

# MATLAB EXPO

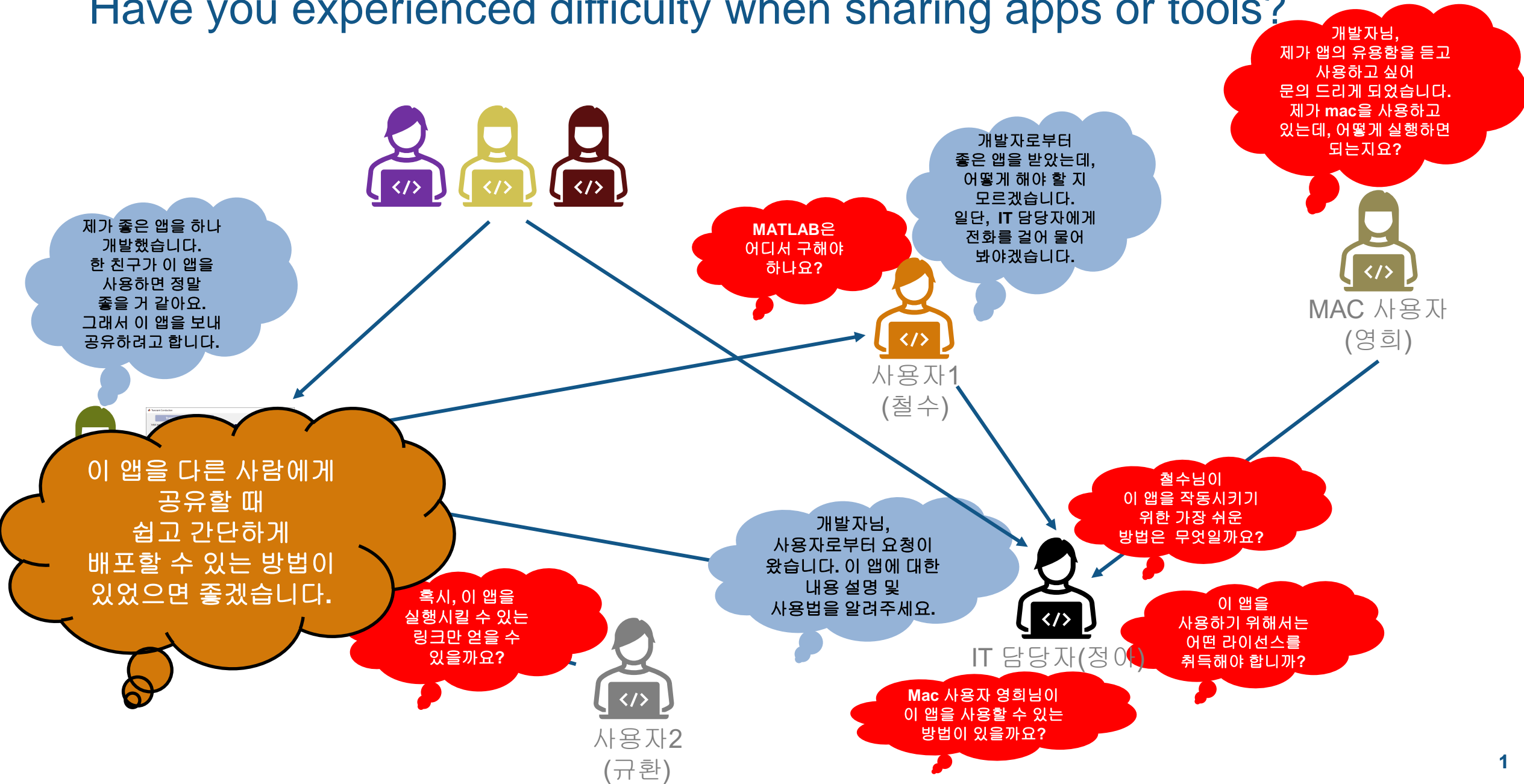
## 2021

### MATLAB Web App Server를 이용한 클라우드 서비스 구축

장규환 차장



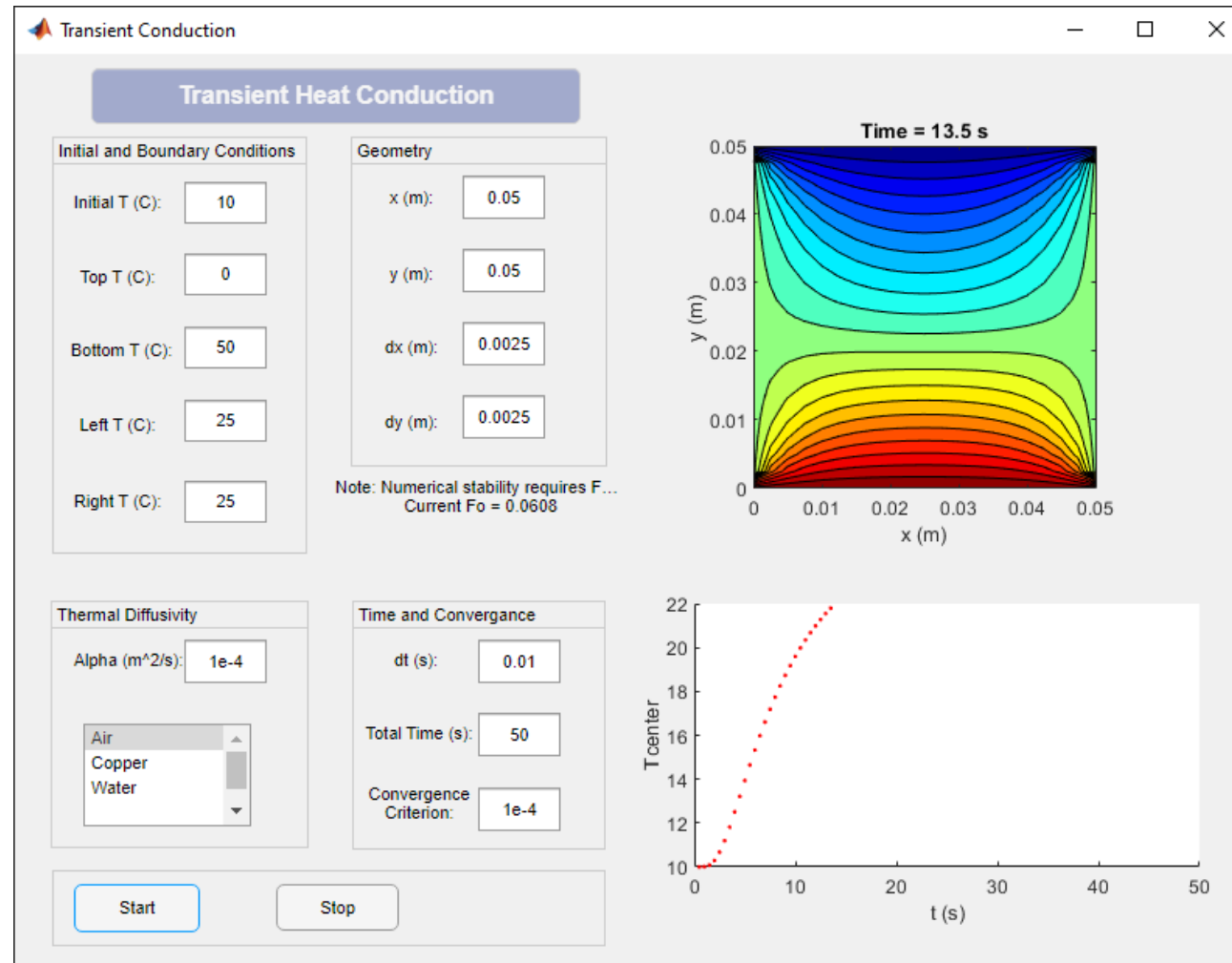
# Have you experienced difficulty when sharing apps or tools?



