



All about Ascendas Systems

Presented by...

Phitcha PHITCHAYANON

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& **SIMULINK®**

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Values

Role of Company



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Deliver value-added
service.

Provide solutions that
enable research
accuracy, speed and
precision.

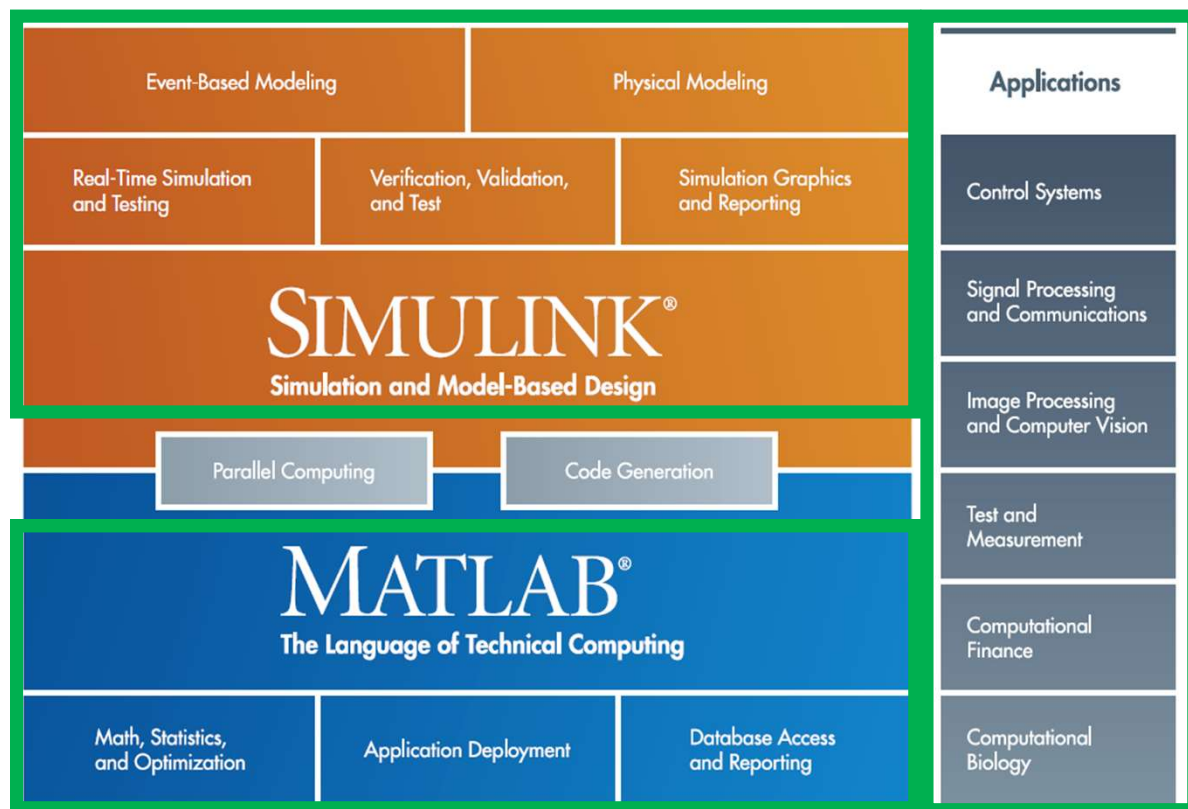
Achieve desired
business end-results.

Ascendas

Ascendas
Systems

Ascendas

MathWorks Products



MathWorks offers nearly 100 products for technical computing and Model-Based Design. Widely used throughout industry, government and academia, these products are accelerating the pace of discovery, innovation, development, and learning in engineering and science

There is always something for everyone, to experience changes.



