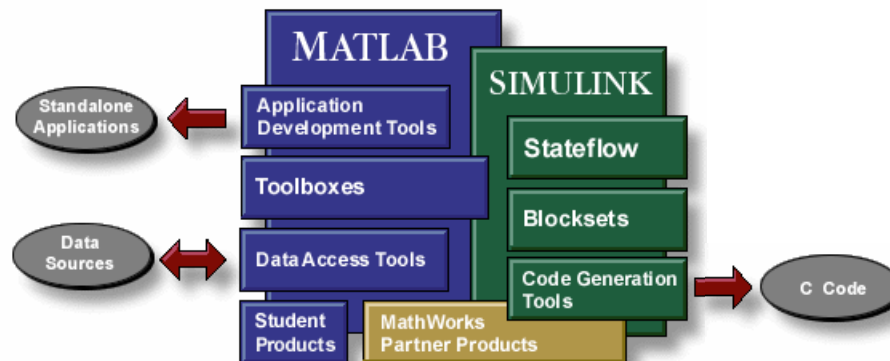
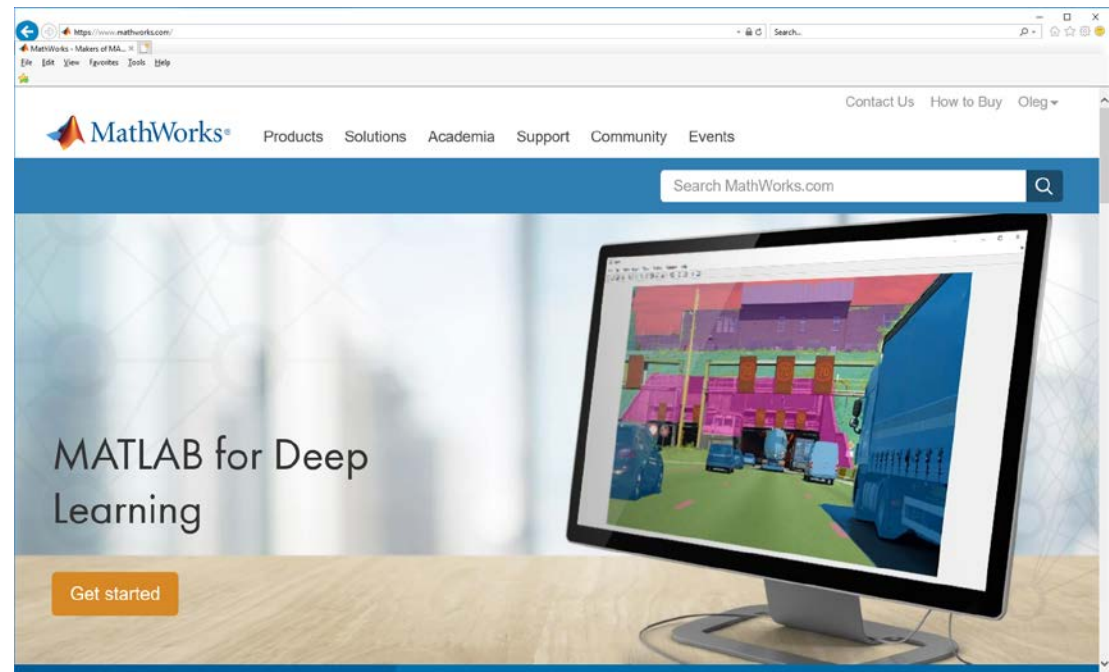


Chapter 1. MATLAB/Simulink as a Technical Computing Language



- 1.1 Introduction
- 1.2 History of MATLAB Creation and Development
- 1.3 Capabilities and Resources
- 1.4 Aerospace Application Tools
- 1.5 Overview of MathWorks Products
- 1.6 Installing Mathworks Products
- 1.7 MATLAB Online



Fast Facts

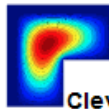
- Founded in 1984
- Software installations at over 80,000 business, government, and university sites
- Customers in over 180 countries
- There are more than:
 - 2 million users of MATLAB worldwide
 - 4 million files downloaded from File Exchange on MATLAB Central in 2016
 - 225,000 contributors worldwide to MATLAB Central apps
 - 500 third-party solutions that build on MATLAB and Simulink
 - Over 2,000 MATLAB based books in 28 languages

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

www.mathworks.com/company/newsletters/news_notes/clevescorner/dec04.html

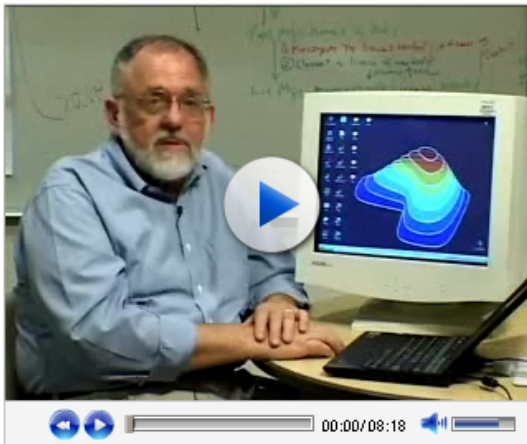
- Newsletters Main Page
- News & Notes
 - Current Issue
 - Cleve's Corner**
 - Past Issues
- MATLAB Digest
 - Current Issue
 - Past Issues
- MATLAB Digest - Academic Edition
 - Current Issue
 - Past Issues
- MATLAB Digest - Biotech and Pharmaceutical Edition
 - Current Issue
 - Past Issues
- User Stories

MATLAB News & Notes - December 2004



Cleve's Corner

The Origins of MATLAB



Video: The Origins of MATLAB 8:18

Cleve Moler describes his inspiration for authoring MATLAB. Reprinted from The MathWorks News & Notes | January 2006 | www.mathworks.com

www.mathworks.com/company/newsletters/news_notes/clevescorner/jan06.pdf

The Growth of MATLAB and The MathWorks over Two Decades

Jack Little left his job at the consulting company and bought a new COMPAQ portable computer at Sears. The machine had only 256 KB of memory and no hard disc; Jack had to swap 5-1/4-inch floppies to compile programs. Jack and Steve took a year and a half to re-write MATLAB in C, adding new features they had envisioned. Steve wrote the parser/interpreter, and Jack wrote the math libraries, including translations to C of about a dozen routines from LINPACK and MATLAB. Jack also wrote the first Control System Toolbox. Some of their original code is still used in MATLAB today.

1983
MATLAB
rewritten

Jack Little used
this COMPAQ
portable to
develop
MATLAB 1.0.



Jack suggested making MATLAB a matrix-based programming language to which we could easily add new functions, organized into toolboxes. He wanted the system to be available on a wide range of machines, from PCs and workstations to mainframes. He also wanted it to take advantage of graphics where they were available. I readily agreed.

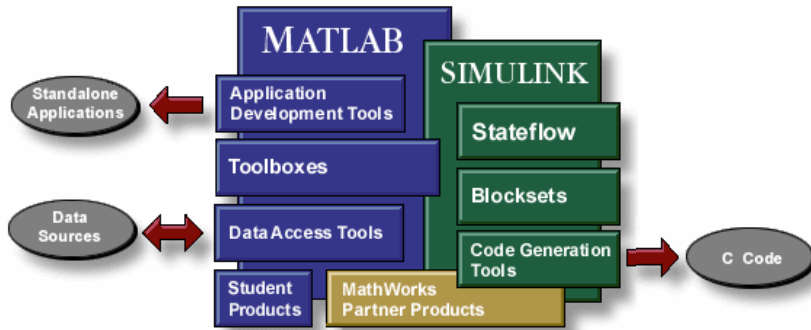
There was considerable concern about code size in the initial versions of MATLAB. On the PC, MATLAB had to share 256KB of memory with the DOS operating system and still leave room to store a few matrices. I designed a simple, single-shift, complex QZ algorithm that was not in EISPACK. It required little memory and could be used for most of the matrix eigenvalue problems. We even used it for polynomial zeros to save code.

1984
The
MathWorks
founded

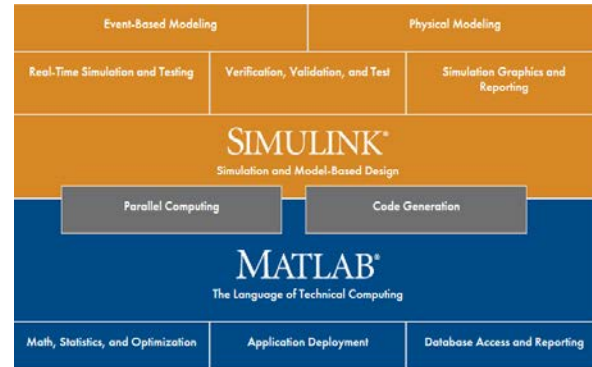
In 1984, Jack, Steve, and I founded The MathWorks. The first mailing address was a rented A-frame cabin where Jack lived in the hills above Stanford University in Portola Valley, California.

The MathWorks released MATLAB 1.0, implemented in C for MS-DOS PCs. MATLAB made its commercial debut at the IEEE Conference on Design and Control in Las Vegas, Nevada.

MATLAB Product Family

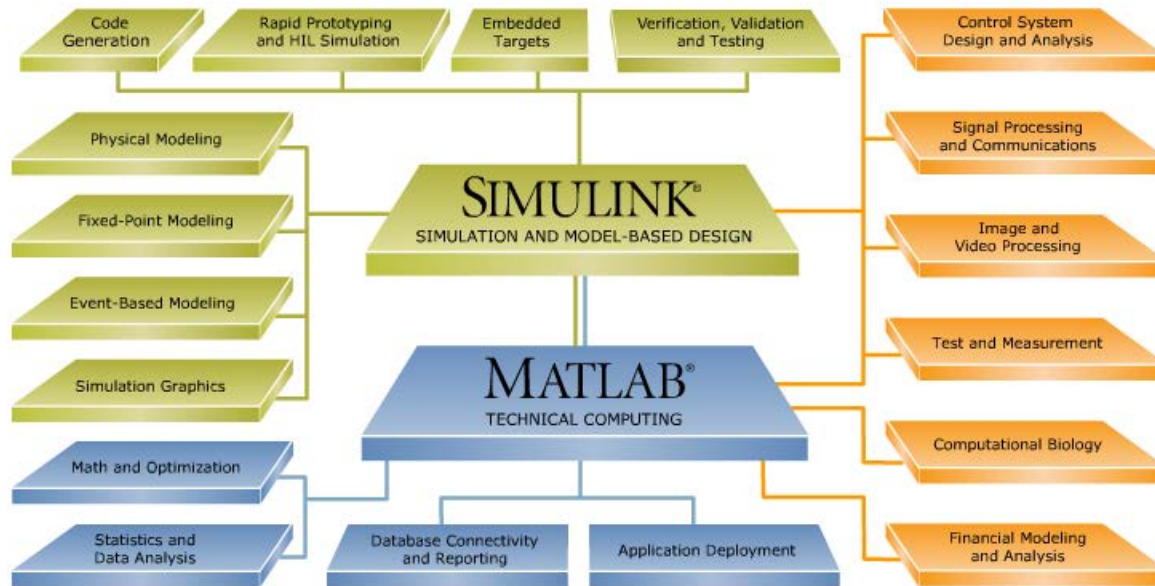


Simulink Product Family



Application-Specific Products

Applications
Control Systems
Signal Processing and Communications
Image Processing and Computer Vision
Test and Measurement
Computational Finance
Computational Biology



MATLAB Product Family

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.