# Building and Sharing Tools is a powerful way to share your work

Distribute MATLAB apps and Simulink simulations

Increase workflow efficiency by sharing tools



Save time and increase productivity

Royalty-free distribution

# Common challenges

Customers recognize these items as barriers to enabling efficient sharing workflows



Simple, easy to use centralized distribution solution



Mechanism to secure and control access to applications



Manage and provide access to Runtime libraries

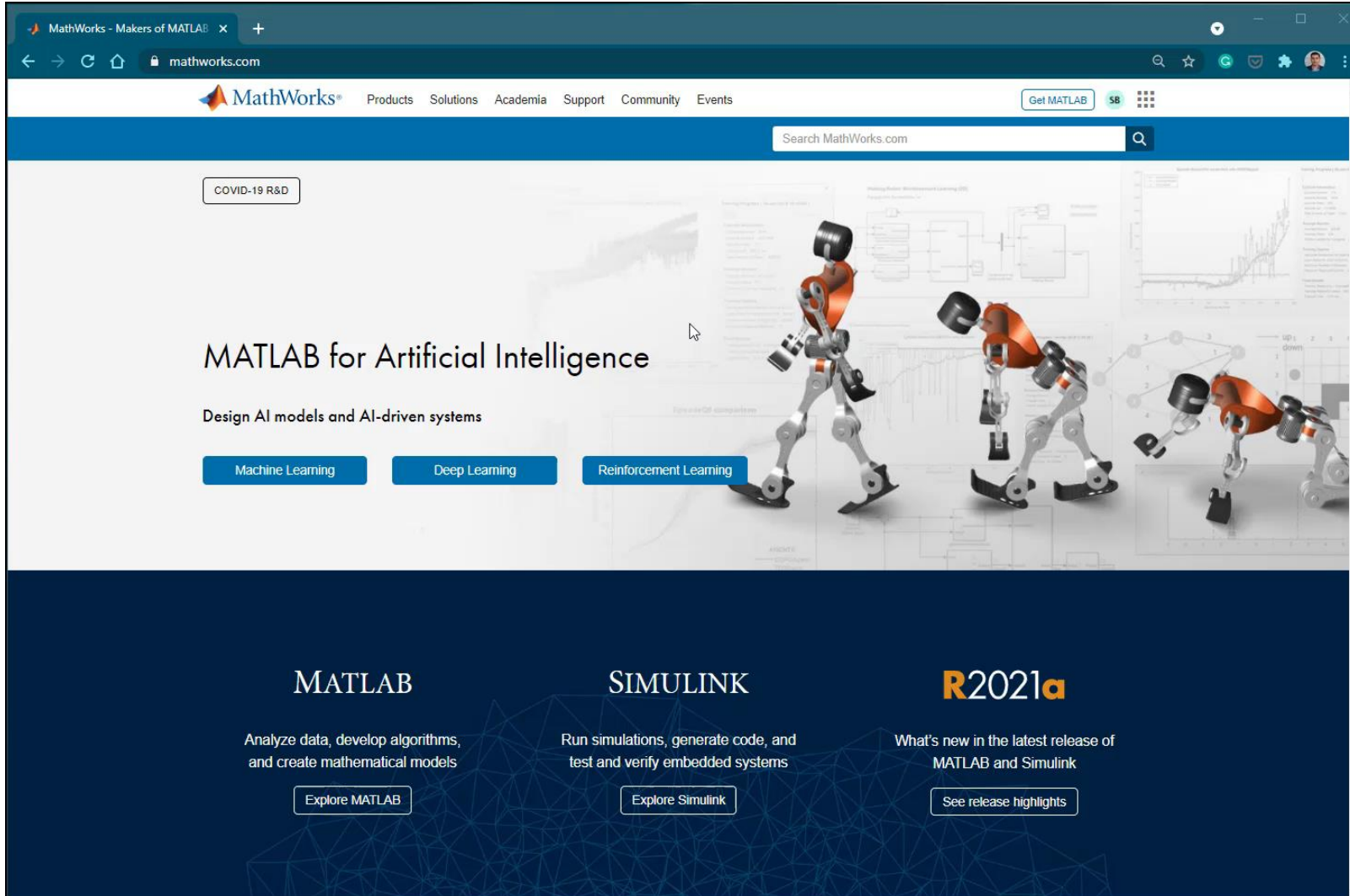


Simple process to deploy new application features

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# MathWorks offers solutions to help you share your work

## Find out more about our portfolio of application deployment products



### End User



Individual



Workgroup

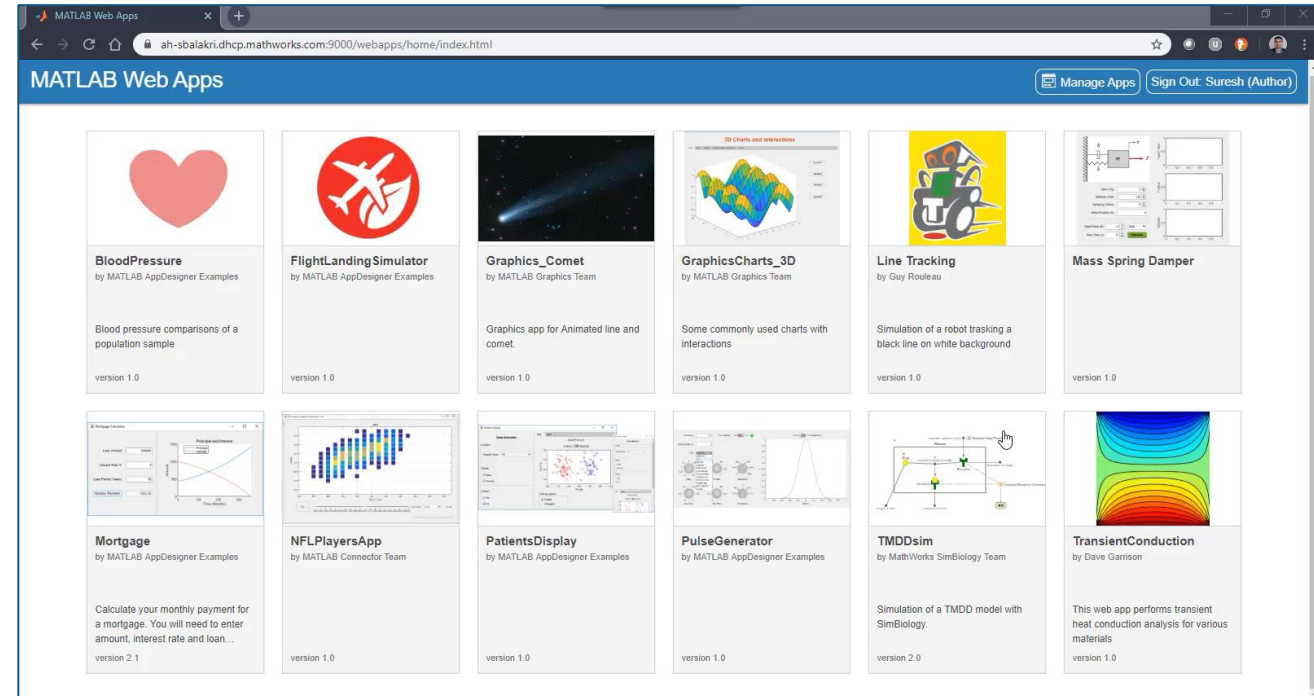


Enterprise

# MATLAB Web App Server

New product, introduced in **R2020a**

- What is it?
  - MATLAB Web App Server is a **server software** that **enables you to host and share** your custom MATLAB apps and Simulink simulations as **browser-based web apps**.
- Who does it help?
  - MATLAB and Simulink users
  - IT Administrator
  - End user needing access to MATLAB based apps