Data Analytics



Deep Learning



Internet of Things



Mechatronics



Motor and Power Control



Rapid Prototyping



Hardware in the Loop

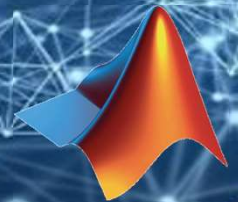


Wireless

<https://www.mathworks.com/solutions>



Introduction to MATLAB



Phitcha Phitchayanon
Application Engineer

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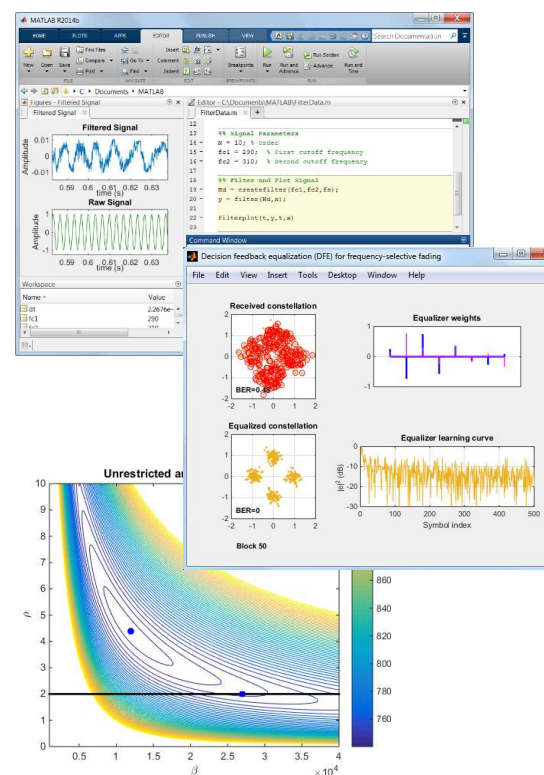


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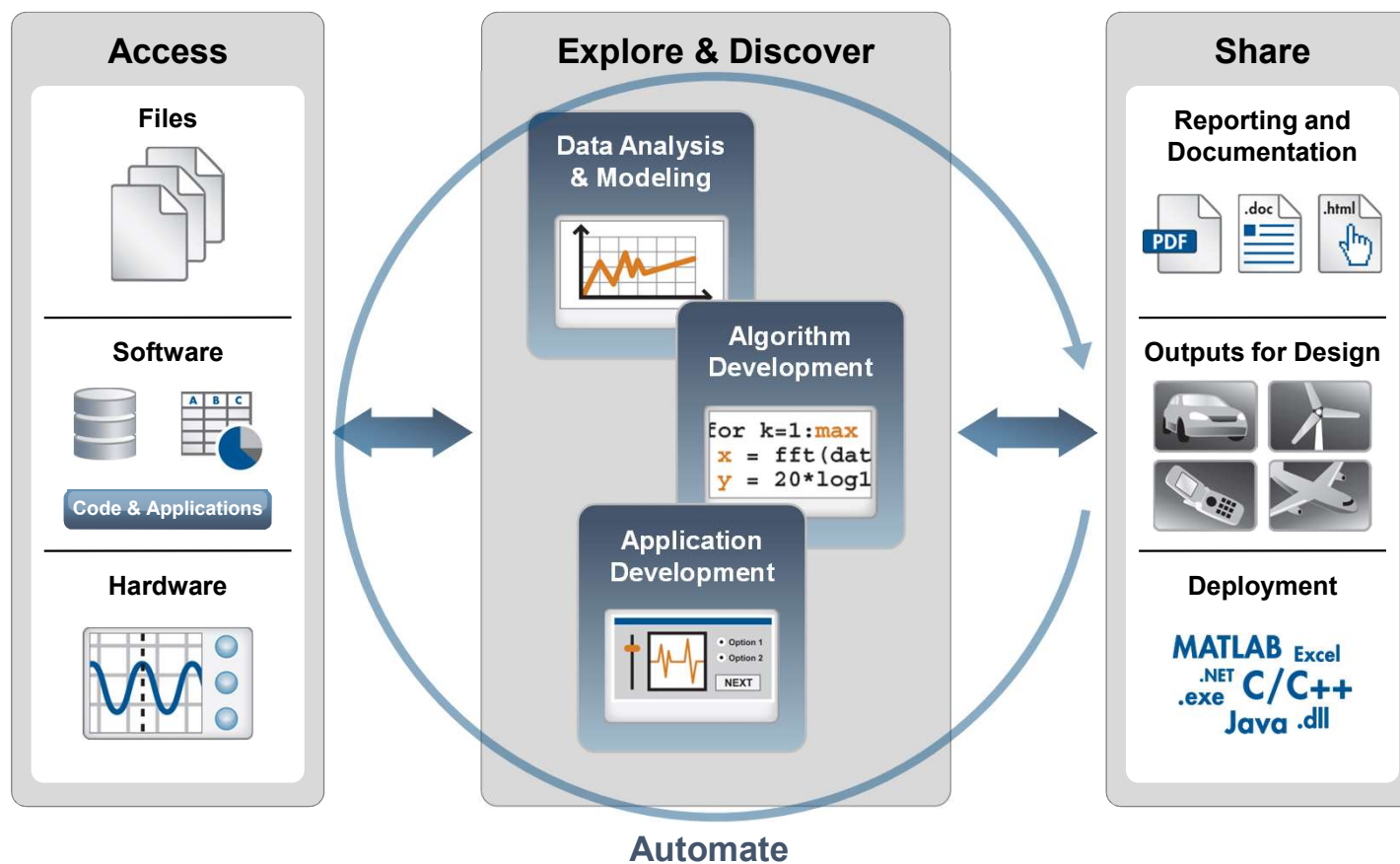
MATLAB®
& SIMULINK®