Shaping the Future of Aerospace

Latest Release Highlights

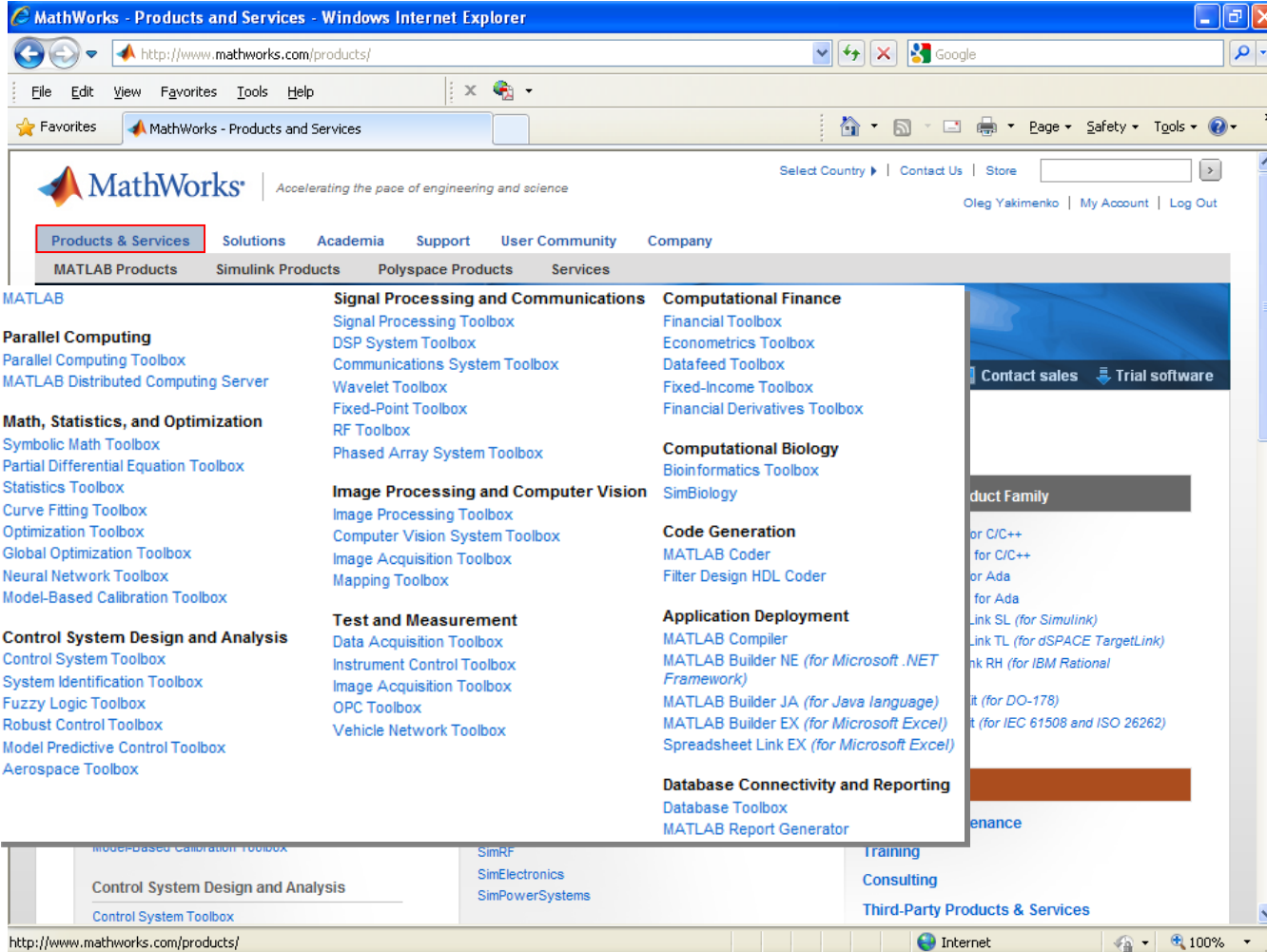
- **R2012b** – new Desktop features (Toolstrip interface that replaced menus and toolbars, Apps gallery presenting apps from the MATLAB product family, redesigned Help system), command line suggestions; new Simulink Editor, smart signal routing and simulation tools
- R2013b – new types of data ([table](#) data container, [categorical](#) array)
- R2014a – new way to display Command History window (pop-up window rather than static window)
- **R2014b** – new graphics system, new types of data ([datetime](#), [duration](#), and [calendarDuration](#)), suggested corrections for syntax errors in the Command Window, packaging a sharing tool, big data analysis tools ([datastore](#) and others)
- R2016a – Live Editor to create and run live scripts with embedded output), App Designer
- R2016b – new types of data ([timetable](#) data container, [timeseries](#) objects, [string](#) array), working with missing data ([fillmissing](#)) and big data ([tall](#))
- R2017a – MATLAB Online to use MATLAB through the web browser, working with outliers ([filloutliers](#) and others)
- R2017b – MATLAB Drive providing a common free cloud-based storage of 250Mb), plotting in geographic coordinates, [wordcloud](#) function, contextual hints for function arguments in Live Editor
- R2018a – improved graphic ([axes](#), [legend](#))
- R2018b – new plotting functions ([xline](#), [yline](#), [geoaxes](#), [stackedplot](#), [scatterhistogram](#) and others), axes toolbar, Deep Learning Toolbox
- R2019a – new tabular data reading functions ([readmatrix](#) and others), [parallelplot](#), graphics export, object detection using you-only-look-once (YOLO) v2 detectors, Reinforcement Learning Toolbox
- **R2019b** – Simulink Toolstrip and other tools, Git integration with MATLAB, map-based data visualization, Live Editor Tasks, function argument validation, Navigation, Robotics System and ROS Toolboxes

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

6 out of 25

Engineering Computations and Modeling in MATLAB/Simulink

Toolboxes and Blocksets



The screenshot shows the MathWorks website in a Windows Internet Explorer browser. The page is titled "MathWorks - Products and Services" and features a navigation menu with categories like "Products & Services", "Solutions", "Academia", "Support", "User Community", and "Company". Under "Products & Services", there are sub-categories for "MATLAB Products", "Simulink Products", "Polyspace Products", and "Services".

The main content area is divided into several sections, each listing various toolboxes and blocksets:

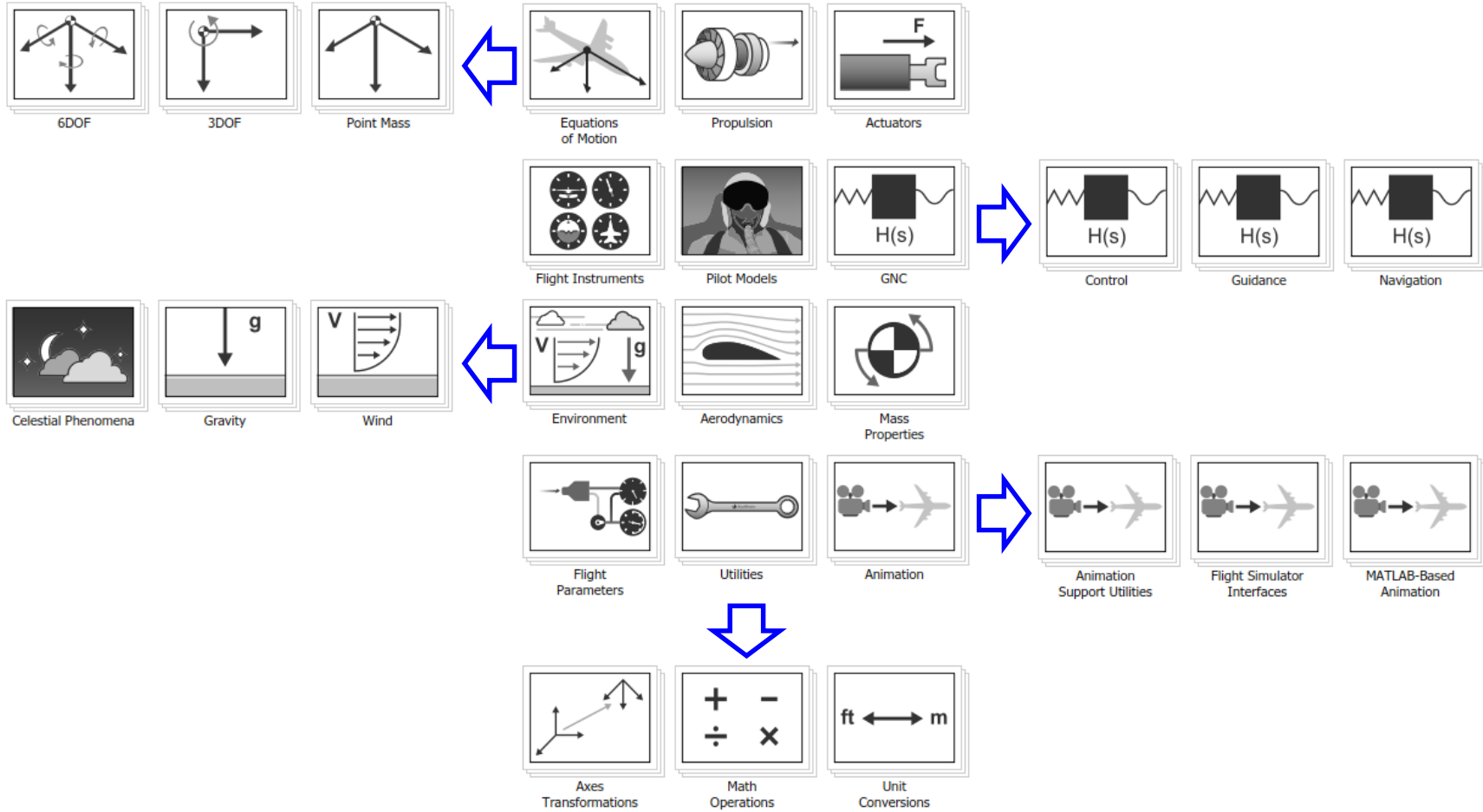
- MATLAB**
 - Parallel Computing**
 - Parallel Computing Toolbox
 - MATLAB Distributed Computing Server
 - Math, Statistics, and Optimization**
 - Symbolic Math Toolbox
 - Partial Differential Equation Toolbox
 - Statistics Toolbox
 - Curve Fitting Toolbox
 - Optimization Toolbox
 - Global Optimization Toolbox
 - Neural Network Toolbox
 - Model-Based Calibration Toolbox
 - Control System Design and Analysis**
 - Control System Toolbox
 - System Identification Toolbox
 - Fuzzy Logic Toolbox
 - Robust Control Toolbox
 - Model Predictive Control Toolbox
 - Aerospace Toolbox
- Signal Processing and Communications**
 - Signal Processing Toolbox
 - DSP System Toolbox
 - Communications System Toolbox
 - Wavelet Toolbox
 - Fixed-Point Toolbox
 - RF Toolbox
 - Phased Array System Toolbox
- Image Processing and Computer Vision**
 - Image Processing Toolbox
 - Computer Vision System Toolbox
 - Image Acquisition Toolbox
 - Mapping Toolbox
- Test and Measurement**
 - Data Acquisition Toolbox
 - Instrument Control Toolbox
 - Image Acquisition Toolbox
 - OPC Toolbox
 - Vehicle Network Toolbox
- Computational Finance**
 - Financial Toolbox
 - Econometrics Toolbox
 - Datafeed Toolbox
 - Fixed-Income Toolbox
 - Financial Derivatives Toolbox
- Computational Biology**
 - Bioinformatics Toolbox
 - SimBiology
- Code Generation**
 - MATLAB Coder
 - Filter Design HDL Coder
- Application Deployment**
 - MATLAB Compiler
 - MATLAB Builder NE (for Microsoft .NET Framework)
 - MATLAB Builder JA (for Java language)
 - MATLAB Builder EX (for Microsoft Excel)
 - Spreadsheet Link EX (for Microsoft Excel)
- Database Connectivity and Reporting**
 - Database Toolbox
 - MATLAB Report Generator