# Konkuk University

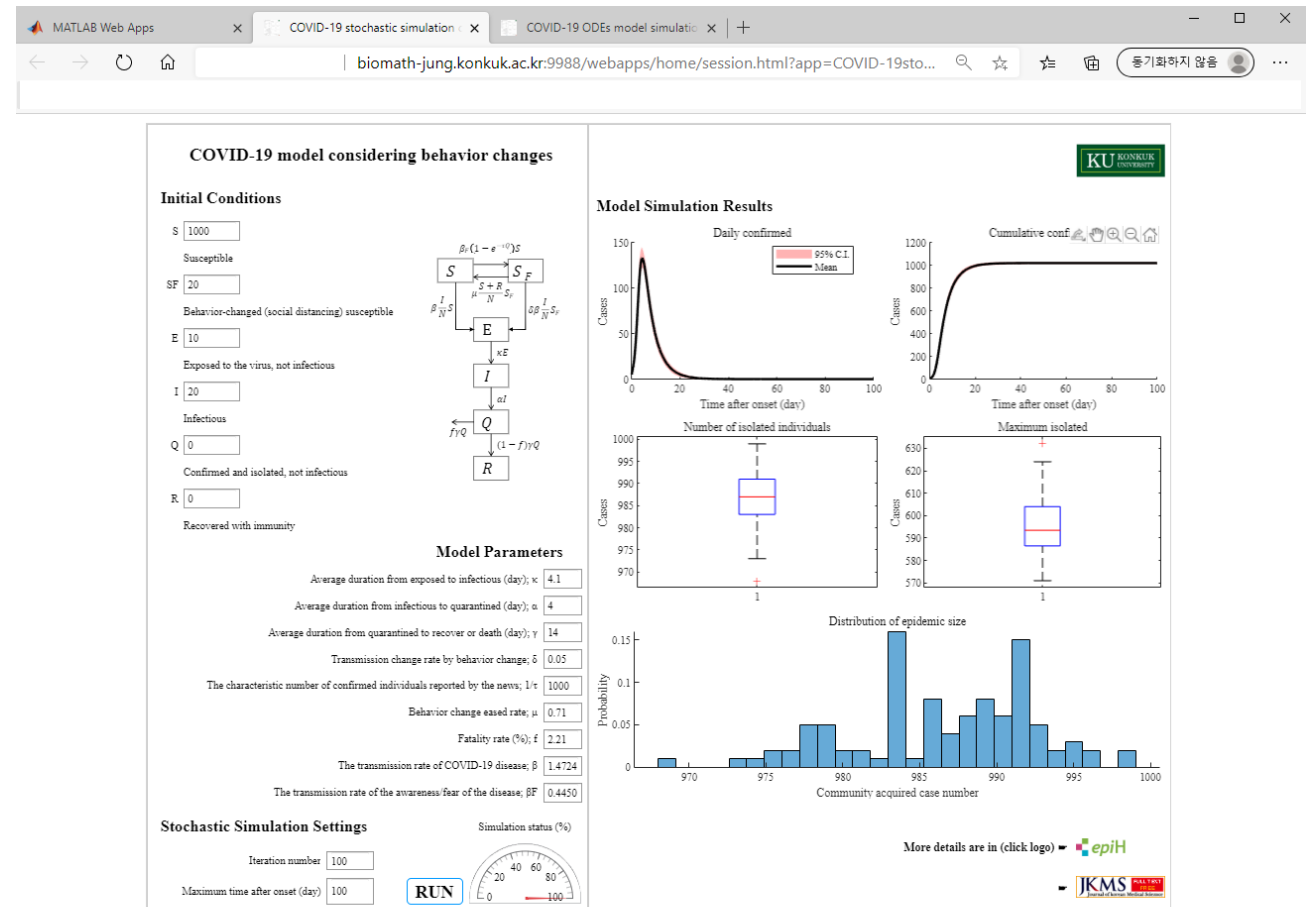
## Forecasts COVID-19 trend and effects of social distancing for KCDC

Professor Eun ok Jung has developed a SEIR model using MATLAB.

She predicts infection rate in South Korea and provides scientific background for KCDC.

The model is published using MATLAB Web App Server, and freely accessible from browser.

For her profound contribution, she received the honor of a President's Commendation from President award on April 21, 2020.





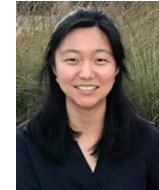
# Caltech Neuroscience

Leveraged MATLAB Web Apps as a browser-based interactive tool to run simulations

**Use Case:** Generate simulations for neuroscientists to examine the relationship of **acute**, **repeated** and **chronic** exposure to Nicotine



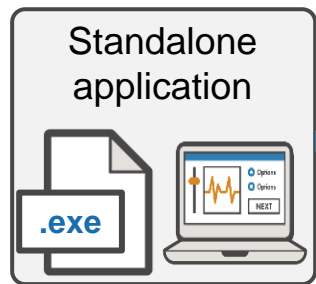
Dr Henry  
Lester



Janice  
Jeon



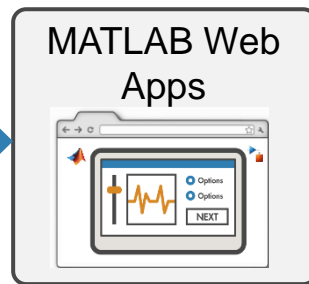
Alex  
Wang



MATLAB Compiler



Neuroscientist

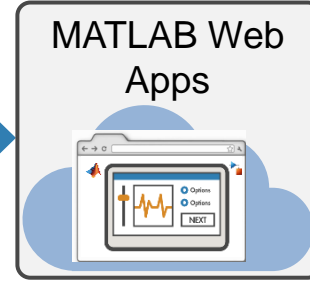


MATLAB Web App  
Server

SimBiology  
Toolbox



Neuroscientist



Cloud: MATLAB  
Web App Server

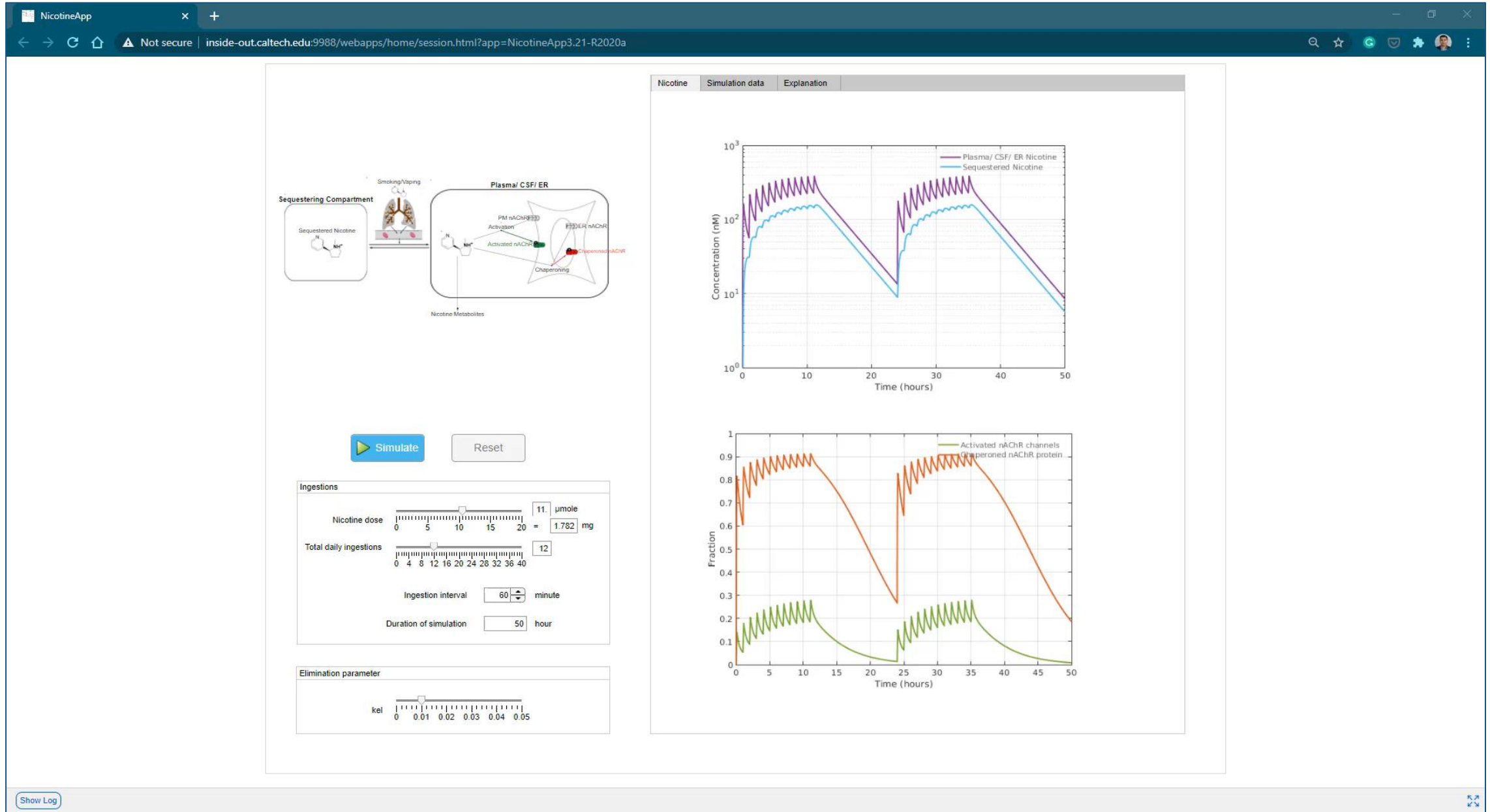
SimBiology  
Toolbox



Neuroscientist Vape Users







# Recall our common challenges

How does MATLAB WebApp Server address these challenges?