What is MATLAB?

- High-level language
- Interactive development environment
- Used for:
 - Numerical computation
 - Data analysis and visualization
 - Algorithm development and programming
 - Application development and deployment



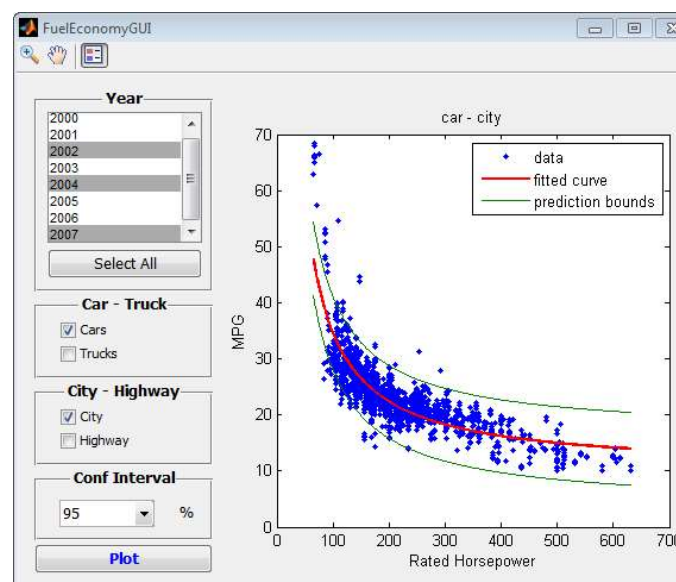
Technical Computing Workflow



Demo: Fuel Economy Analysis

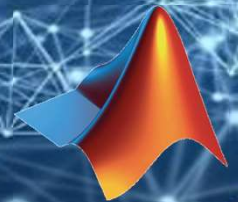
- Goal:
 - Study the relationships between fuel economy, horsepower, and type of vehicle

- Approach:
 - Access data from Excel
 - Interactively visualize and explore trends
 - Create a model
 - Document results





