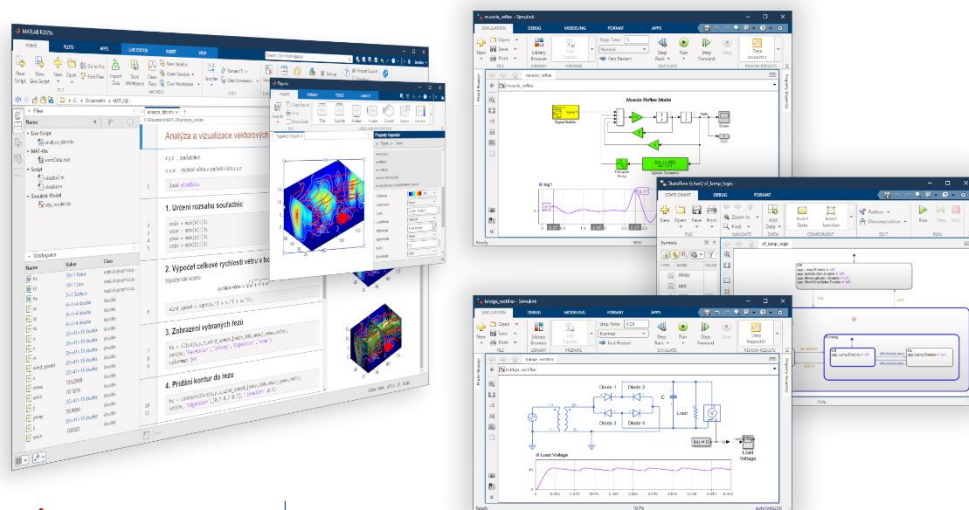


10.9.2026 Technical Computing Camp 2026

# AI asistenti a ďalšie aktuality v prostredí MATLAB



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# Tisíce organizácií využívajú MATLAB a Simulink na vývoj