At the bottom of the page, there are links for "Training", "Consulting", and "Third-Party Products & Services".

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

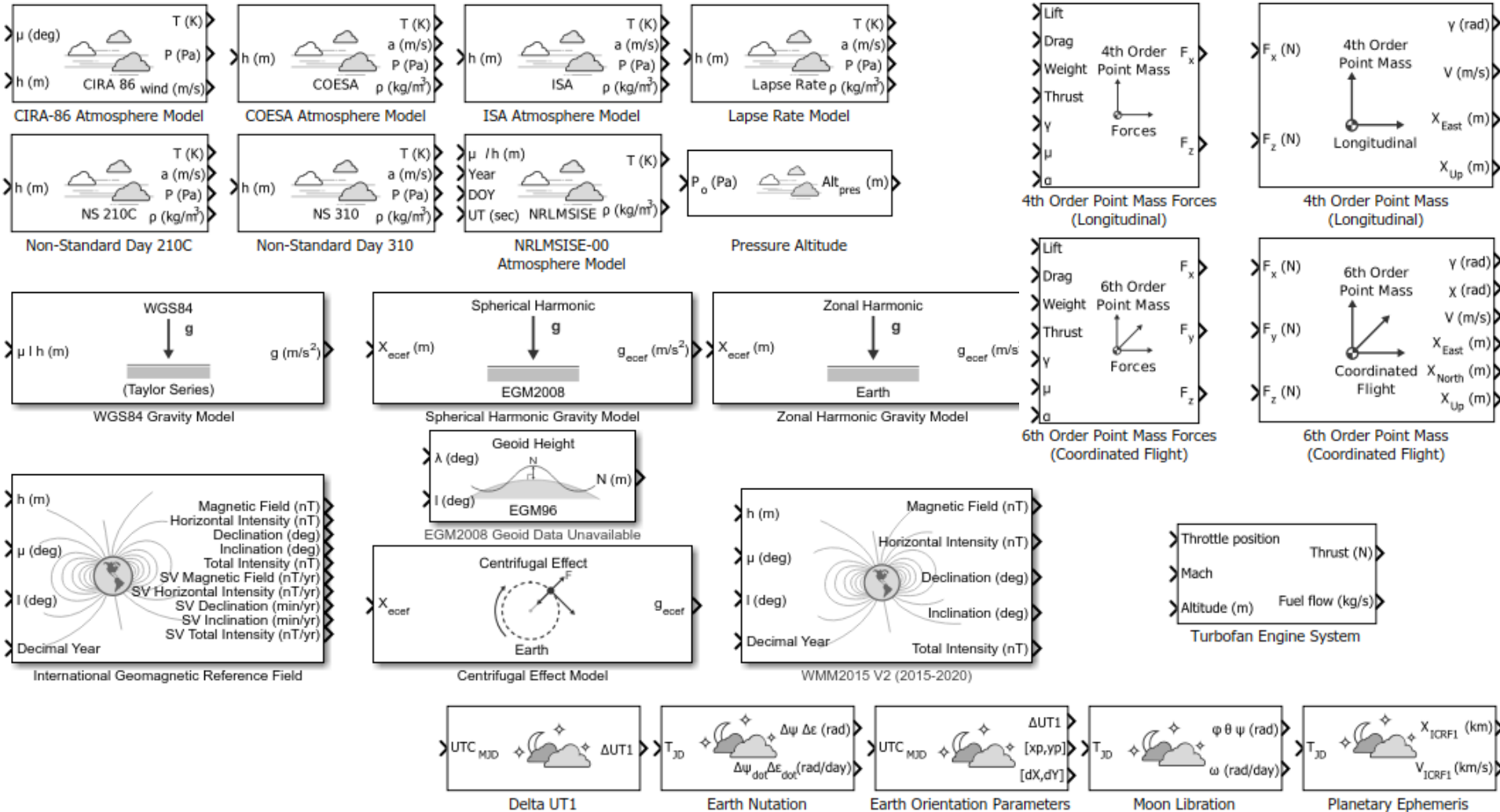
Subgroup	Brief Description
Axes Transformations	Transforms axes of coordinate systems to different types
Flight Parameters	Computes various flight parameters, including ideal airspeed correction, Mach number, and dynamic pressure
Quaternion Math	Assures common mathematical and matrix operations on a quaternion
Unit Conversion	Converts common measurement units from one system to another, and enables time calculations, including Julian dates, decimal year, and leap year
Environment	Simulates various aspects of aircraft environment, such as atmosphere conditions, gravity, magnetic fields, and wind
Gas Dynamics	Provides various gas dynamics tables
Trajectory and Attitude Visualization	Allows constructing FlightGear animation objects to be used in virtual reality animations

Aerospace Blockset Libraries



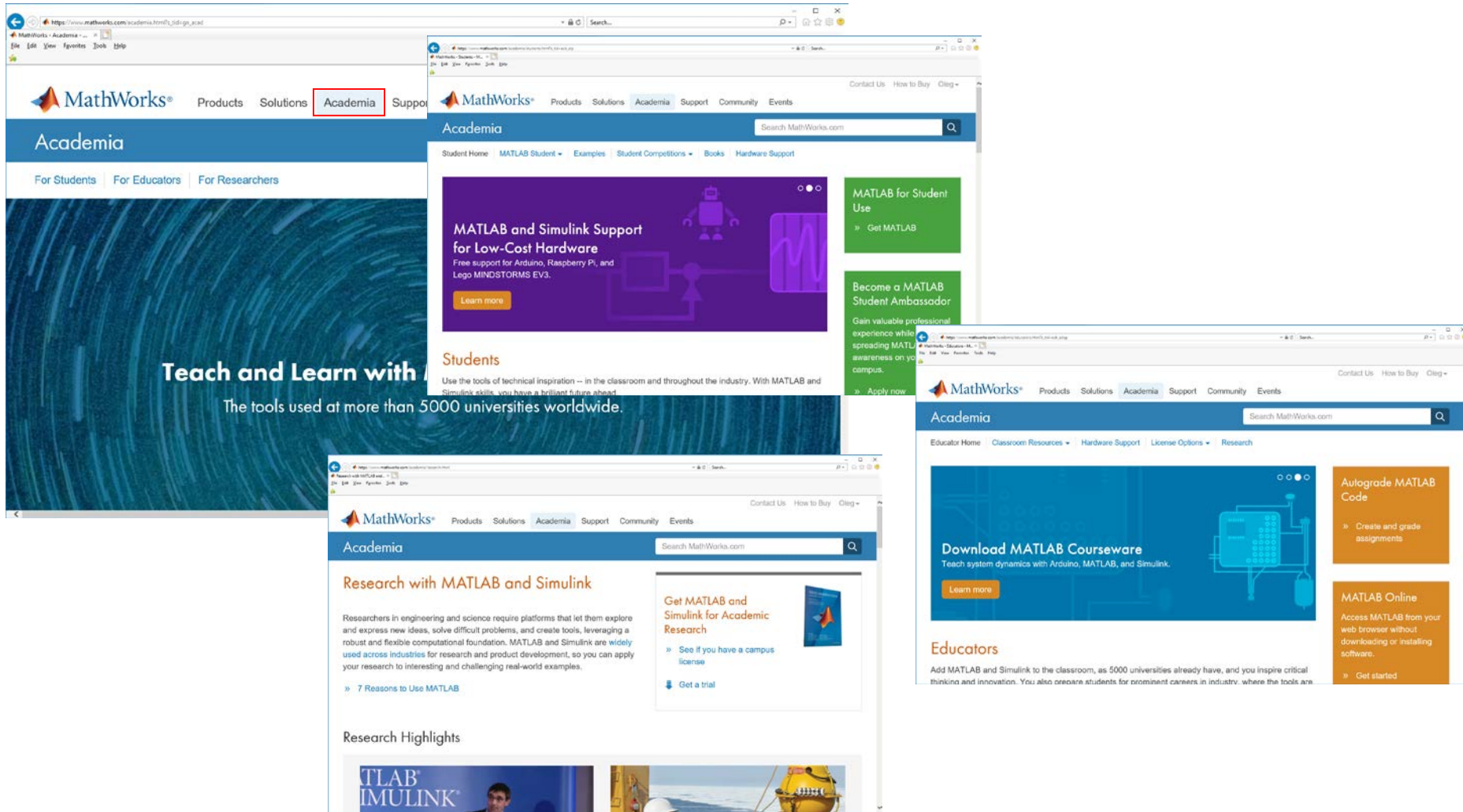
All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