Go to MATLAB



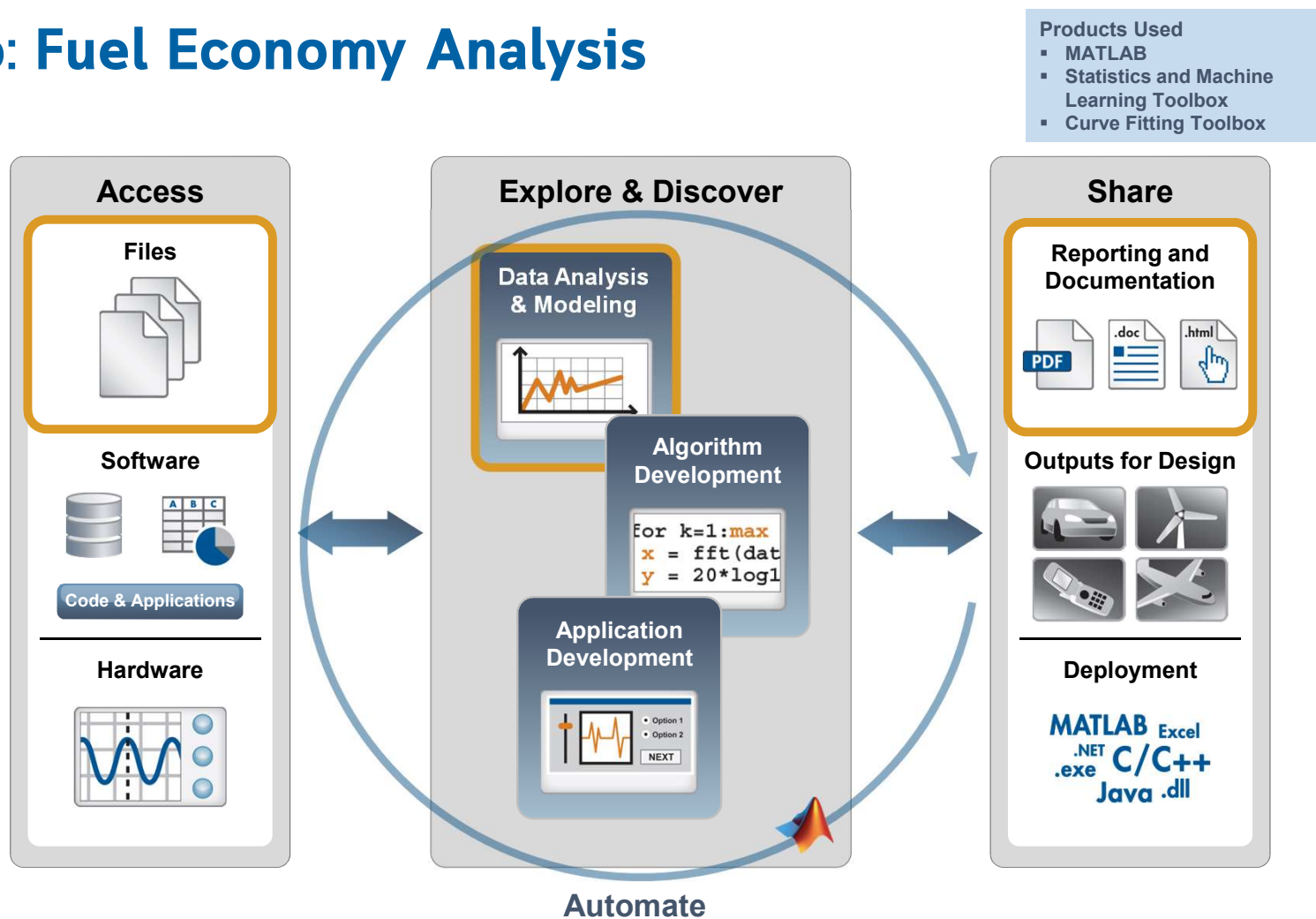
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Demo: Fuel Economy Analysis