Simple, easy to use centralized distribution solution



Mechanism to secure and control access to applications



Manage and provide access to Runtime libraries



Simple process to deploy new application features

# Challenge 1/4

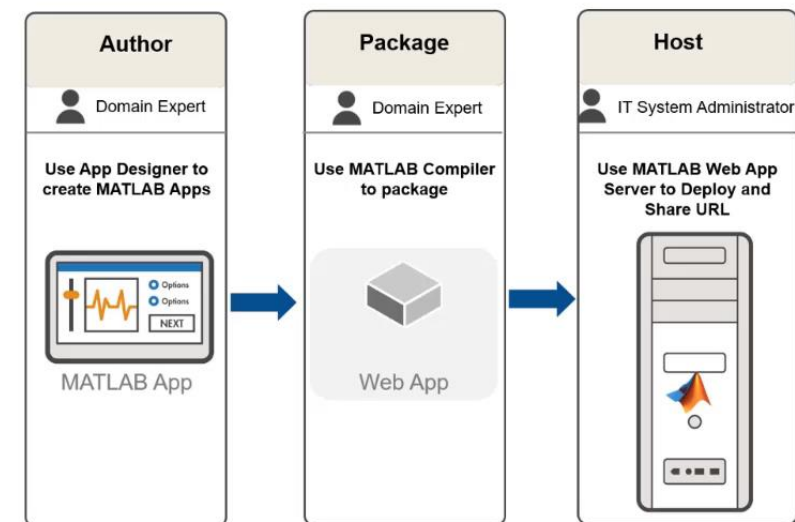
Simple, easy to use centralized distribution solution

## Benefits:

- One centralized server solution to host and share all web apps
- Meets corporate IT policies
- Author role provides self-serve tool to upload and manage the web apps



## MATLAB Web Apps Workflow



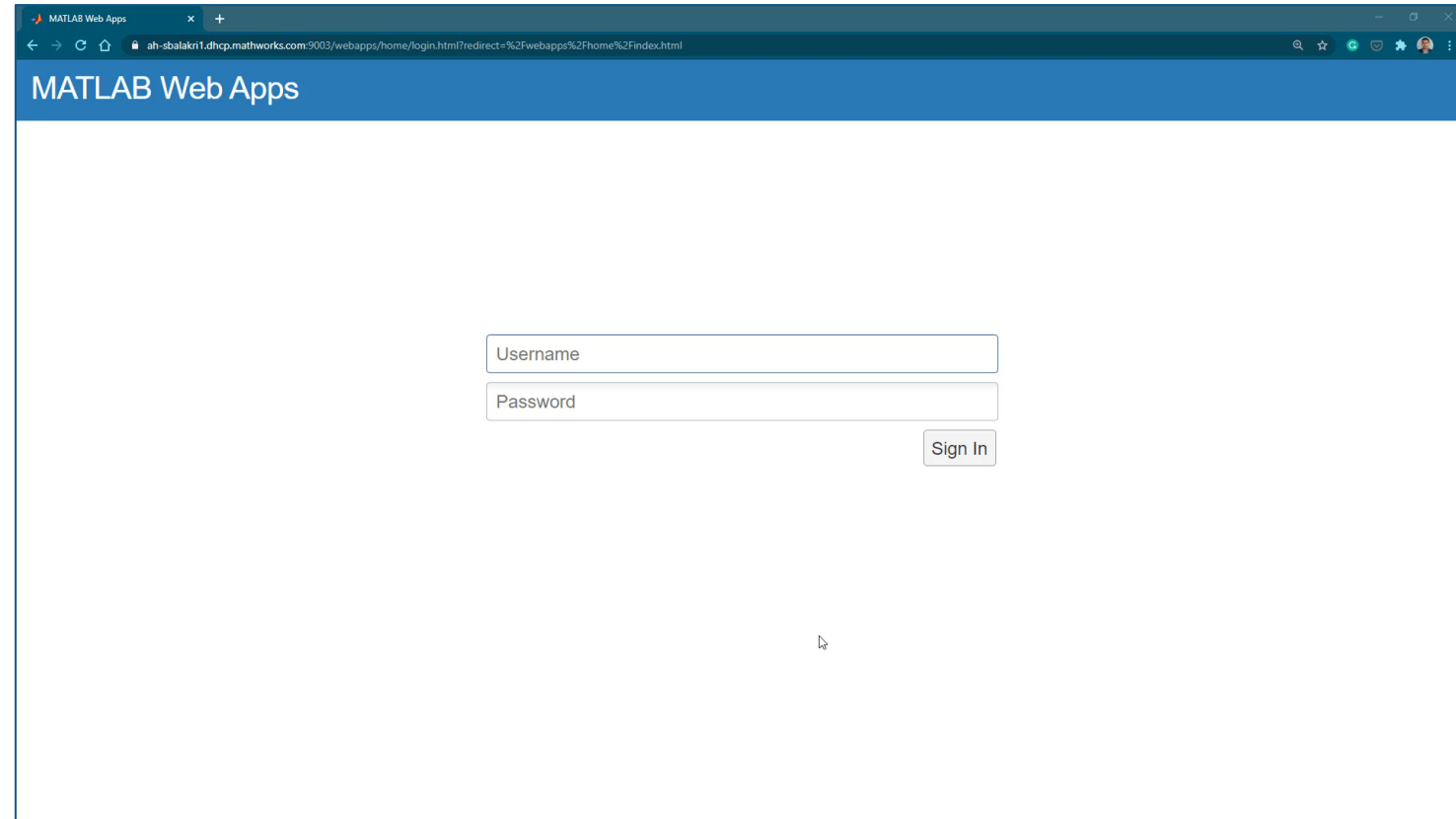
R2020a

# Challenge 2/4

## Mechanism to secure and control access to applications

### Benefits:

- Integrate with your existing authentication servers (LDAP, OIDC)
- Allows to assign roles
  - **Author** can upload, delete and run the apps
  - **User** can run the apps