Aerospace Blockset Blocks



All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

Mathworks for Academia



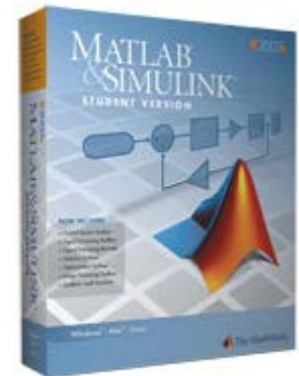
All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

Student Versions

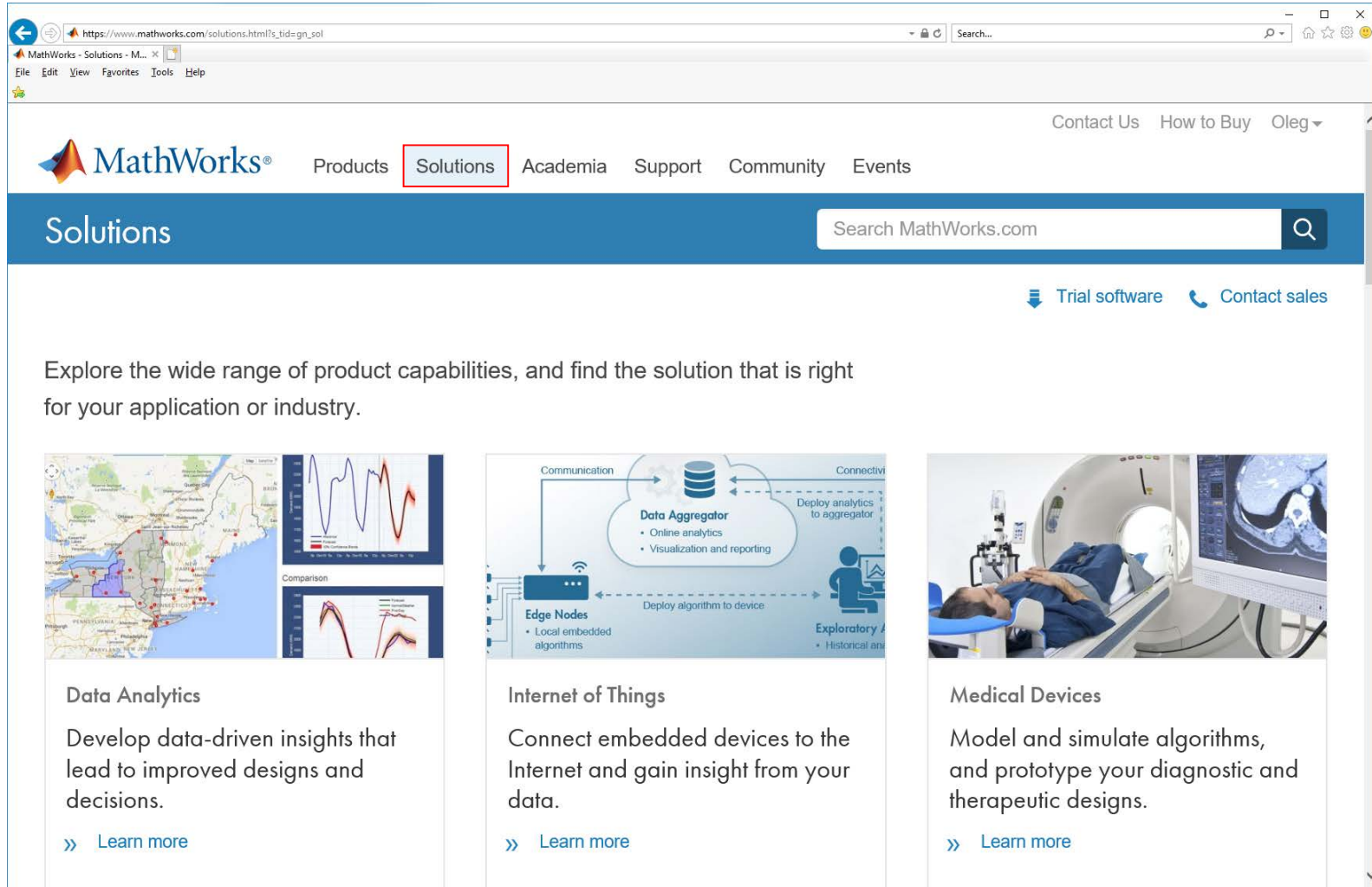
1. MATLAB Student version Includes MATLAB only, with the option to purchase add-on products for a variety of courses and applications.

2. MATLAB and Simulink Student Suite includes full-featured versions of **MATLAB** and **Simulink** (the student version of Simulink enables you to create models that include over 300 blocks) along with the key functions from:

- Control System Toolbox
- Curve Fitting Toolbox
- DSP System Toolbox
- Image Processing Toolbox
- Instrument Control Toolbox
- Optimization Toolbox
- Parallel Computing Toolbox
- Signal Processing Toolbox
- Statistics and Machine Learning Toolbox
- Symbolic Math Toolbox