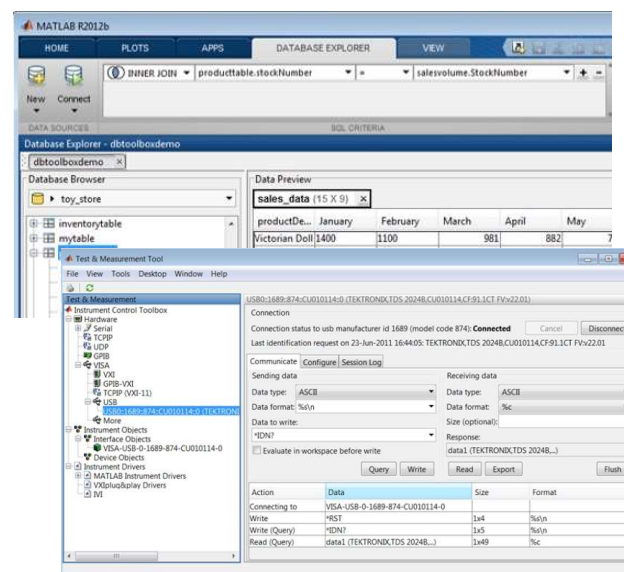
Accessing Data from MATLAB

Access

Explore & Discover

Share

- Files
 - Excel, text, or binary
 - Audio and video, image
 - Scientific formats and XML
- Applications and languages
 - C/C++, Java, FORTRAN
 - COM, .NET, shared libraries
- Databases
(*Database Toolbox*)
- Measurement hardware
 - Data acquisition hardware
(*Data Acquisition Toolbox*)
 - Stand-alone instruments and devices
(*Instrument Control Toolbox*)



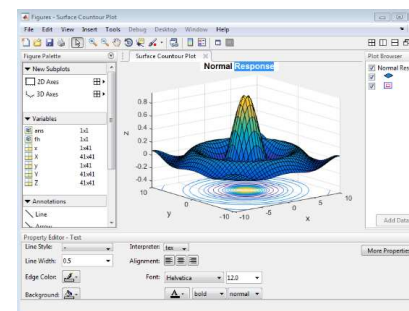
Data Analysis and Visualization in MATLAB

Access

Explore & Discover

Share

- Built-in engineering and mathematical functions
 - Interpolation, filtering, smoothing, Fourier analysis
- Extensive plotting capabilities
 - 2-D, 3-D, and volume visualization
 - Tools for creating custom plots



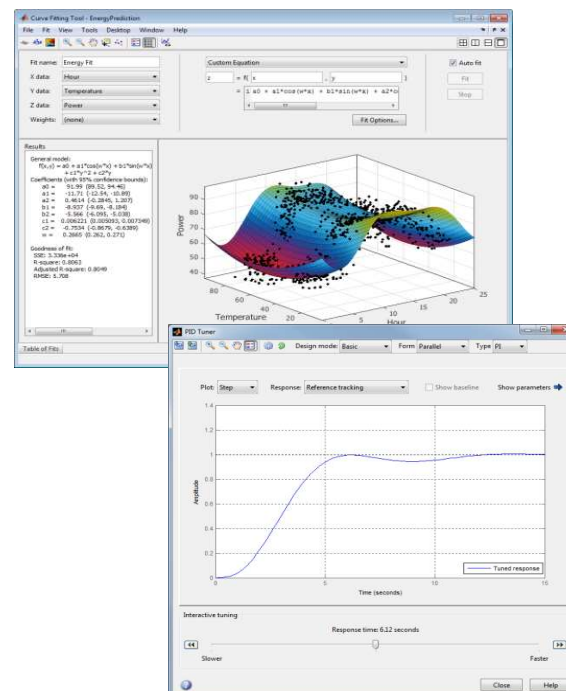
Expanding the Capabilities of MATLAB

Access

Explore & Discover

Share

- MathWorks add-on tools for:
 - Math, statistics, and optimization
 - Control system design and analysis
 - Signal processing and communications
 - Image processing and computer vision
 - Parallel computing and more...
- Partner products provide:
 - Additional interfaces
 - Domain-specific analysis
 - Support for niche applications



