Data Analytics Workflow

Data Acquisition

Data Analytics

Analytics Integration

Business Systems

Smart Connected Systems

MATLAB: Single Platform
Challenges

- How to share MATLAB algorithms with multiple internal and external consumers
  - Both MATLAB users and non-MATLAB users

- Challenging and time consuming to re-code MATLAB algorithms for integration into IT frameworks
  - Development resources are scarce and time-to-market is short

- Difficult to migrate solutions to enterprise scale web or cloud frameworks
  - Scale application to serve large numbers of simultaneous requests
MATLAB Programs Can be Shared With Anyone

Share With Other MATLAB Users

Share With People Who do Not Have MATLAB

MATLAB User

Group Members

Suppliers

Clients

Collaborators

Organization
Share with MATLAB Users

- Directly share MATLAB files
- Package Entire Toolboxes
- Package an App
MATLAB Programs Can be Shared With Anyone

Share With Other MATLAB Users

Share With People Who do Not Have MATLAB

- Group Members
- Suppliers
- Clients
- Collaborators

MATLAB User

Organization
Share with People Who Do Not Have MATLAB

- MATLAB Compiler
- MATLAB Compiler SDK

- Standalone Application
- Excel Add-in
- Hadoop
- C/C++
- Java
- .NET
- Python
- MATLAB Production Server

Share Applications with No Additional Programming
Integrate MATLAB-based Components With Your Own Software

- Royalty-free Sharing
- IP Protection via Encryption
Share Applications Built Completely in MATLAB

MATLAB Application

1. Application Author

2. MATLAB Compiler

   - Standalone Application
   - Excel Add-in
   - Hadoop

3. End User

   - MATLAB Runtime

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Integrate MATLAB-based Components With Your Own Software

MATLAB

Toolboxes

1. MATLAB Compiler SDK
   - C/C++
   - .NET
   - Python
   - Java

2. MATLAB Production Server

3. MATLAB Runtime

Application Author

Software Developer

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MATLAB and MATLAB Production Server

is the easiest and most productive environment to take your enterprise analytics or IoT solution from idea to production.
Why MATLAB Production Server Matters to You

MATLAB Production Server allow you to continue to work in the environment that you love
- No need to learn another programming language
- MATLAB Production Server integrates with enterprise IT infrastructure

MATLAB Production Server integrates MATLAB code into the enterprise IT fabric that you are comfortable with
- No need to re-code into another programming language
- Web and cloud friendly architecture
Scale Up with MATLAB Production Server™

- Directly deploy MATLAB programs into production
  - Centrally manage multiple MATLAB programs and runtime versions
  - Automatically deploy updates without server restarts
  - Most efficient path for creating enterprise applications

- Scalable and reliable
  - Service large numbers of concurrent requests
  - Add capacity or redundancy with additional servers

- Use with web, database and application servers
  - Lightweight client library isolates MATLAB processing
  - Access MATLAB programs using native data types
Example - Integrating with IT systems
Customer examples: Financial customer advisory service

- Saved €2 million annually for an external system
- Quicker implementation of adjustments in source code by the quantitative analysts
- Knowledge + MATLAB = Build your own systems
Industrial IoT Analytics on AWS

Industrial Equipment
• Networked communication
• Embedded sensors
• Data reduction

Global industrial equipment manufacturer

MATLAB Production Server

Request Broker

MATLAB Compiler SDK

MATLAB

Business Systems

Users

Algorithm Developers

Global industrial equipment manufacturer

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Building Automation IoT Analytics on Azure

Building/HVAC automation control system
- Variety of sensors and controls
- Networked communication
- Data reduction

MATLAB Production Server

- Request Broker
- Azure EventHub
- Azure Blob
- Azure SQL

Global heavy duty electrical equipment manufacturer

Business Systems

Users

Algorithm Developers

Global heavy duty electrical equipment manufacturer

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Technology Stack

**Databases**
- neo4j
- SQL Server
- mongoDB

**Cloud Storage**
- Azure Blob
- S3

**IoT**
- kafka

**Analytics**
- MATLAB Distributed Computing Server
- MATLAB Production Server
- Request Broker

**Business System**
- Qlik
- Tableau
- Spotfire

**Visualization**
- Microsoft IIS
- WebSphere

**Web**
- Apache Tomcat
- Python
- Custom App

**Public Cloud**
- Microsoft Azure
- Amazon Web Services
- Rackspace
- OpenStack
- VMware

**Private Cloud**
- Platform

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Production Deployment Workflow

**Development**

- **MATLAB Developer**
  - Initial Test Application
  - Debug Algorithm
  - MATLAB Algorithm
  - MATLAB Compiler SDK

**Enterprise Application Developer**

- **Web Application**
  - Function Call
  - MATLAB Production Server

**Production**

- **MATLAB Production Server**
  - Deployable Archives
  - Function Calls

- MATLAP Algorithm

- Verify data handling and initial behavior

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Develop and Test with MATLAB Compiler SDK

- Test environment for MATLAB Production Server
- Test and debug in MATLAB desktop
  - Details on request transactions
  - MATLAB debug and profiling with end to end testing

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Key Takeaways

1. Distribute applications to non-MATLAB users royalty-free.

2. Integrate MATLAB functions into existing workflows and development platforms.

3. Deploy MATLAB applications to service simultaneous user requests enterprise-wide via web or cloud frameworks.
Online Resources

• Documentation – Create and Share Toolboxes and Package Apps

• Website – Desktop and Web Deployment

• Free White Paper – Building a Website with MATLAB Analytics

• Website – Using MATLAB With Other Programming Languages

• Website – Training Options for MATLAB

Experience hands-on training on latest product capabilities.