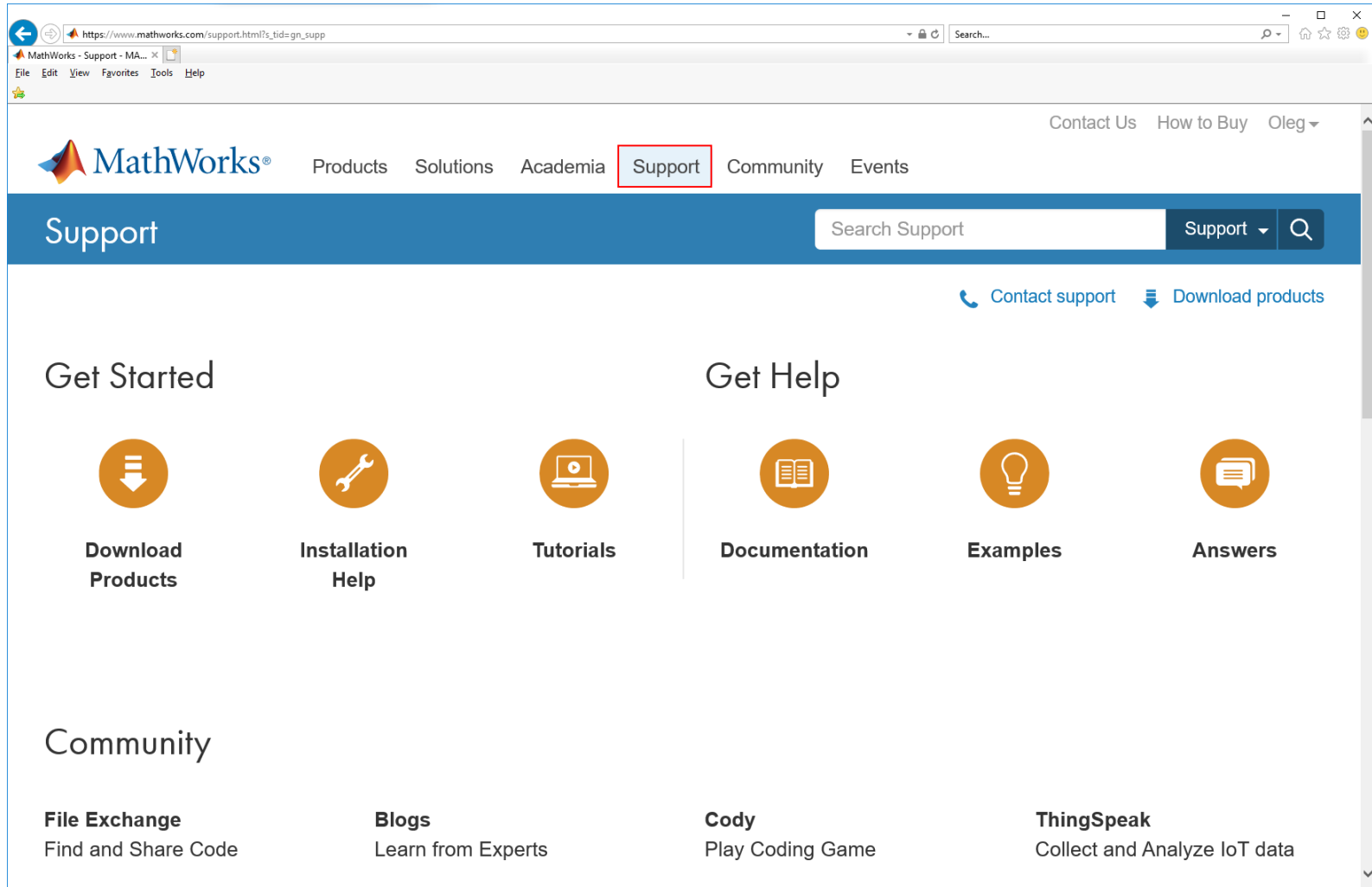


Runs on Windows, Mac and Linux

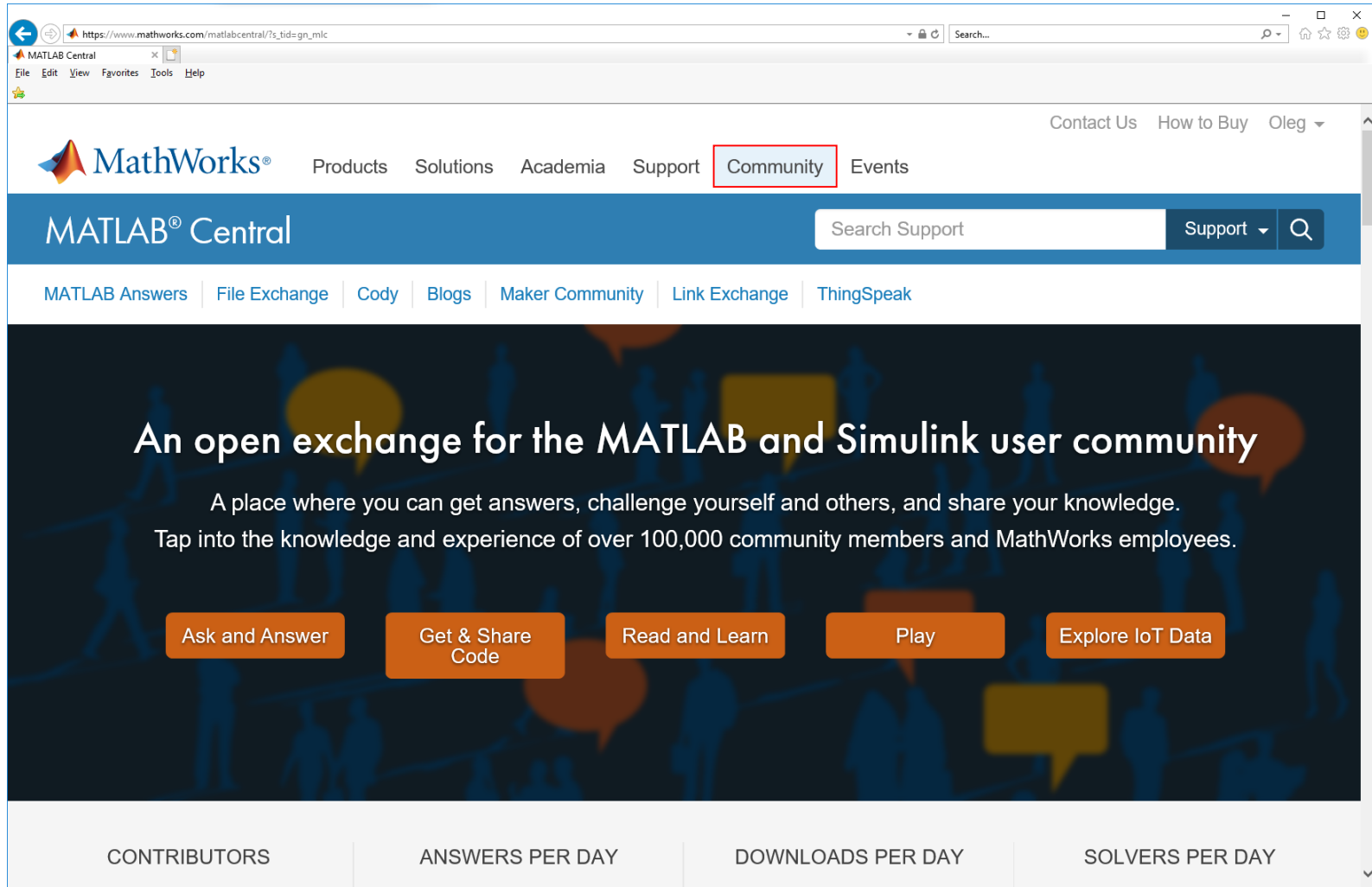


The screenshot shows the MathWorks Solutions website. The navigation menu includes 'Products', 'Solutions' (highlighted with a red box), 'Academia', 'Support', 'Community', and 'Events'. The main heading is 'Solutions' with a search bar. Below the heading, there are links for 'Trial software' and 'Contact sales'. The main content area features three columns:

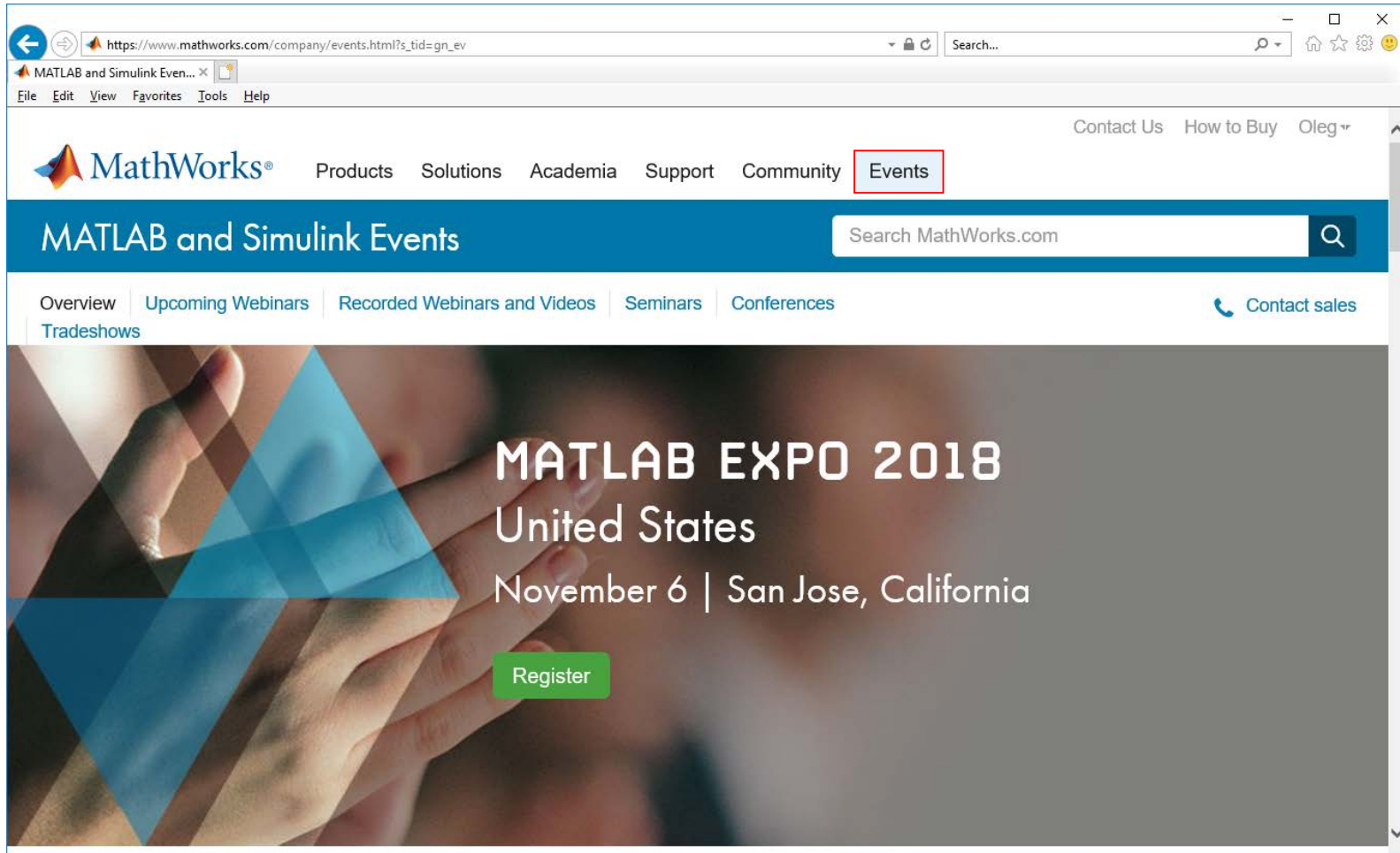
- Data Analytics:** Develop data-driven insights that lead to improved designs and decisions. [» Learn more](#)
- Internet of Things:** Connect embedded devices to the Internet and gain insight from your data. [» Learn more](#)
- Medical Devices:** Model and simulate algorithms, and prototype your diagnostic and therapeutic designs. [» Learn more](#)



The screenshot shows the MathWorks Support website. The browser address bar displays https://www.mathworks.com/support.html?s_tid=gn_supp. The navigation menu includes [Products](#), [Solutions](#), [Academia](#), [Support](#) (highlighted with a red box), [Community](#), and [Events](#). The main header features the MathWorks logo, a search bar labeled "Search Support", and a "Support" dropdown menu. Below the header, there are links for "Contact support" and "Download products". The "Get Started" section contains icons for "Download Products", "Installation Help", and "Tutorials". The "Get Help" section contains icons for "Documentation", "Examples", and "Answers". The "Community" section includes "File Exchange" (Find and Share Code), "Blogs" (Learn from Experts), "Cody" (Play Coding Game), and "ThingSpeak" (Collect and Analyze IoT data).



The screenshot shows the MATLAB Central website interface. At the top, the MathWorks logo is on the left, and navigation links for Products, Solutions, Academia, Support, Community (highlighted with a red box), and Events are in the center. On the right, there are links for Contact Us, How to Buy, and Oleg. Below the navigation is a blue header with 'MATLAB® Central' on the left, a 'Search Support' input field, and a 'Support' dropdown menu with a search icon. Underneath, a white bar contains links for MATLAB Answers, File Exchange, Cody, Blogs, Maker Community, Link Exchange, and ThingSpeak. The main content area has a dark background with the heading 'An open exchange for the MATLAB and Simulink user community' and a sub-heading 'A place where you can get answers, challenge yourself and others, and share your knowledge. Tap into the knowledge and experience of over 100,000 community members and MathWorks employees.' Below this are five orange buttons: 'Ask and Answer', 'Get & Share Code', 'Read and Learn', 'Play', and 'Explore IoT Data'. At the bottom, a white bar displays four statistics: 'CONTRIBUTORS', 'ANSWERS PER DAY', 'DOWNLOADS PER DAY', and 'SOLVERS PER DAY'.



The screenshot shows a web browser window displaying the MathWorks Events page. The address bar shows the URL: https://www.mathworks.com/company/events.html?s_tid=gn_ev. The page features the MathWorks logo and navigation links: Products, Solutions, Academia, Support, Community, and Events (highlighted with a red box). Below the navigation is a search bar for MathWorks.com. The main content area is titled "MATLAB and Simulink Events" and includes tabs for Overview, Upcoming Webinars, Recorded Webinars and Videos, Seminars, Conferences, and Tradeshows. A prominent banner for "MATLAB EXPO 2018 United States" is displayed, with the date "November 6 | San Jose, California" and a green "Register" button. The background of the banner shows hands holding a blue geometric shape.