Sharing Results from MATLAB

Access

Explore & Discover

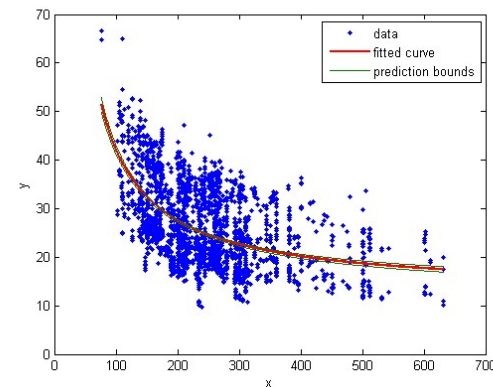
Share

- Automatically generate reports
 - Publish MATLAB files
 - Customize reports using MATLAB Report Generator
- Package as an app or a custom toolbox
- Deploy applications to other environments

Plot Data and Model

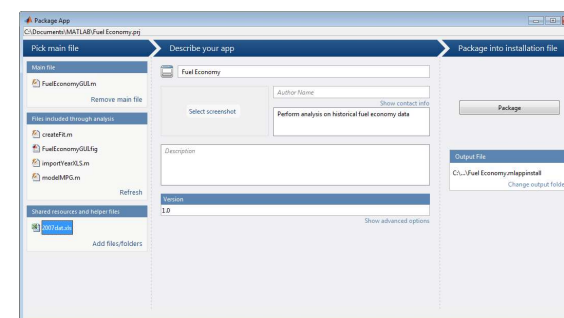
The result from the Curve Fitting Toolbox has a `plot` method for displaying the result graphically. We can choose to display the prediction bounds for the fit.

```
figure;  
hh = plot(cf, 'r', carDataDS.RatedHP, carDataDS.MPG, 'predfunc', 0.95);  
set(hh(2), 'LineWidth', 2);  
set(hh(3:4), 'LineStyle', '-', 'Color', [0.5 0]);
```



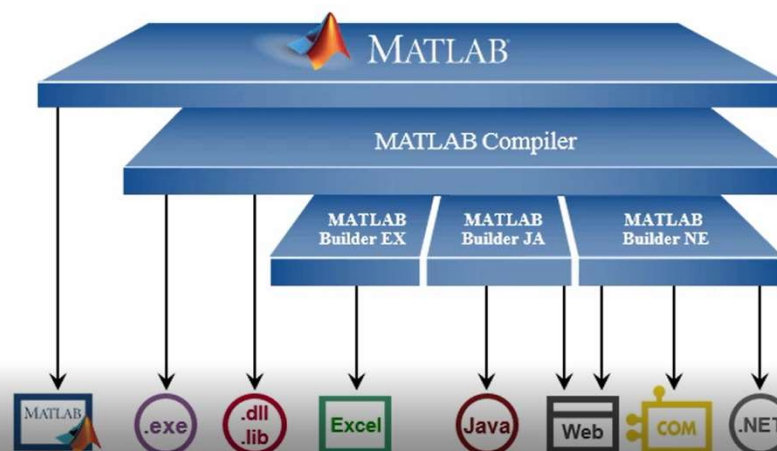
Packaging and Sharing MATLAB Apps

- MATLAB apps
 - Interactive applications to perform technical computing tasks
 - Displayed in apps gallery
- Included in many MATLAB products
- Package your own app
 - Create single file for distribution and installation into gallery
 - Packaging tool:
 - Automatically includes all necessary files
 - Documents required products

