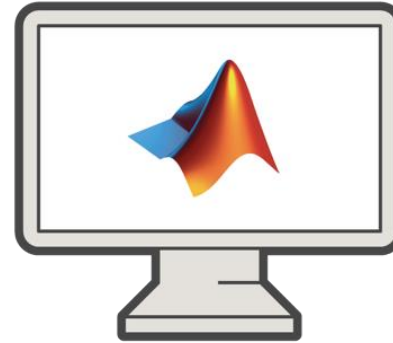
Ian McKenna, Ph.D.  
Senior Application Engineer

# Agenda

- How MATLAB fits into System Architecture
- Calling Python from MATLAB
- Calling MATLAB from Python
- Packaging MATLAB applications
  - Royalty free .py libraries
  - RESTful API for business critical applications
- Q & A

# Solution Architect Technology Landscape

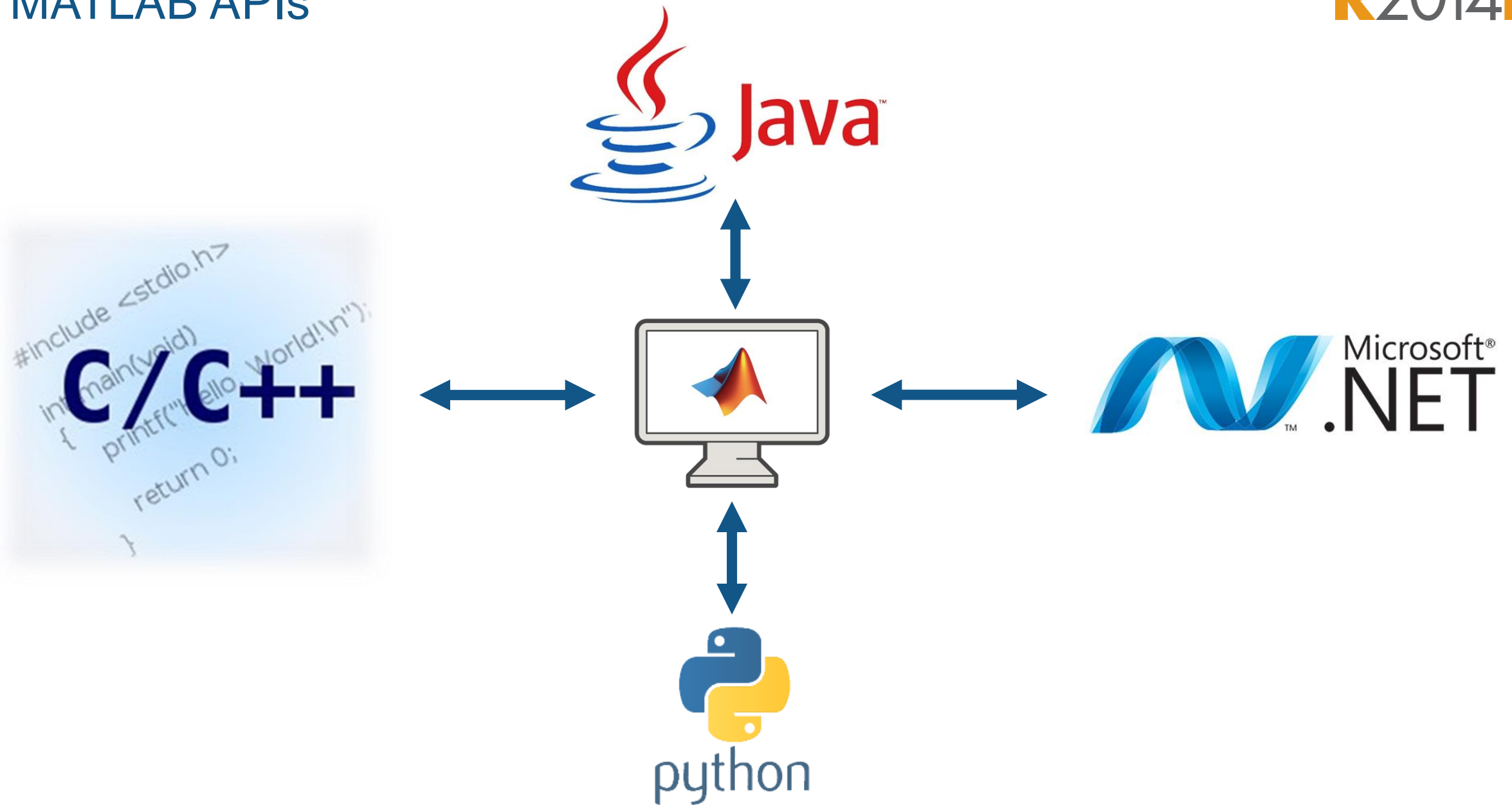
**DATA SOURCES**



**BUSINESS SYSTEMS**

**CLOUD / WEB**

## MATLAB APIs



# Using MATLAB with Python

- Three ways to integrate:



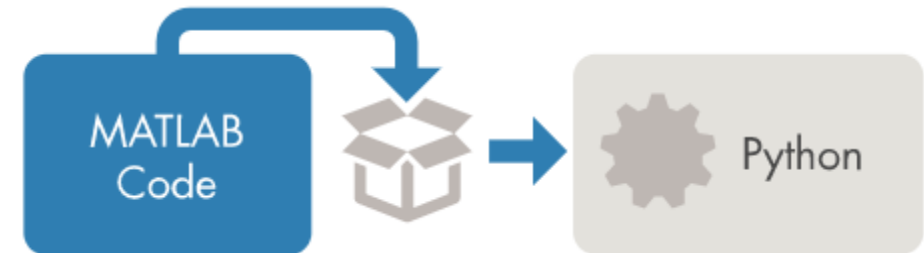
Algorithm  
Developers

- Calling Python from MATLAB
- Calling MATLAB from Python



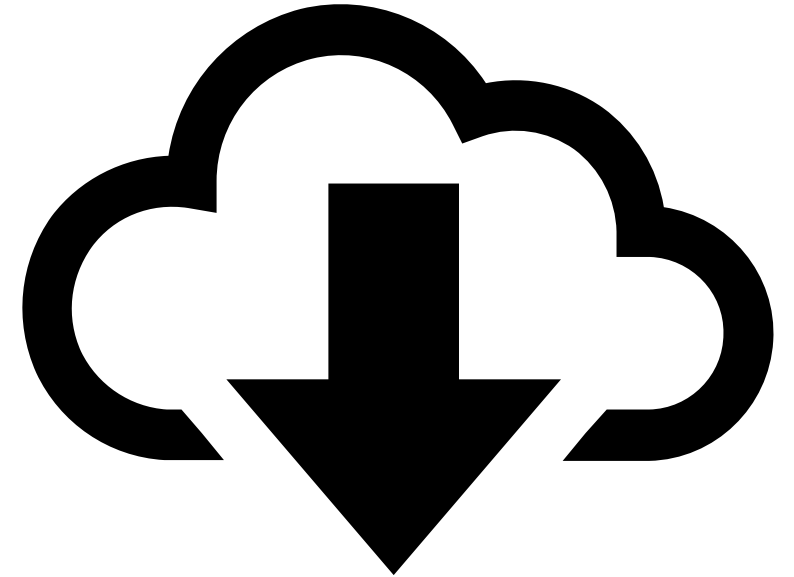
Users

- Packaging MATLAB programs for scalable deployment with Python



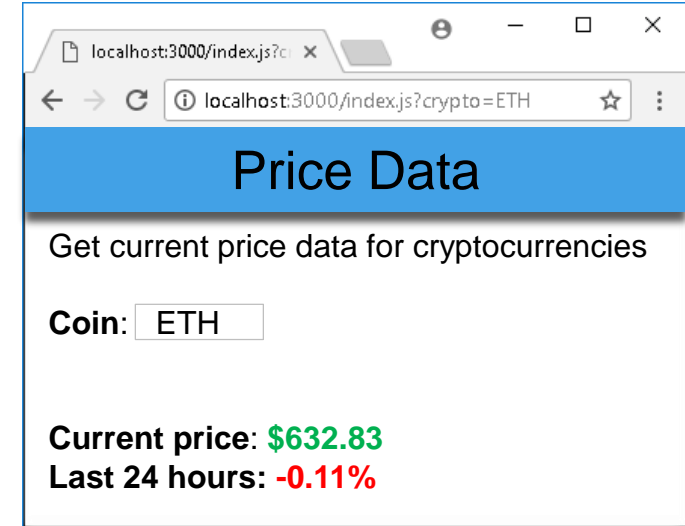
# Price Trend Predictor

- **Goal:**
  - Software as a service: Cryptocurrency price forecaster
- **Approach:**
  - Use IT managed data import libraries
  - Rapidly build predictive models
  - Deploy analytics to enterprise using RESTful API