MATLAB Scripts on the Web

From GPS measurements to ENU measurements: sample code

This code was written in *MATLAB*

Step 1: Convert GPS to ECEF

```
function [X,Y,Z] = llh2xyzTest(lat,long, h)
% Convert lat, long, height in WGS84 to ECEF X,Y,Z
% lat and long given in decimal degrees.
lat = lat/180*pi; %converting to radians
long = long/180*pi; %converting to radians
a = 6378137.0; % earth semimajor axis in meters
f = 1/298.257223563; % reciprocal flattening
e2 = 2*f -f^2; % eccentricity squared

chi = sqrt(1-e2*(sin(lat)).^2);
X = (a./chi +h).*cos(lat).*cos(long);
Y = (a./chi +h).*cos(lat).*sin(long);
Z = (a*(1-e2)./chi + h).*sin(lat);
```

Step 2: Convert ECEF to ENU

```
function [e,n,u] = xyz2enuTest(Xr, Yr, Zr, X, Y, Z)
% convert ECEF coordinates to local east, north, up

phiP = atan2(Zr,sqrt(Xr^2 + Yr^2));
lambda = atan2(Yr,Xr);

e = -sin(lambda).*(X-Xr) + cos(lambda).*(Y-Yr);
n = -sin(phiP).*cos(lambda).*(X-Xr) - sin(phiP).*sin(lambda).*(Y-Yr) + cos(phiP).*(Z-Zr);
u = cos(phiP).*cos(lambda).*(X-Xr) + cos(phiP).*sin(lambda).*(Y-Yr) + sin(phiP).*(Z-Zr);
```

WIKIPEDIA

English

The Free Encyclopedia

2 382 000+ articles

Deutsch

Die freie Enzyklopädie

752 000+ Artikel

Français

L'encyclopédie libre

661 000+ articles

Polski

Wolna encyklopedia

502 000+ hasel

日本語

フリー百科事典

492 000+ 記事

Italiano

L'enciclopedia libera

455 000+ voci

Nederlands

De vrije encyclopedie

439 000+ artikelen

Español

La enciclopedia libre

362 000+ artículos

Русский

Свободная энциклопедия

284 000+ статей



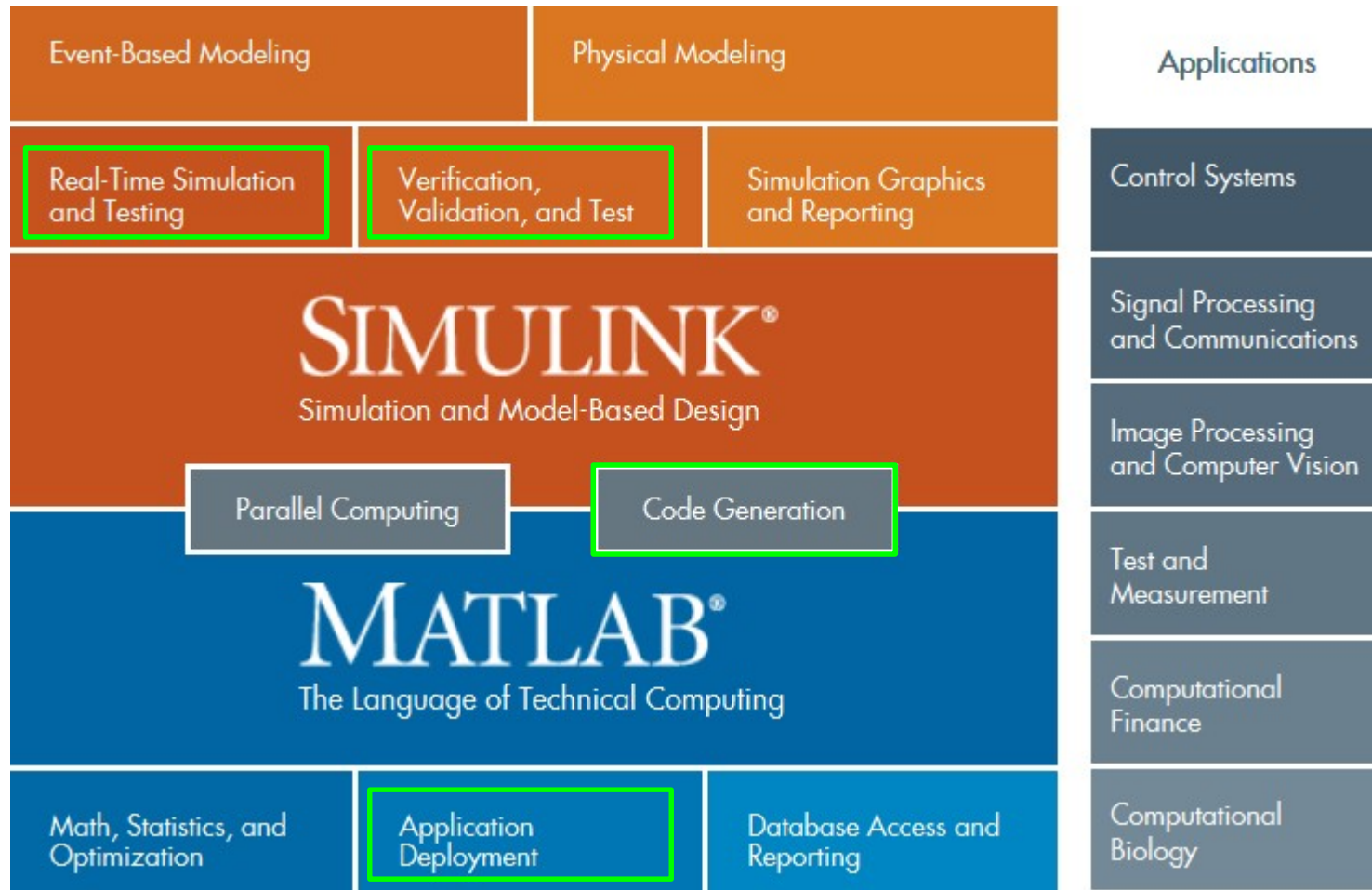
search · suche · rechercher · szukaj · 検索 · ricerca · zoeken · busca · buscar
поиск · sök · 搜索 · søk · haku · cerca · suk · пошук · căutare · ara

Geodetic system

English



MATLAB/Simulink: What's Next?

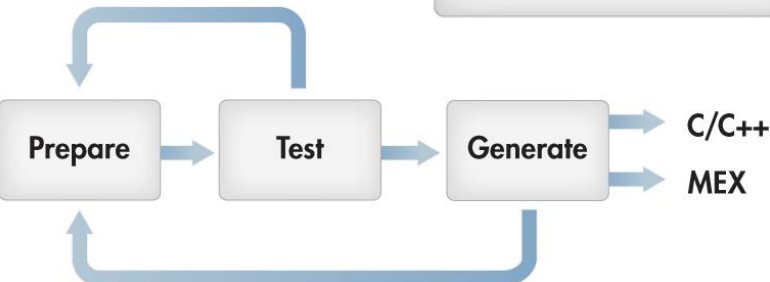


MATLAB Code Generation Tools



```

Block: sldemo_radar_eml/MATLAB Function
EDITOR
VIEW
Find Files
Insert
Compare
Comment
Go To
Breakpoints
Run Model
Build Model
SIMULINK
New
Open
Save
Print
Indent
Find
FILE
EDIT
NAVIGATE
BREAKPOINTS
RUN
28 % Radar update time deltat is inherited from model workspace
29
30 % 1. Compute Phi, Q, and R
31 Phi = [1 deltat 0 0; 0 1 0 0; 0 0 1 deltat; 0 0 0 1];
32 Q = diag([0 .005 0 .005]);
33 R = diag([300^2 0.001^2]);
34
35 % 2. Propagate the covariance matrix:
36 P = Phi*P*Phi' + Q;
37
38 % 3. Propagate the track estimate::
39 xhat = Phi*xhat;
40
41 % 4 a). Compute observation estimates:
42 Rangehat = sqrt(xhat(1)^2+xhat(3)^2);
43 Bearinghat = atan2(xhat(3),xhat(1));
44
45 % 4 b). Compute observation vector y and linearized measurement m
46 yhat = [Rangehat;
47         Bearinghat];
48 M = [ cos(Bearinghat)      0 sin(Bearinghat)      0
49       -sin(Bearinghat)/Rangehat 0 cos(Bearinghat)/Rangehat 0 ];
50
51 % 4 c). Compute residual (Estimation Error)
52 residual = meas - yhat;
    
```



Code Generation Report

MATLAB code | Call stack | C code

Target Source Files

- kalmanfilter.c
- kalmanfilter.h
- kalmanfilter_data.h
- kalmanfilter_data.c
- kalmanfilter_initialize.h
- kalmanfilter_initialize.c
- kalmanfilter_initialize.h
- kalmanfilter_initialize.c
- kalmanfilter_initialize.h
- kalmanfilter_initialize.c

File: kalmanfilter.c (kalmanfilter.c)

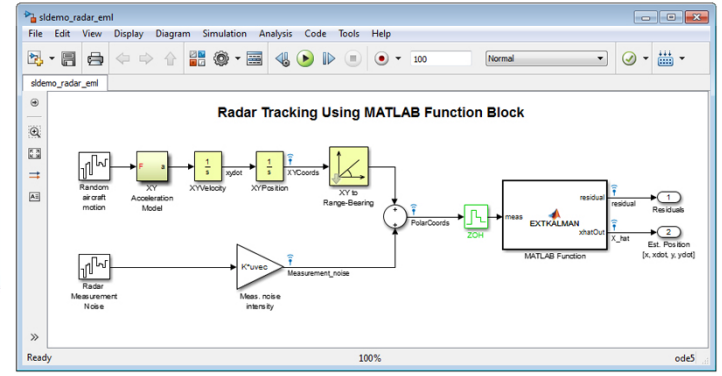
```

66 for (i1 = 0; i1 < 6; i1++) {
67     Q[i1 + 6 * i1] = 1;
68 }
69
70 /* Initial state conditions */
71 /* Predicted state and covariance */
72 x_pos[i1] = 0.0;
73 for (i2 = 0; i2 < 6; i2++) {
74     x_pos[i1] += (real_T)b_m[i1 + 6 * i2] * x_est[i2];
75 }
76
77
78 for (i2 = 0; i2 < 6; i2++) {
79     a[i1 + 6 * i2] = 0.0;
80     for (k = 0; k < 6; k++) {
81         a[i1 + 6 * i2] += (real_T)b_m[i1 + 6 * k] * p_est[k + 6 * i2];
82     }
83 }
84
85
86 for (i2 = 0; i2 < 6; i2++) {
87     for (k = 0; k < 6; k++) {
88         a21 = 0.0;
    
```