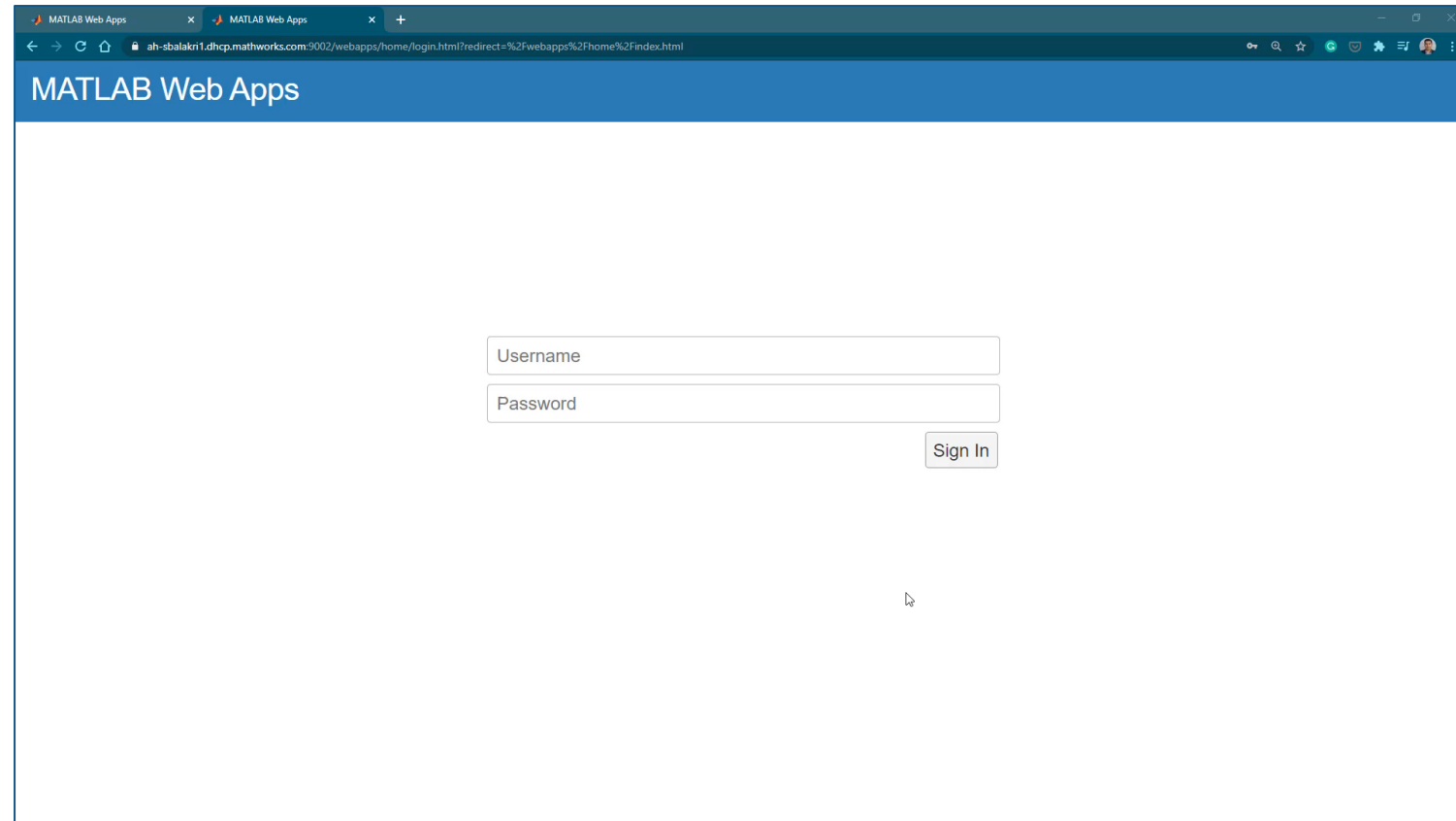
R2020a

# Challenge 2/4 (continued)

## Mechanism to secure and control access to applications

### Benefits:

- Starting in R2021a, apply app level policies to access control individual app
- Organize and group apps into folder per team
- Configure user access per folder or individual app
- Users can only see and run the specific authorized apps

























# Challenge 3/4

## Manage and provide access to MATLAB Runtime libraries

### Benefits:

- App developers using multiple versions of MATLAB and Simulink supported with single server
- Easy migration of apps after an upgrade
- Apps developed in 5 prior versions of MATLAB
  - Starting from R2019b

TLAB Web Apps > Manage Apps Upload App Sign Out

Name	Version	Author	MATLAB Runtime	Status Message	
 Mass Spring Damper	1.0	-	R2020a	✓ OK	
 MassSpringDamperAppForLinux	-	-	-	✗ Expired CTF	
 Mortgage	2.1	MATLAB AppDesigner Examples	R2020a	✓ OK	
 NFLPlayersApp	1.0	MATLAB Connector Team	R2020a	✓ OK	
 PatientsDisplay	1.0	MATLAB AppDesigner Examples	R2020a	✓ OK	
 PatientsTreeAppExample	1.0	MATLAB AppDesigner Examples	R2020a	✓ OK	
 PlotSelector	1.0	MATLAB Graphics Team	R2020a	✓ OK	
 PulseGenerator	1.0	MATLAB AppDesigner Examples	R2020a	✓ OK	
 RoadSuspensionInteractionIn3DOF_SLSimApp	-	-	-	✗ Expired CTF	
 TMDDsim	2.0	MathWorks SimBiology Team	R2019b	✓ OK	
 TransientConduction	1.0	Dave Garrison	R2020a	✓ OK	

R2020a

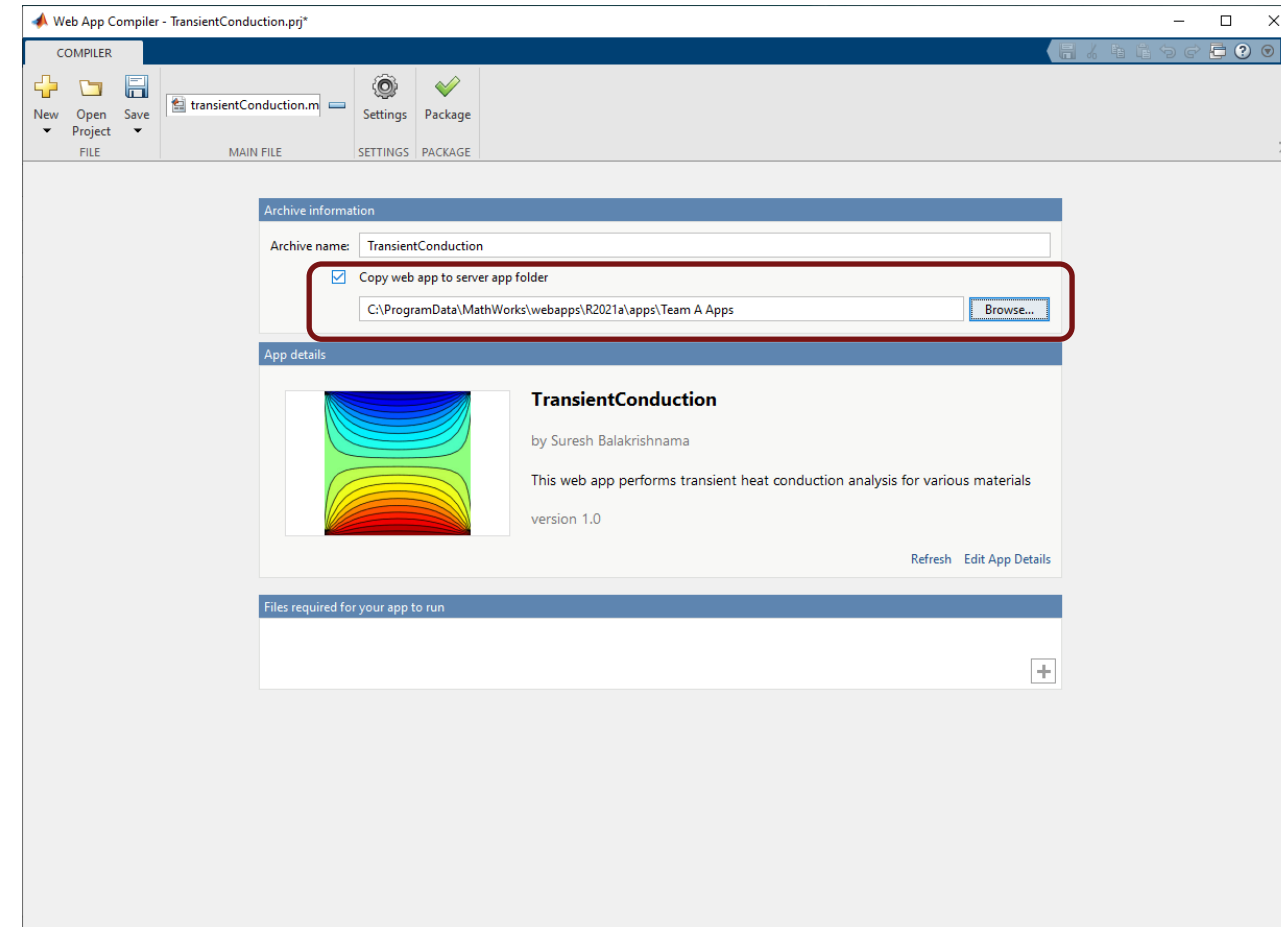


# Challenge 4/4

## Simple process to deploy new application features

### Benefits:

- Authoring environment allows you to develop and deploy
- No additional manual steps required to package the app data and dependent files