# Current Setup

Crypto Data



Model  
Developers



IT  
Professionals



Business  
Users

# New Idea

Crypto Data



localhost:3000/index.js?crypto=ETH

## Price Data

Get future price data for cryptocurrencies

Coin:

Current price: \$632.83  
 Predicted price in 1 day: **\$670.21**



**Business Users**



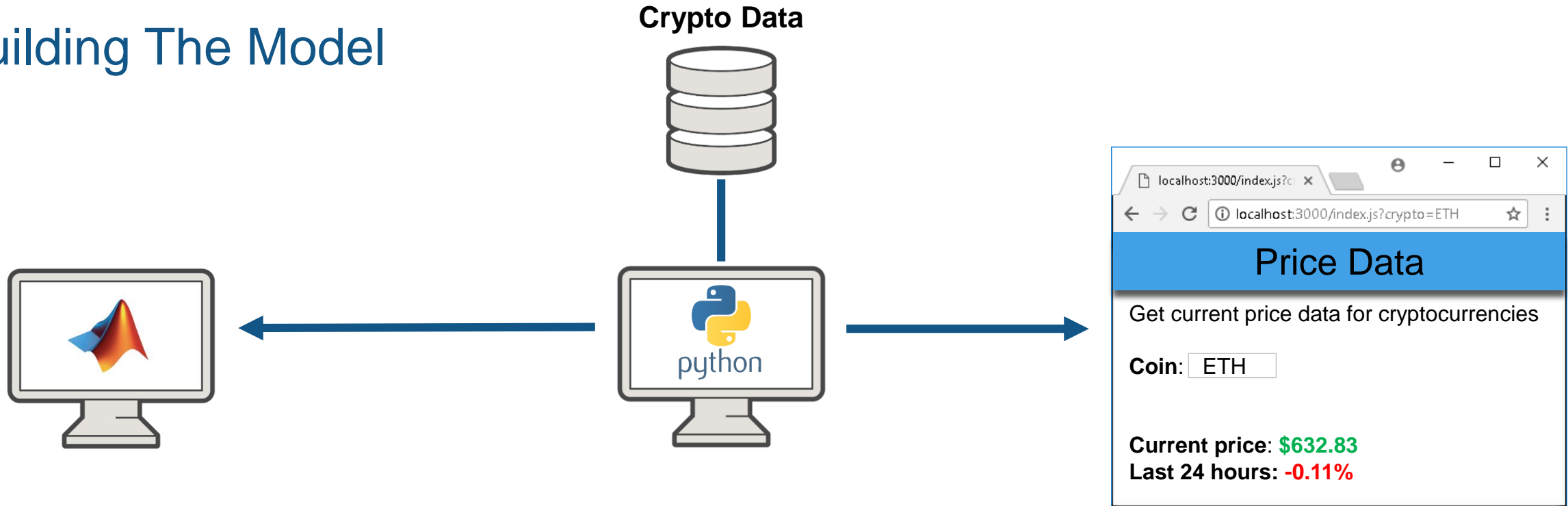
**IT Professionals**



**Model Developers**



# Building The Model



**Model  
Developers**

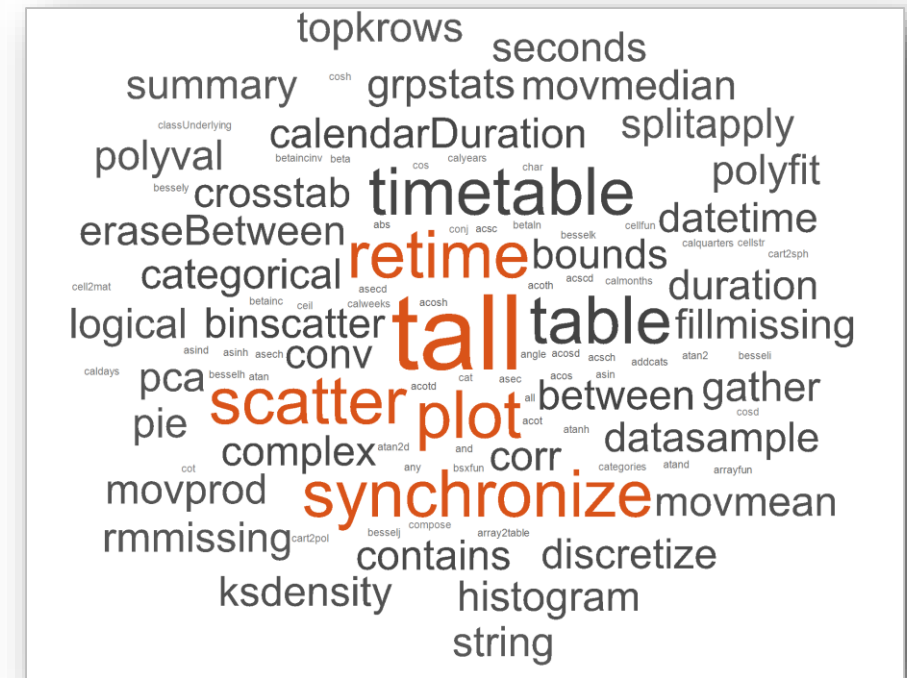
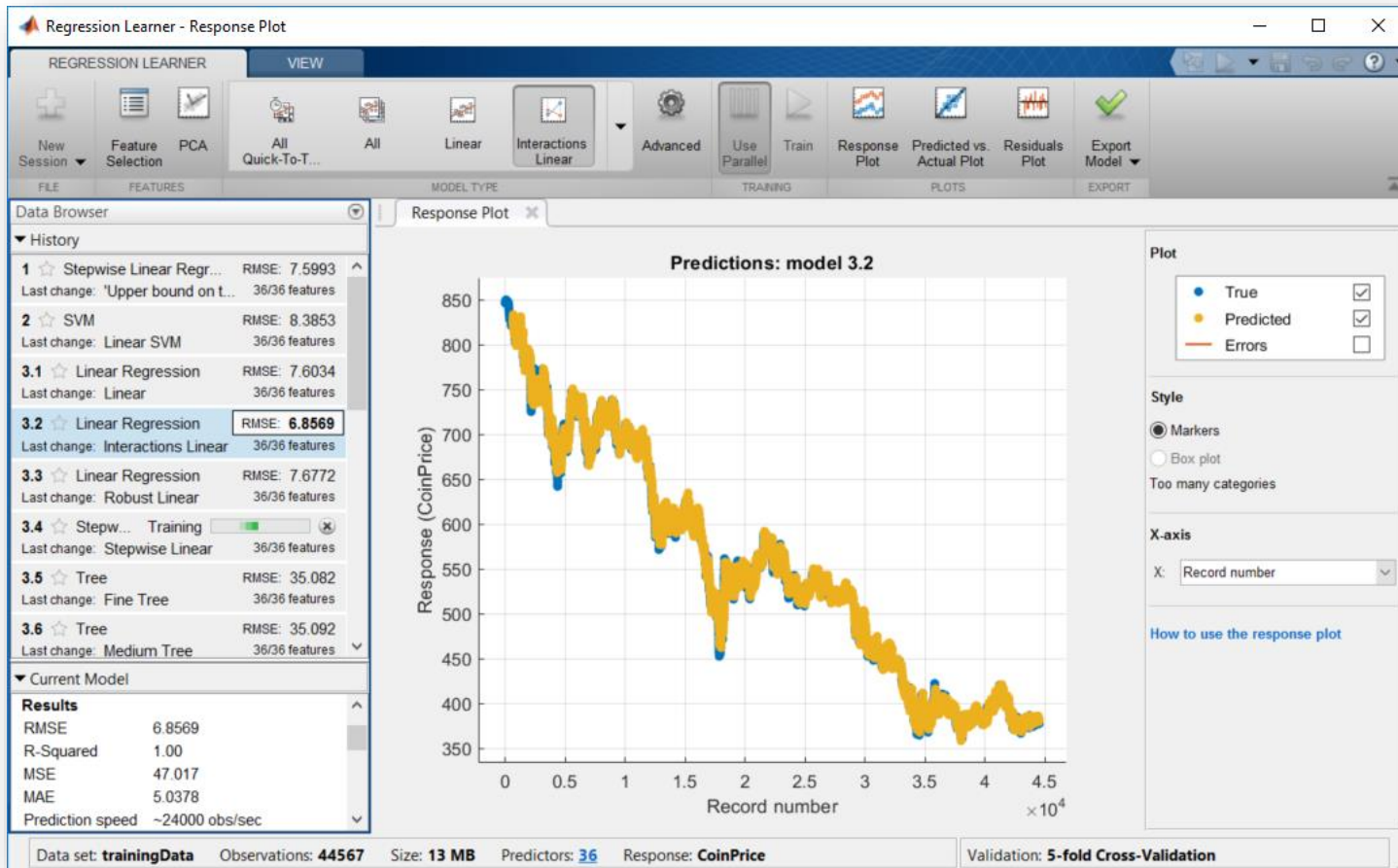