Summary | All Messages (0) | Target Build Log

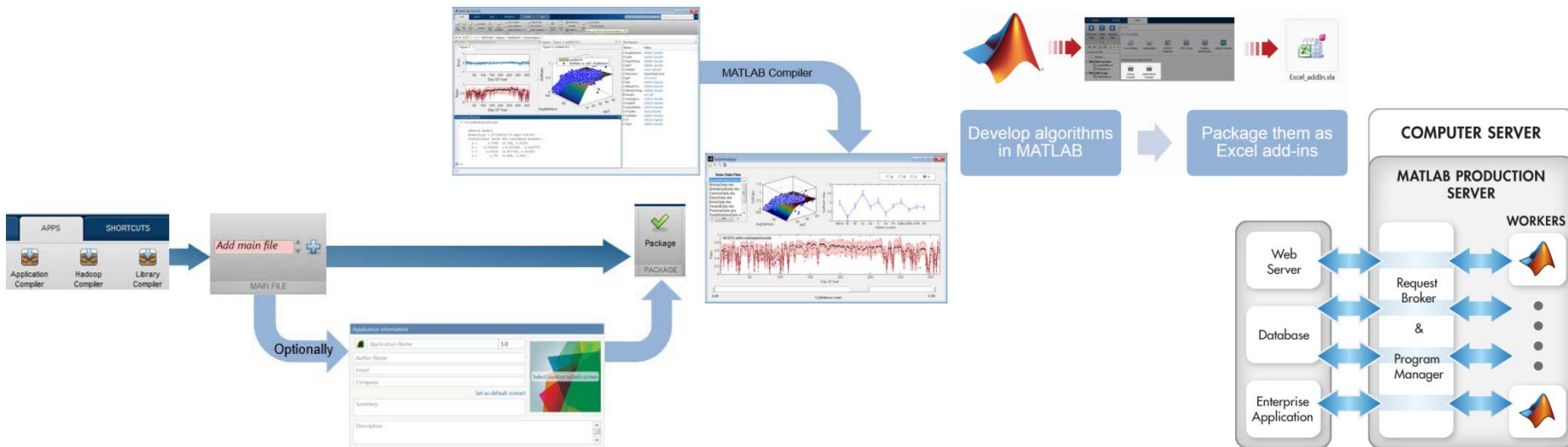
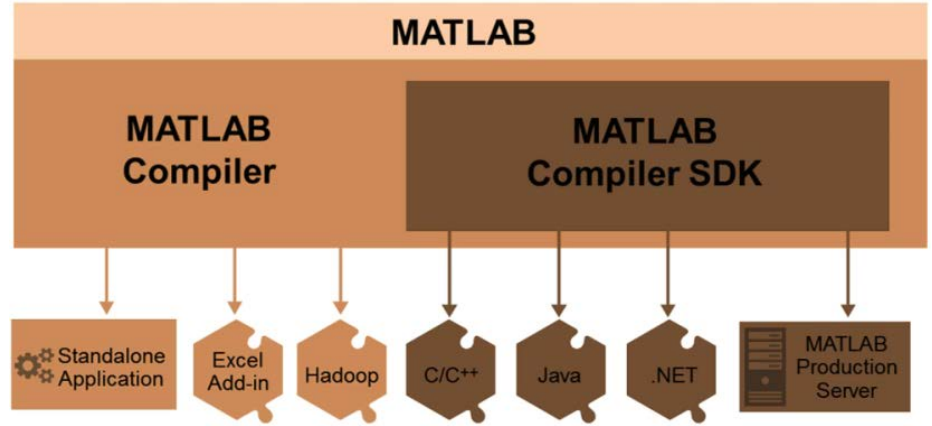
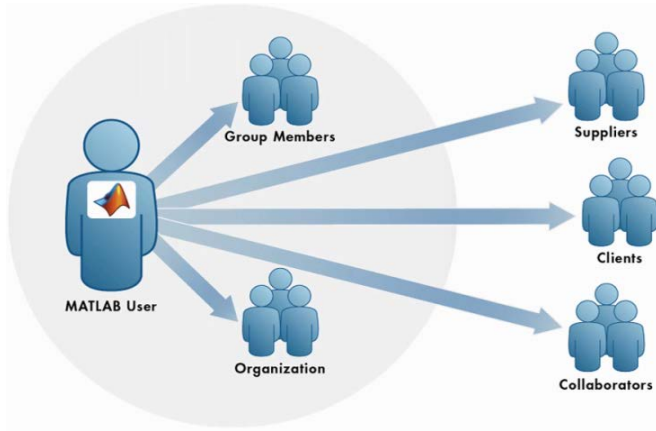
C source code generated on: 01-Aug-2012 16:20:27
Coding target: Static Library
Number of errors: 0
Number of warnings: 0

Tell Us What You Think
We value your feedback. Please take a few minutes to answer this short questionnaire regarding the...



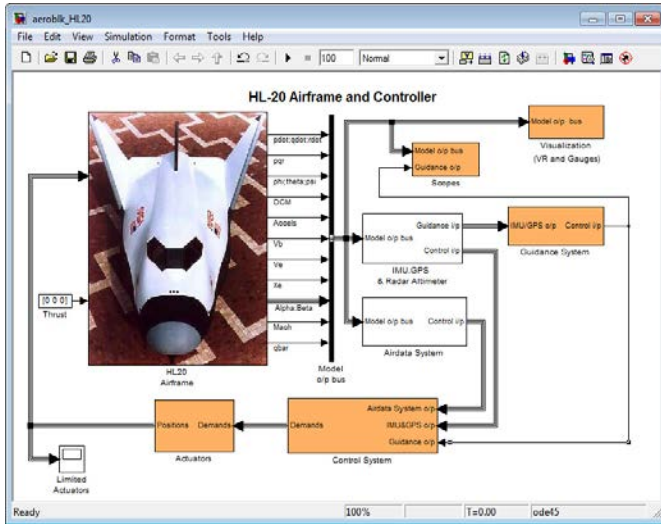
All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

Application Deployment Tools



All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

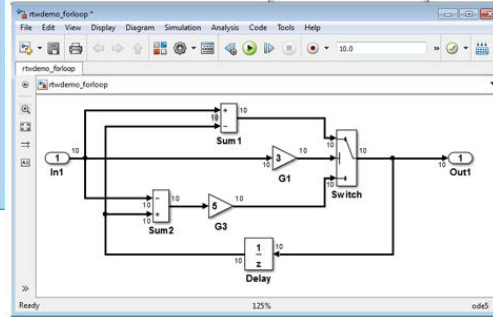
Simulink Coder & Simulink Real-Time



```

1  /* mbc-line none */
2  #if MODEL_rtwdemo_forloop rtwdemo_forloop_M;
3  #if MODEL_rtwdemo_forloop *const rtwdemo_forloop_M = &rtwdemo_forloop_M;
4  void rtwdemo_forloop_step(void)
5  {
6  int32_T i;
7  for (i = 0; i < 10; i++) {
8  /* Switch: '<Roots/Switch' (incorporates:
9   * Gain: '<Roots/G1'
10  * Inports: '<Roots/In1'
11  * Sum: '<Roots/Sum1'
12  * Gain: '<Roots/Sum2'
13  * OutDelay: '<Roots/Delay'
14  */
15  if (3.0 * rtwdemo_forloop_U_In1[i] >= 0.0) {
16  rtwdemo_forloop_Y_Out1[i] = rtwdemo_forloop_U_In1[i] -
17  rtwdemo_forloop_MMask-Delay_DSTATE[i];
18  } else {
19  rtwdemo_forloop_Y_Out1[i] = (rtwdemo_forloop_MMask-Delay_DSTATE[i] -
20  rtwdemo_forloop_U_In1[i]) * 5.0;
21  }
22  }
23  }
24  End of Switch: '<Roots/Switch' */
25  Update for UnitDelay: '<Roots/Delay' */
26  rtwdemo_forloop_MMask-Delay_DSTATE[i] = rtwdemo_forloop_Y_Out1[i];

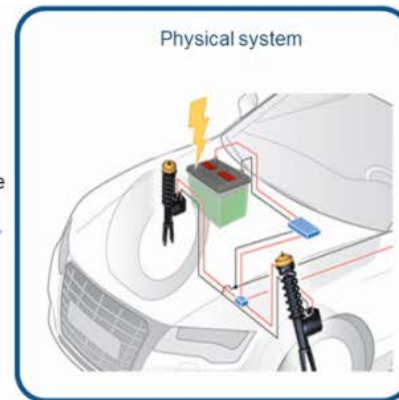
```