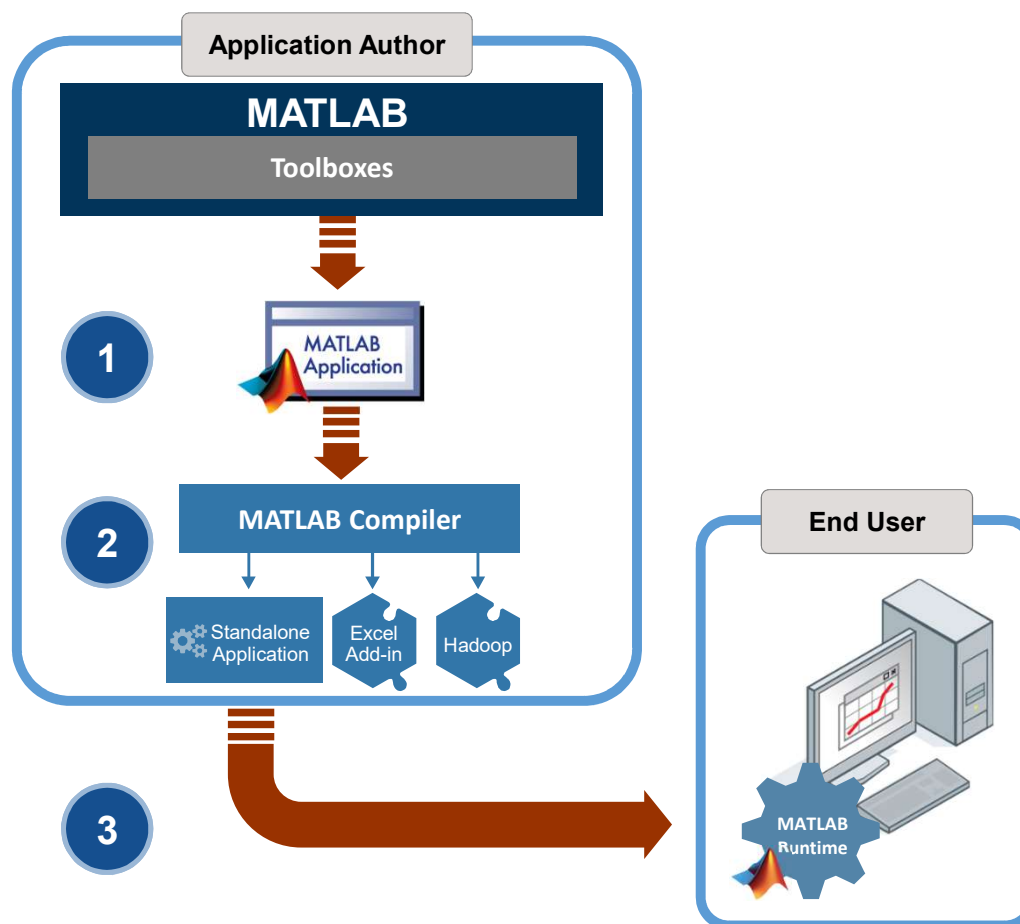


Deploying Applications with MATLAB

- Give MATLAB code to other users
 - MATLAB apps
 - MATLAB files
- Share applications with end users who do not need MATLAB
 - Stand-alone executables
 - Shared libraries
 - Software components

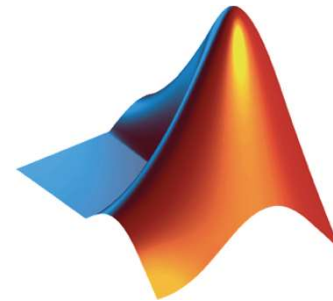


Sharing Standalone Applications



Using MATLAB

- High-level language
 - Native support for vector and matrix operations
 - Built-in math and visualization functions
- Development environment
 - Interactive and easy to get started
 - Ideal for iterative exploration and design
- Technical computing platform
 - Add-on products for a range of application areas
(e.g., signal processing and communications, image and video processing, control systems, test and measurement)





A decorative graphic consisting of a network of glowing blue nodes connected by thin lines, forming a wave-like shape that spans the width of the slide.

Thank you

See you next time

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