**IT  
Professionals**

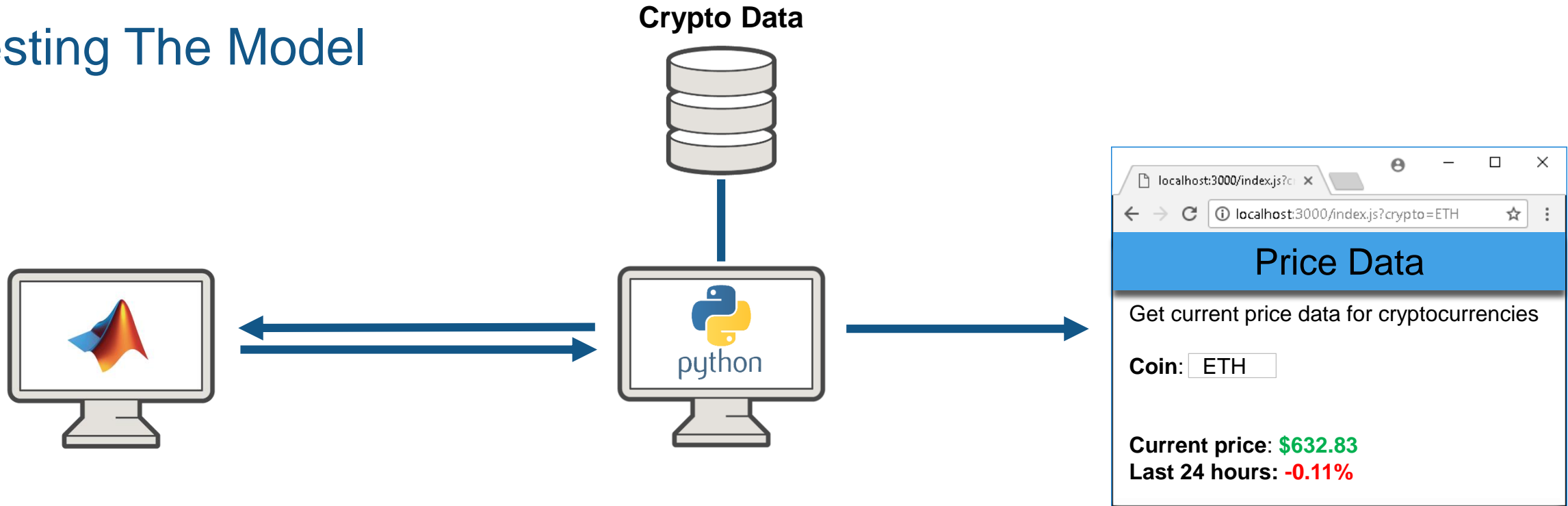


**Business  
Users**

# Prediction Model Development



# Testing The Model



**Model  
Developers**

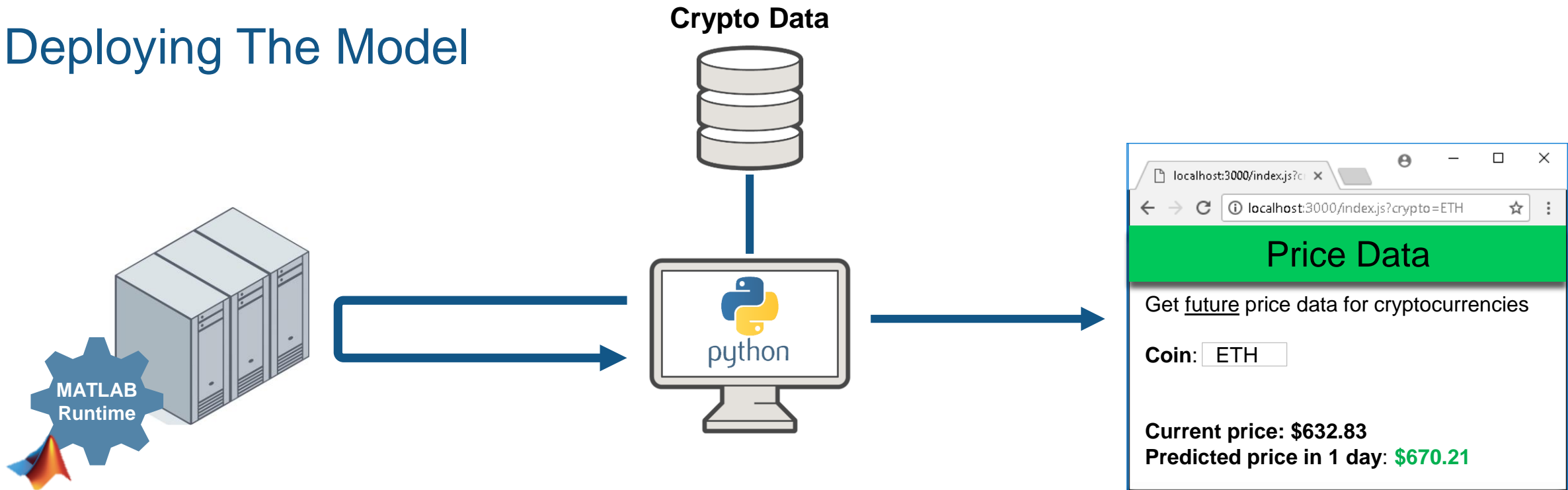


**IT  
Professionals**



**Business  
Users**

# Deploying The Model



**Model  
Developers**

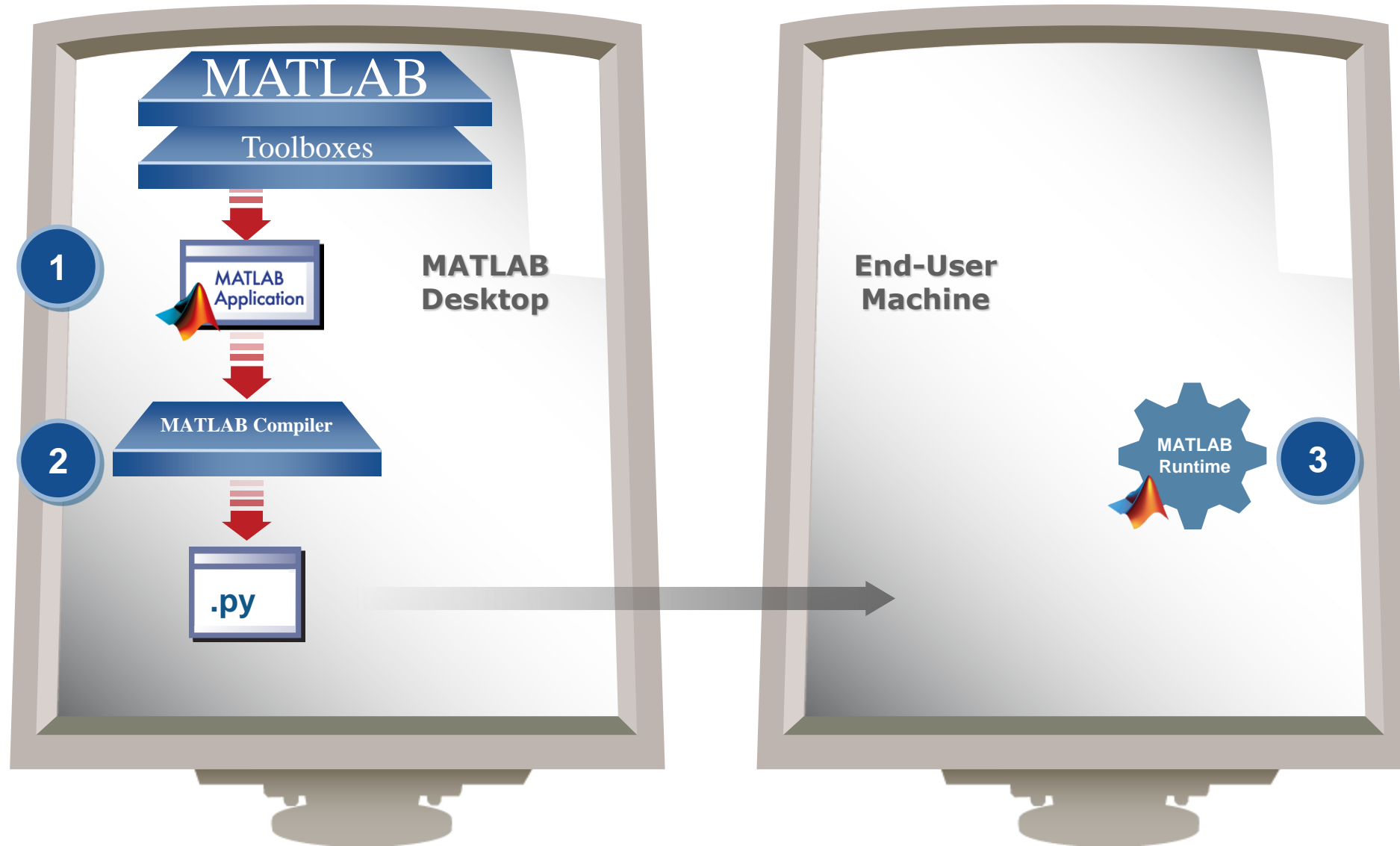


**IT  
Professionals**



**Business  
Users**

# Desktop Deployment with MATLAB



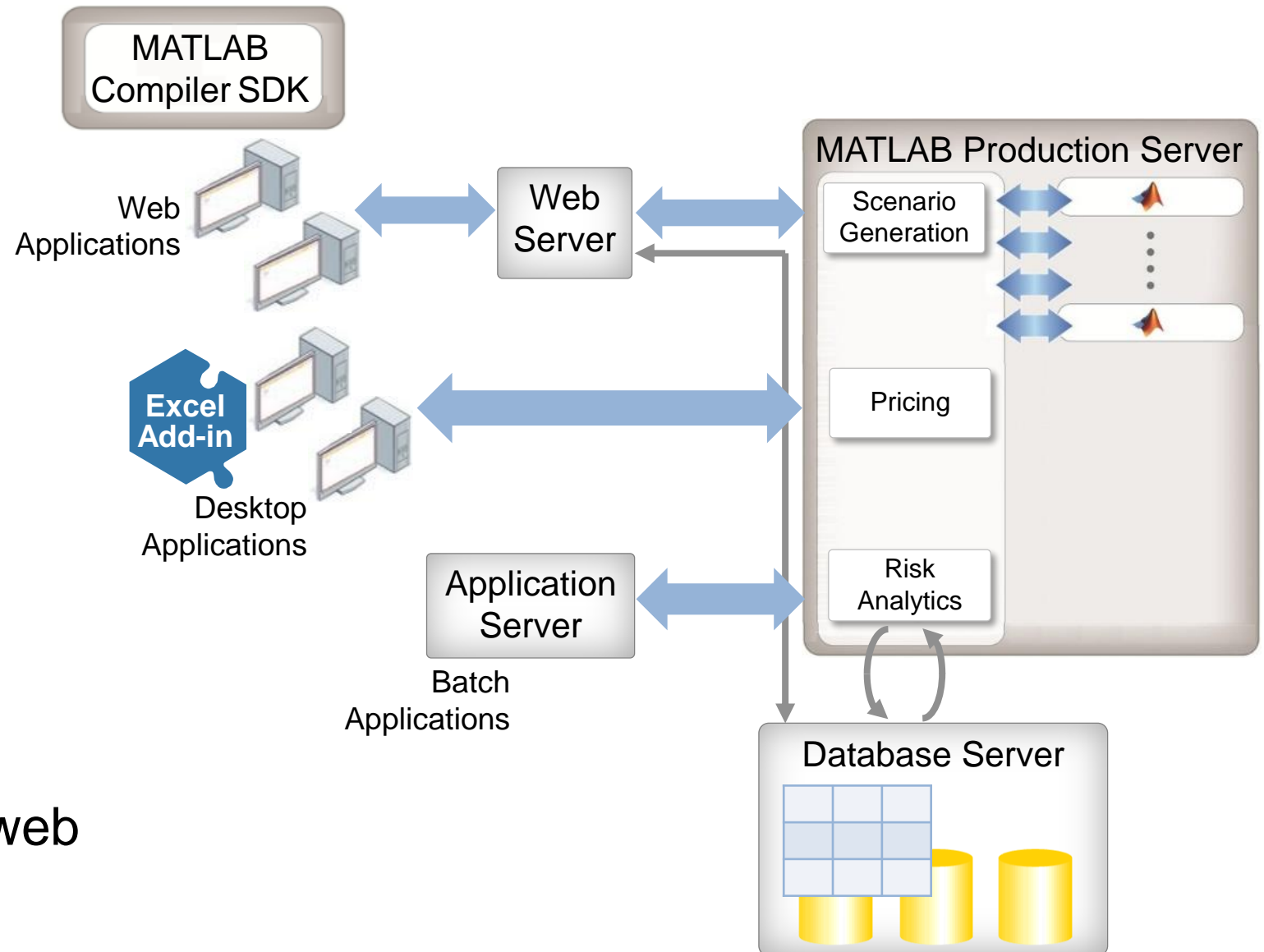