Ethernet



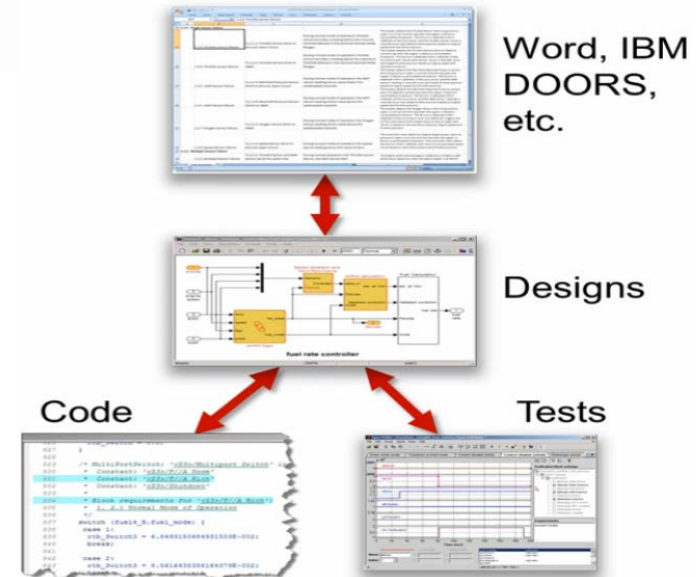
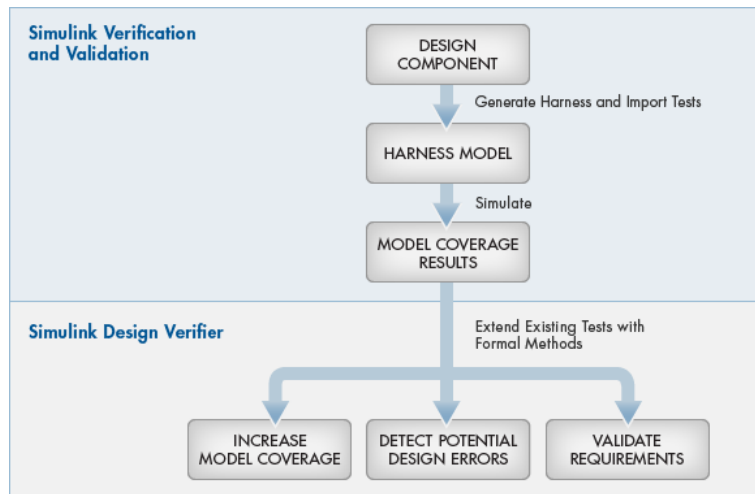
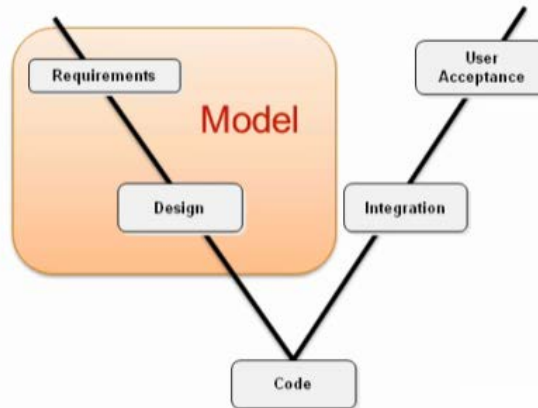
I/O interface



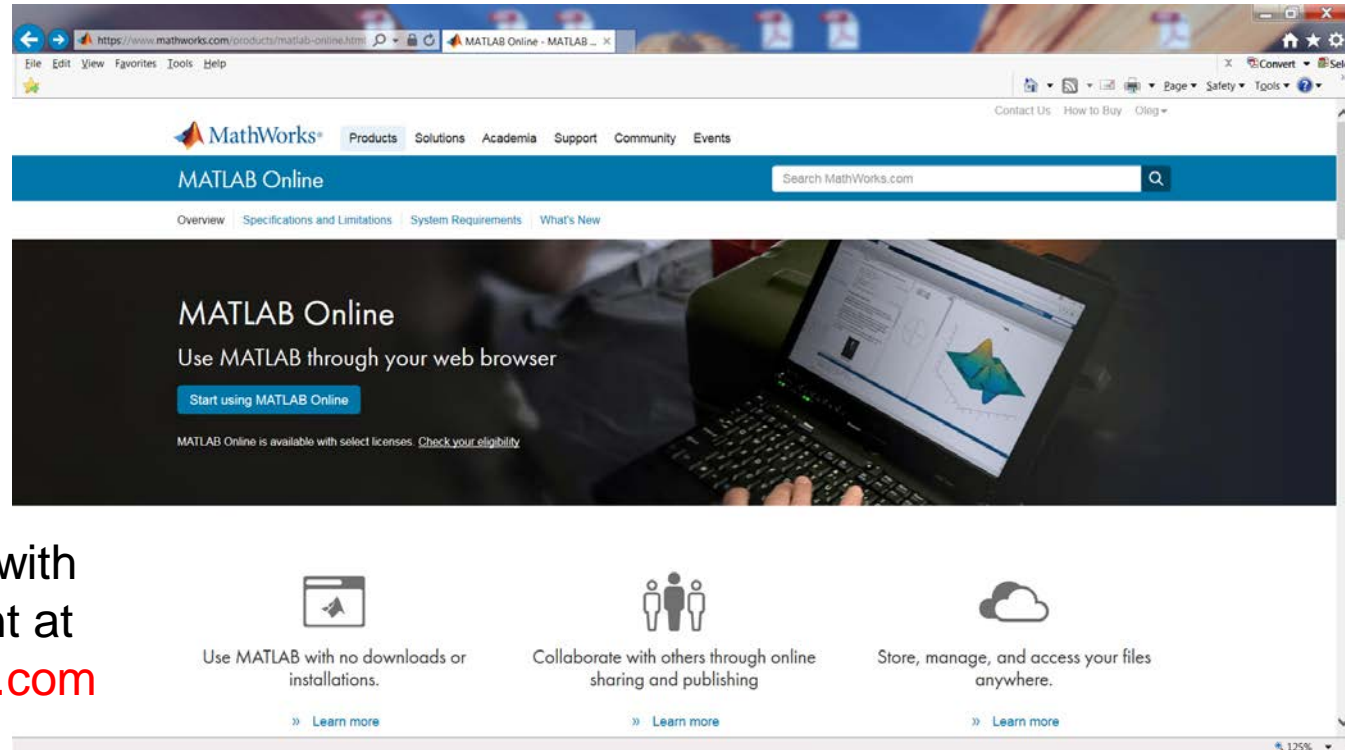
All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

Simulink Model V&V Tools

- Collaboration: modeling standards checks
- Track design changes: traceability analysis
- Structural verification: model coverage
- Formal verification:
 - test generation
 - static error detection
 - requirements proving



All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.



Access **MATLAB Online** with your Mathwork's account at www.matlab.mathworks.com

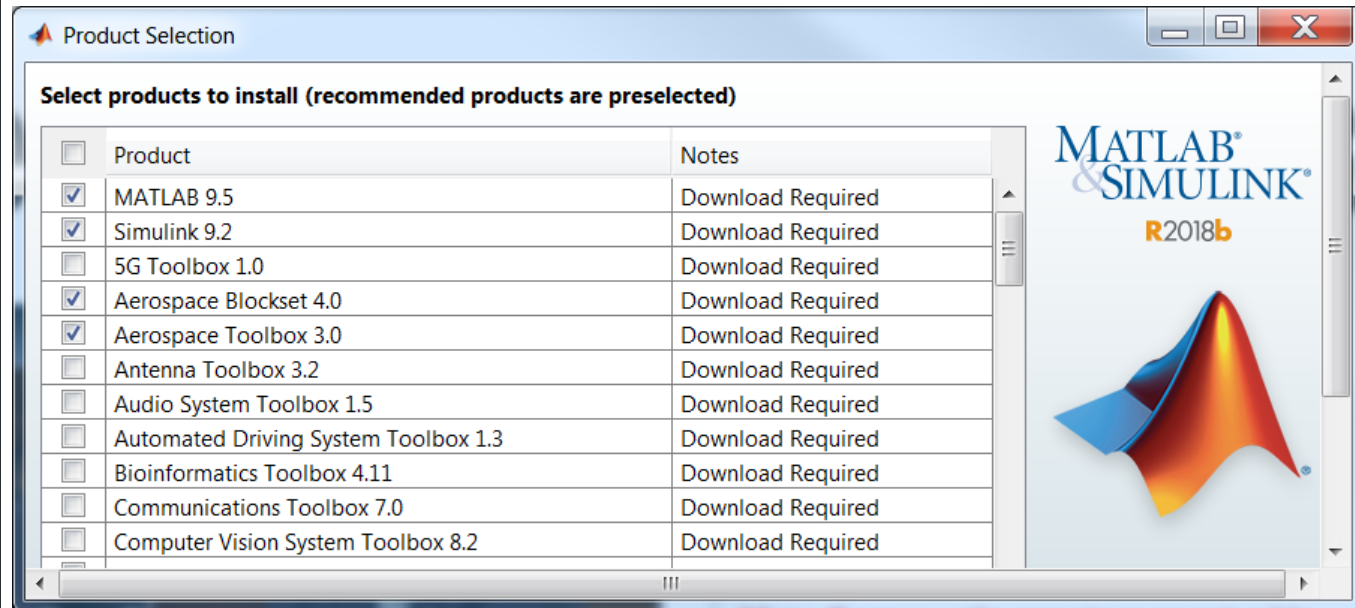
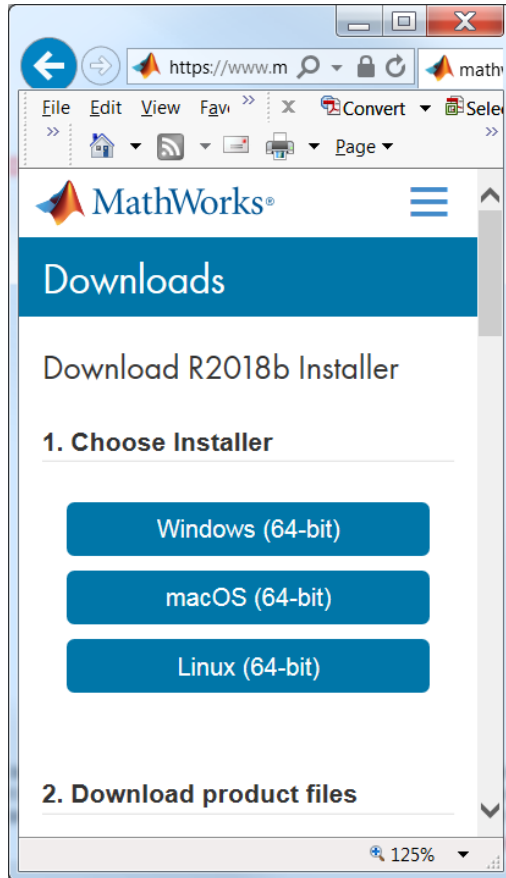
Enjoy Cloud Storage and Synchronization

- **MATLAB Drive** gives you up to 5Gb (250Gb free) to store, access, and manage your files from anywhere with MATLAB Online
- **MATLAB Drive Connector** enables synchronizing your files between your computers and MATLAB Online, eliminating the need for manual upload or download then

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted, unless for course participation, in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the Publisher and/or Author. Contact the American Institute of Aeronautics and Astronautics, Professional Development Programs, 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807.

Installing MathWorks Products

www.mathworks.com/downloads/web_downloads/download_release?release=R20XXx



Between-release updates www.mathworks.com/downloads/web_downloads/download_update?release=R20XXx

The End of Chapter 1

Questions?