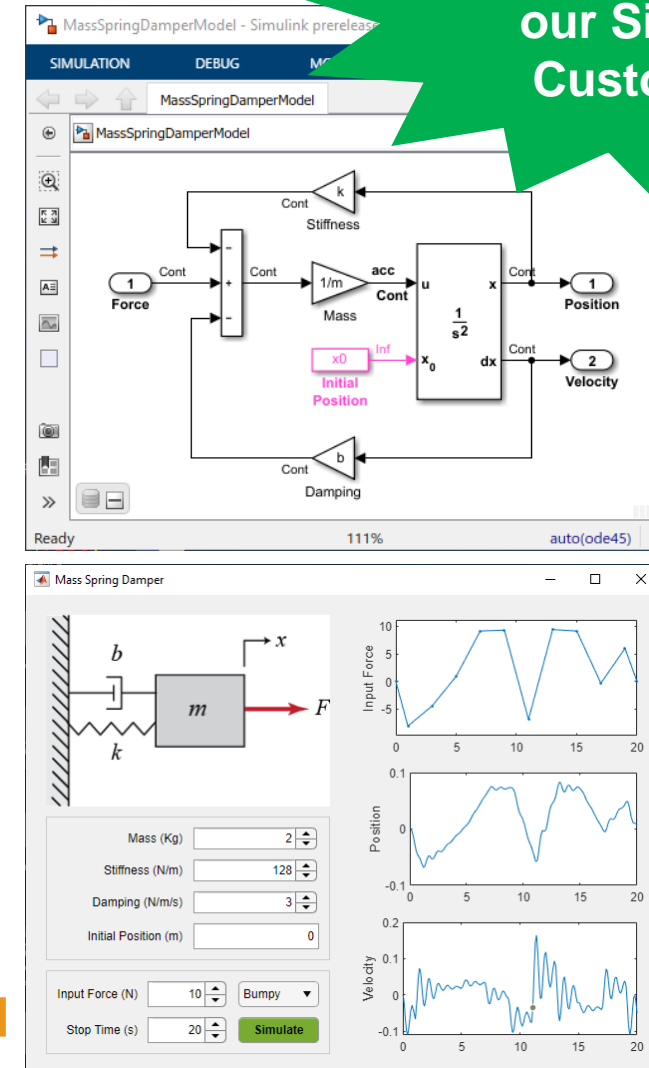
# Share Simulink simulations

## MATLAB WebApp Server supports Simulink

### Benefits:

- End users do not require a Simulink license
- End users can use a web app to choose tunable parameters and run the simulation from a browser
  - MATLAB Apps that call `sim()` can be deployed as web apps
- Simulink Compiler can generate a “Starter” app to get you started

A long-standing  
request from  
our Simulink  
Customers!



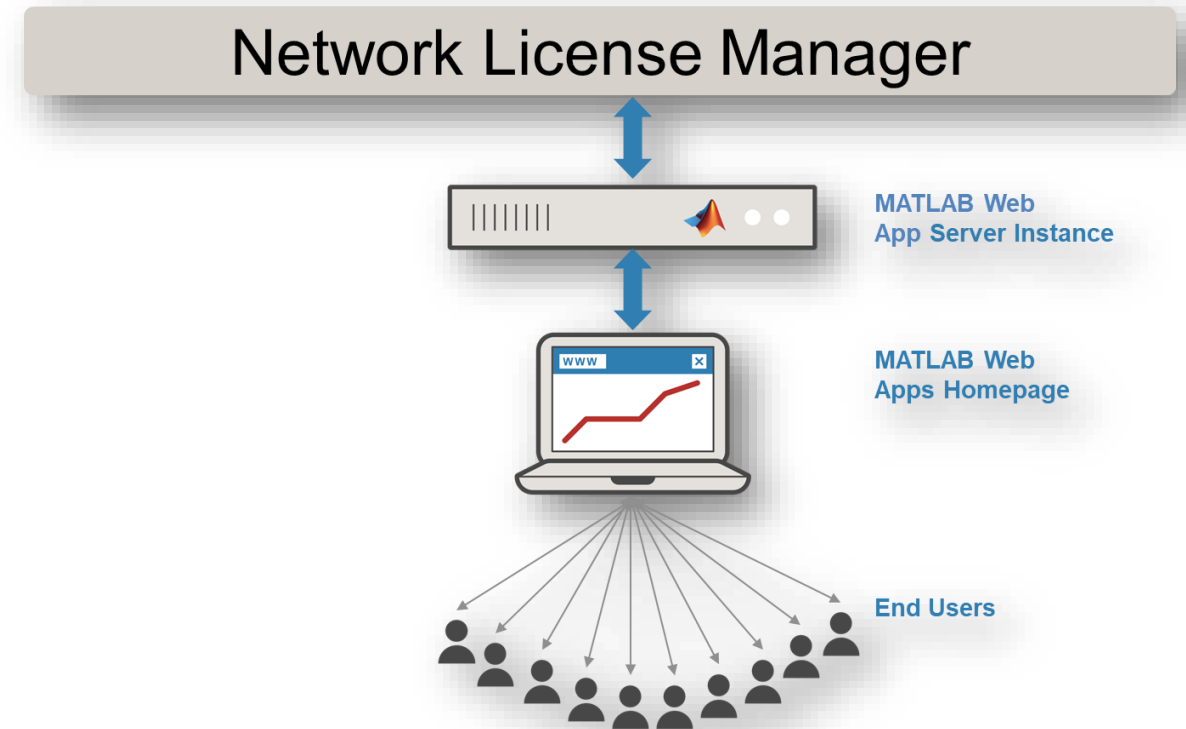
R2020a

# Flexible license model

Designed to support both user and business needs

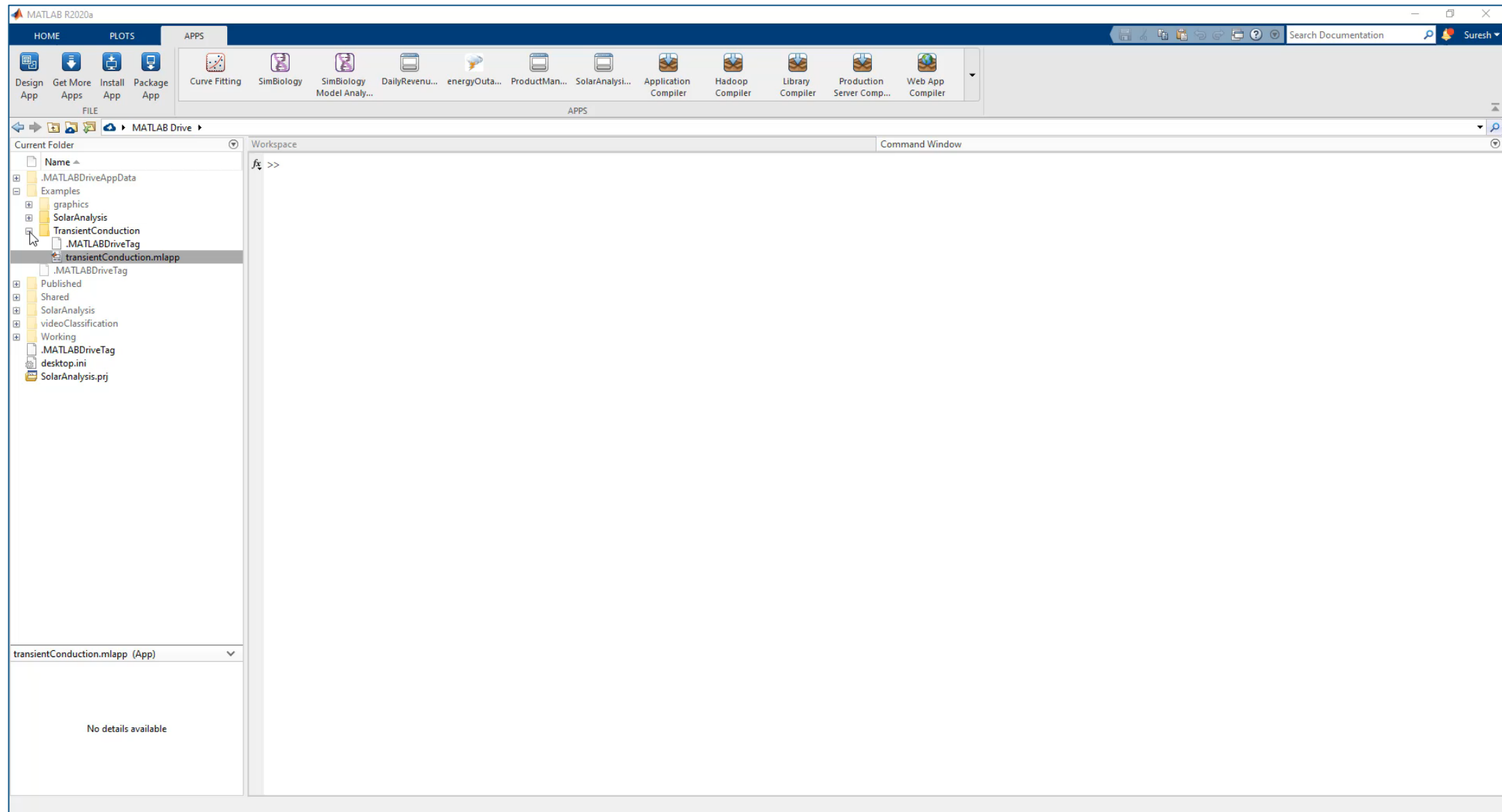
## Benefits:

- End user do not need MATLAB or Simulink license
- License model does not count number of apps deployed or users accessing the apps
- Full control to IT administrators to add users per need



R2020a

# Summary Demo: Share MATLAB programs as MATLAB Web Apps



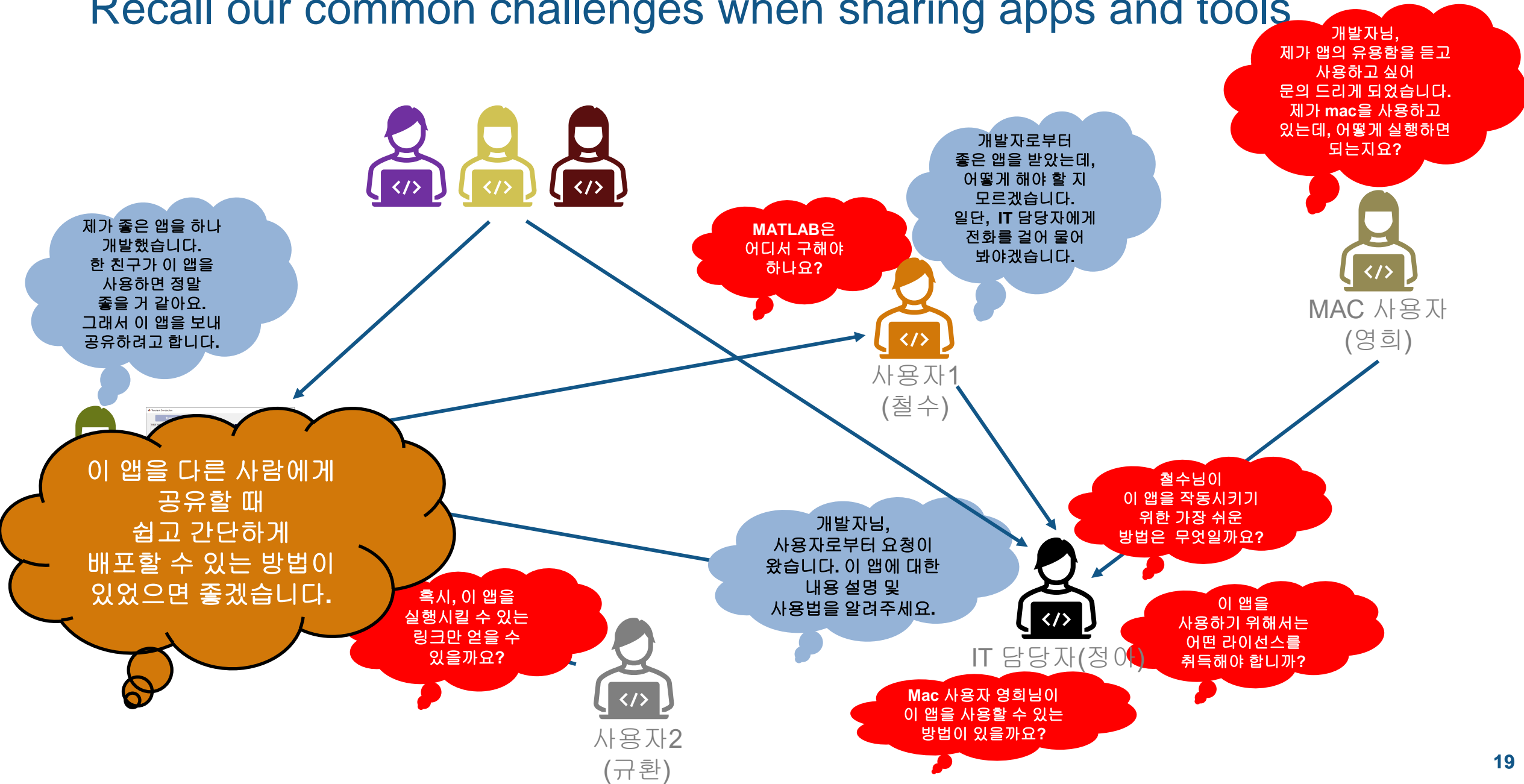
# Summary Demo: Share MATLAB programs as MATLAB Web Apps

The screenshot displays the MATLAB Web Apps interface in a web browser. The browser's address bar shows the URL `ah-sbalakri.dhcp.mathworks.com:9000/webapps/home/index.html`. The page header includes the text "MATLAB Web Apps" and navigation links for "Manage Apps" and "Sign Out: Suresh (Author)".

The main content area features a grid of 14 web application tiles, each with a unique icon, title, author, description, and version number:

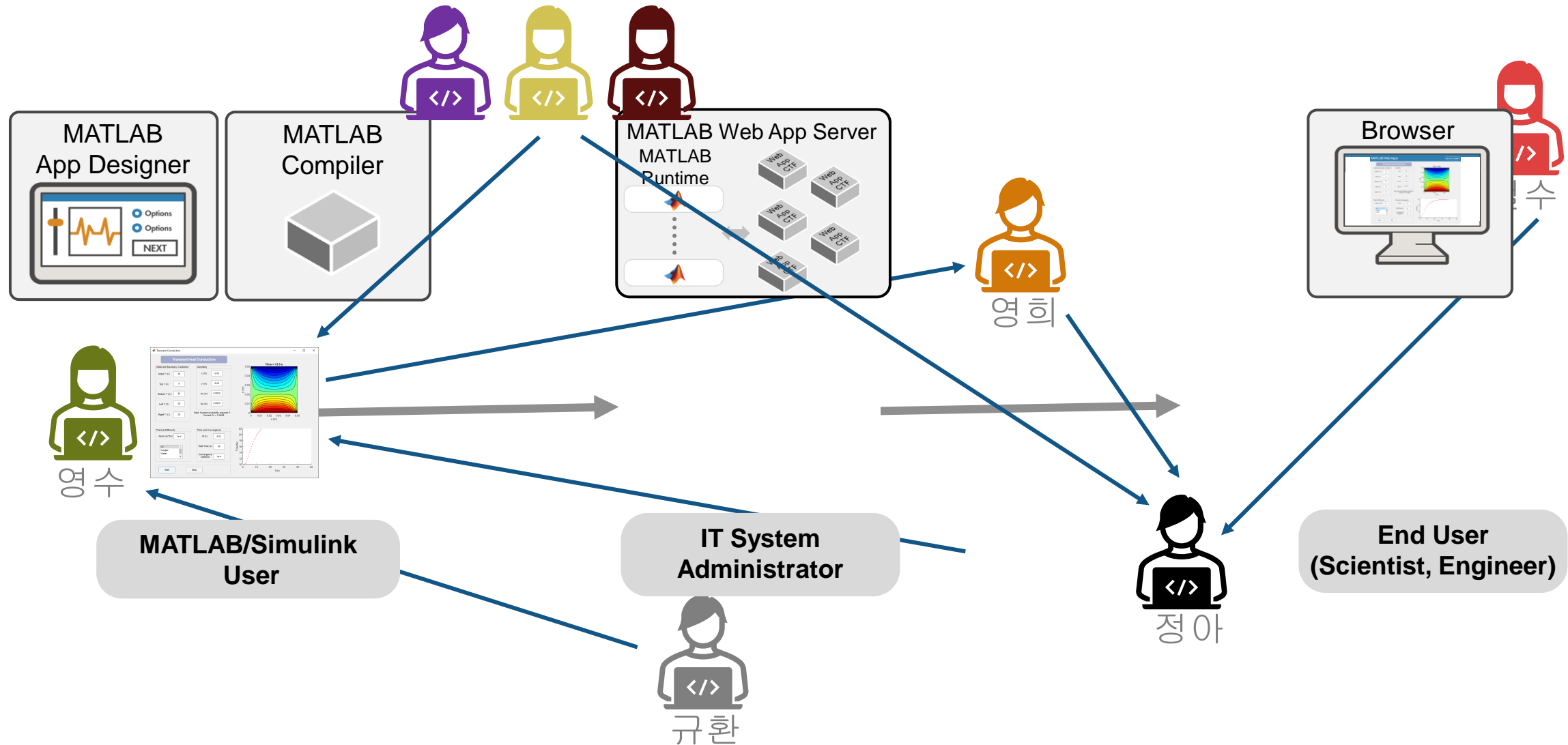
- BloodPressure** (Heart icon): by MATLAB AppDesigner Examples. Description: Blood pressure comparisons of a population sample. Version: 1.0.
- FlightLandingSimulator** (Airplane icon): by MATLAB AppDesigner Examples. Version: 1.0.
- Graphics\_Comet** (Comet icon): by MATLAB Graphics Team. Description: Graphics app for Animated line and comet. Version: 1.0.
- GraphicsCharts\_3D** (3D surface plot icon): by MATLAB Graphics Team. Description: Some commonly used charts with interactions. Version: 1.0.
- Line Tracking** (Robot icon): by Guy Rouleau. Description: Simulation of a robot tracking a black line on white background. Version: 1.0.
- Mortgage** (Mortgage calculator icon): by MATLAB AppDesigner Examples. Description: Calculate your monthly payment for a mortgage. You will need to enter amount, interest rate and loan... Version: 2.1.
- NFLPlayersApp** (Bar chart icon): by MATLAB Connector Team. Version: 1.0.
- PatientsDisplay** (Medical display icon): by MATLAB AppDesigner Examples. Version: 1.0.
- PatientsTreeAppExample** (Patient icons icon): by MATLAB AppDesigner Examples. Version: 1.0.
- PlotSelector** (Graph icon): by MATLAB Graphics Team. Version: 1.0.
- PulseGenerator** (Pulse plot icon): by MATLAB AppDesigner Examples. Version: 1.0.
- RoadSuspensionInteractio** (Car suspension icon): by MATLAB AppDesigner Examples. Version: 1.0.
- TMDDsim** (Simulink block diagram icon): by MathWorks SimBiology Team. Description: Simulation of a TMDD model with SimBiology. Version: 2.0.
- TransientConduction** (Heat map icon): by Dave Garrison. Description: This web app performs transient heat conduction analysis for various materials. Version: 1.0.

# Recall our common challenges when sharing apps and tools



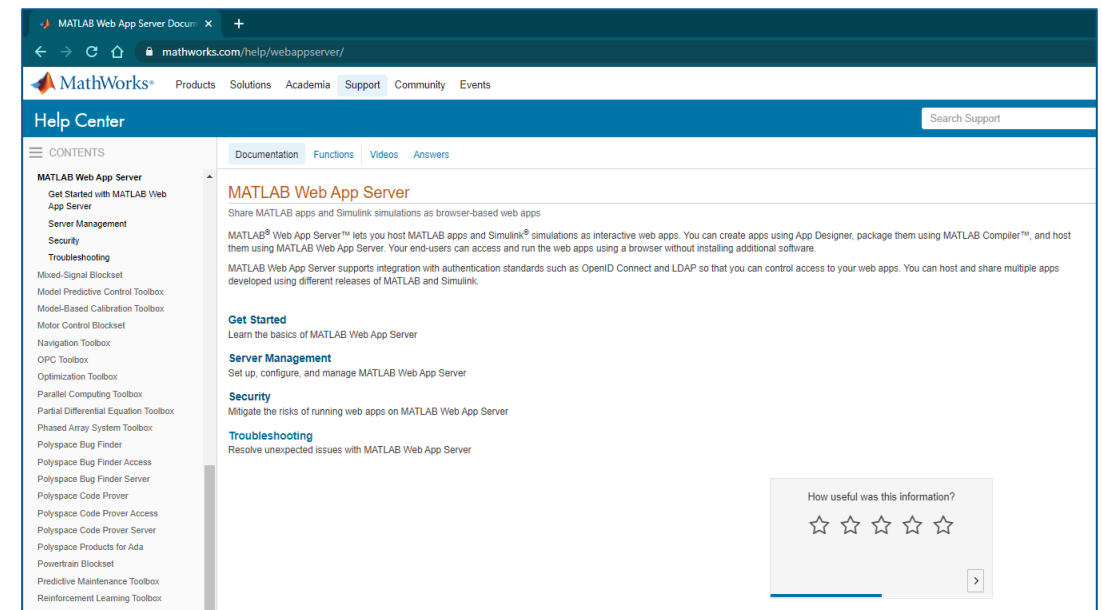
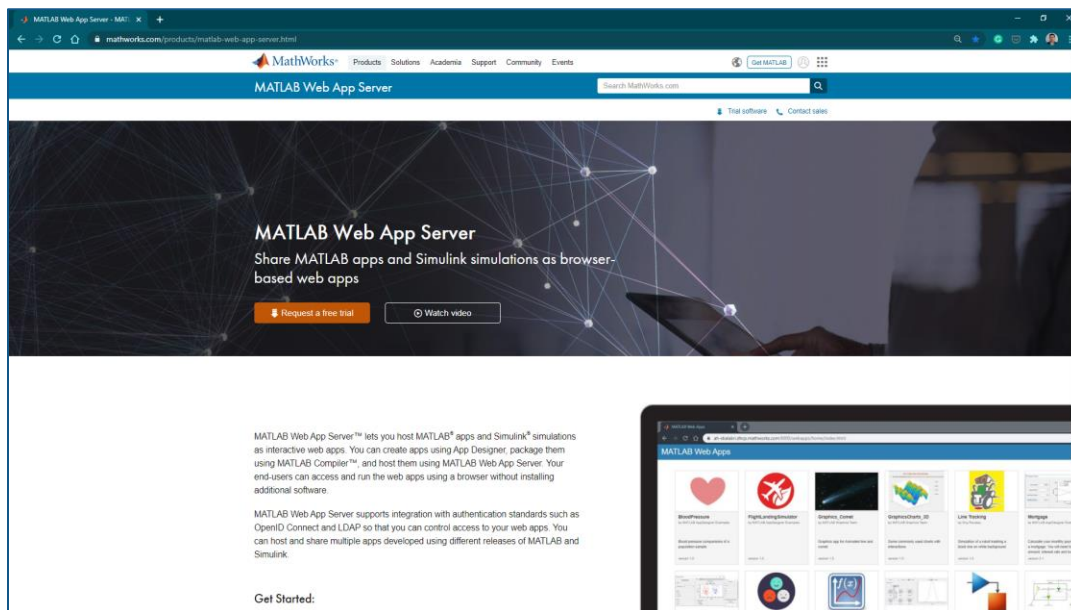


# MATLAB Web App Server *helps you enable sharing workflows*



# Learn more about MATLAB Web Apps

Search: *MATLAB Web Apps*



# Application Specific Training

Get up to speed quickly with professional, focused courses

- MATLAB Fundamentals ([link](#))
- MATLAB Programming Techniques ([link](#))
- Building Interactive Applications in MATLAB ([link](#))
- Object-Oriented Programming with MATLAB ([link](#))
- Advanced MATLAB Application Development
  - New course, contact us for scheduling details

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# MATLAB EXPO 2021

감사합니다



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