Data Analytics Workflow

- Data Acquisition
- Data Analytics
- Analytics Integration

MATLAB: Single Platform

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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

MATLAB User

- Group Members
- Suppliers
- Clients
- Organization
- Collaborators
Share with People Who Do Not Have MATLAB

MATLAB Compiler

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

Share Applications with No Additional Programming

MATLAB Compiler SDK

Integrate MATLAB-based Components With Your Own Software

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

1. Application Author
   - MATLAB
   - Toolboxes

2. MATLAB Compiler
   - Standalone Application
   - Excel Add-in
   - Hadoop

3. End User
Integrate MATLAB-based Components With Your Own Software

MATLAB
Toolboxes

MATLAB Compiler SDK

C/C++, .NET, Python, Java

MATLAB Production Server

Software Developer

Application Author

MATLAB Runtime

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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

Web Applications

Excel Add-in

Desktop Applications

MATLAB Compiler SDK

Web Server

Application Server

Database Server

MATLAB Production Server

Portfolio Optimization

Pricing

Risk Analytics

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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

Business Systems

Users

Algorithm Developers

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Building Automation IoT Analytics on Azure

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

Global heavy duty electrical equipment manufacturer

Business Systems

Users

Algorithm Developers

Global heavy duty electrical equipment manufacturer

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Technology Stack

Data

Databases

Cloud Storage

IoT

Analytics

MATLAB Distributed Computing Server

Request Broker

MATLAB Production Server

Business System

Visualization

Qlik

Web

Tableau

Custom App

MATLAB

Production Server

Distributed Computing

Server

PUBLIC CLOUD

Microsoft Azure

Amazon Web Services

Rackspace

OpenStack

Virtluware

PRIVATE CLOUD

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Production Deployment Workflow

**Development**
- MATLAB Developer
  - Initial Test Application
  - Debug Algorithm
  - MATLAB Algorithm
  - MATLAB Compiler SDK
  - Deployable Archive

**Enterprise Application Developer**
- Web Application
- Function Call

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

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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](#)