# Enterprise Challenges

- Responding to new requirements
- Maintaining software version
- Supporting multiple use cases
- Get models into hands of decision makers faster

# Enterprise Deployment and Scalability of MATLAB

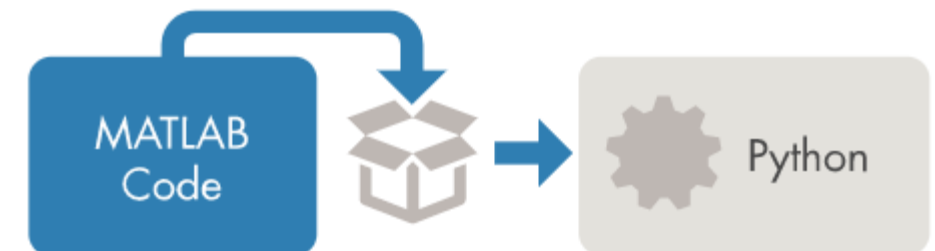


- C/C++
- Java
- C# and .NET
- Python
- Excel
- COM Automation Server
- RESTful, HTTP, and WSDL web services



## Summary: Using MATLAB with Python

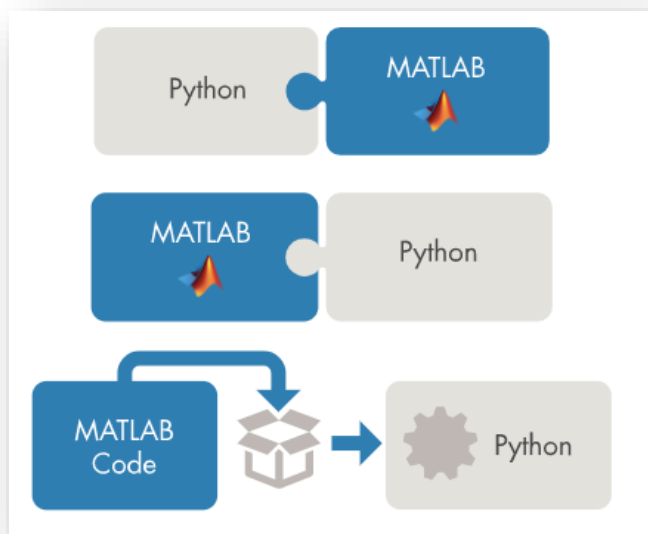
- Calling IT-managed libraries in Python from MATLAB
  - MATLAB
- Calling MATLAB's predictive analytics from Python
  - MATLAB
- Packaging MATLAB applications for scalable deployment with Python
  - Desktop: MATLAB Compiler SDK
  - Enterprise: MATLAB Production Server





## Additional Resources

- MATLAB and Python
  - <https://www.mathworks.com/solutions/matlab-and-python.html>
- Predictive Analytics
  - <https://www.mathworks.com/discovery/predictive-analytics.html>
- Deep Learning
  - <https://www.mathworks.com/discovery/deep-learning.html>



The image shows two overlapping promotional cards for MathWorks ebooks. The left card is titled "Mastering Machine Learning: A Step-by-Step Guide with MATLAB" and features the MathWorks logo at the top left and a green "Download ebook" button at the bottom. The right card is titled "Introducing Deep Learning with MATLAB" and also features the MathWorks logo at the top left and a green "Download ebook" button. The background of the cards shows a stylized city street scene with cars and buildings.