**Letectvo**



**Automobily**



**Komunikácie**



**Radary**



**Komplexné multidoménové systémy, softvérové a autonómne, založené na modeloch a dátach**

**Infraštruktúra a prepojené systémy naprieč odvetviami**

**Priemysel**



**Energetika**



**Modernizácia, stávajú sa dátovo orientovanými pre optimalizáciu a údržbu**

**Elektronika**

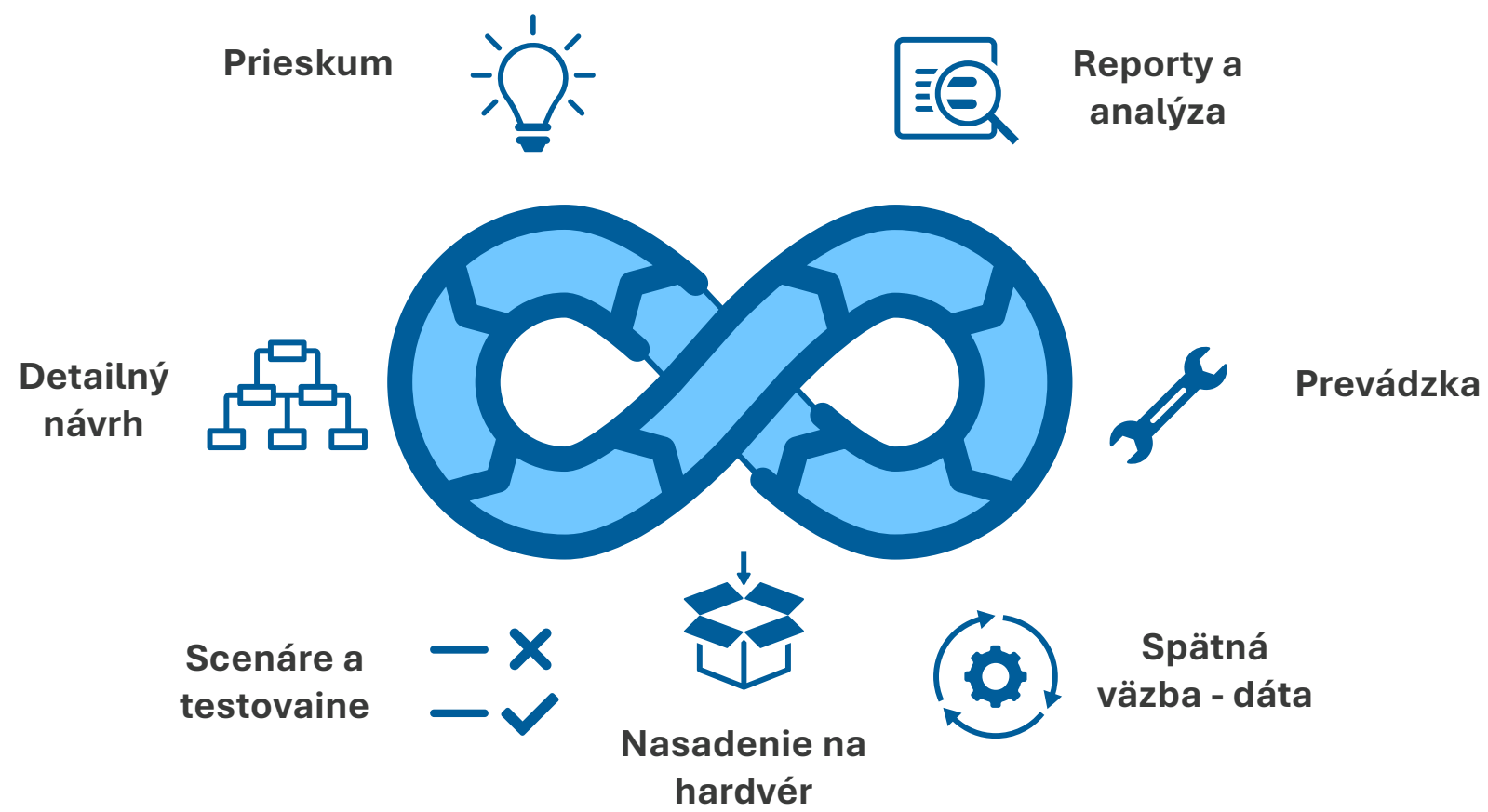


**Polovodiče**



**Široká škála výpočtových platforiem, mnoho druhov HW/SW integrácie**

# Od návrhu po nasadenie



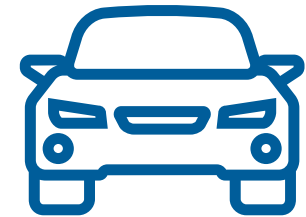
MATLAB®  
& SIMULINK®



**Transformácia vývoja  
s Generatívnou AI**



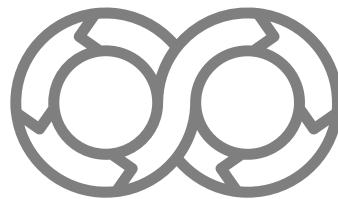
**Od konceptu po  
nasadenie**



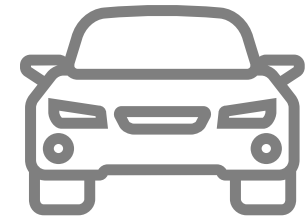
**Komplexné  
systémy**



**Transformácia vývoja  
s Generatívnou AI**



**Od konceptu po  
nasadenie**

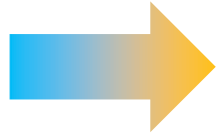


**Komplexné  
systémy**

# Generatívna AI v nástrojoch, ktoré už používate



AI poskytuje textové odpovede.  
Kód vkladáte manuálne.

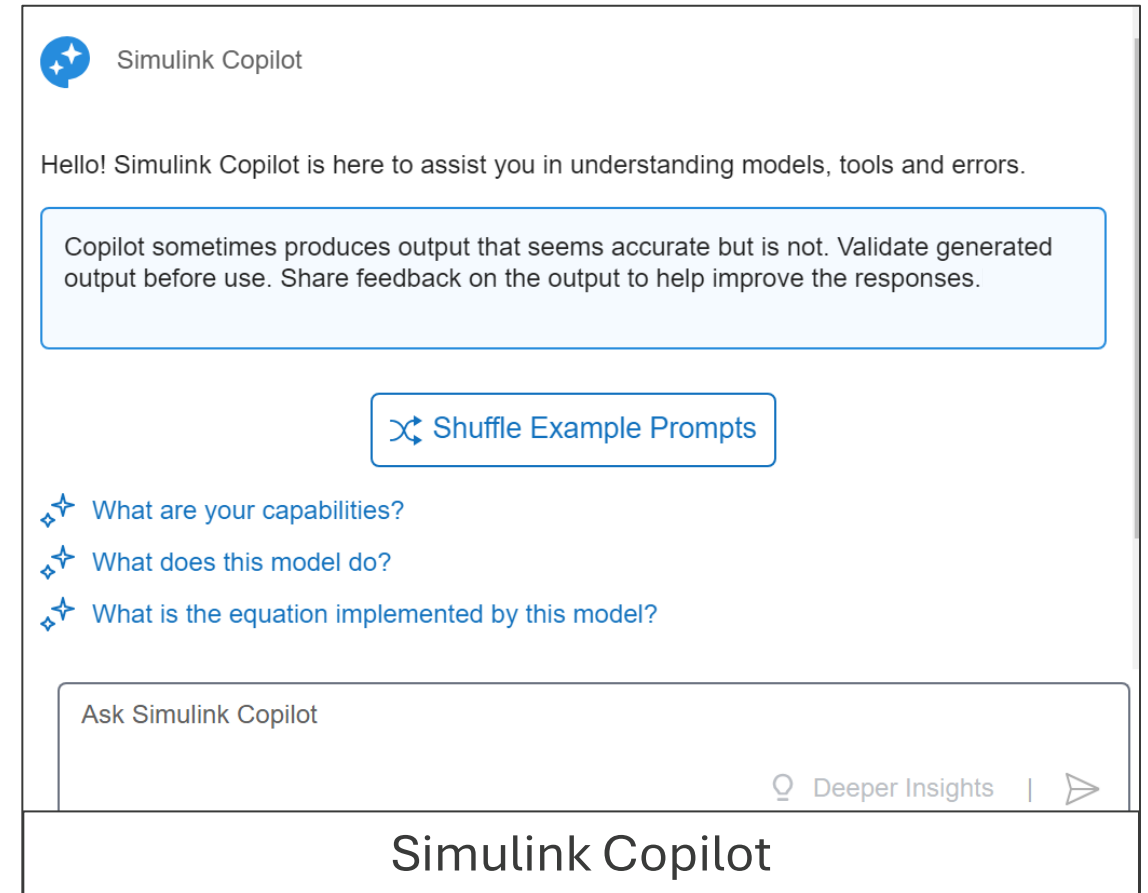
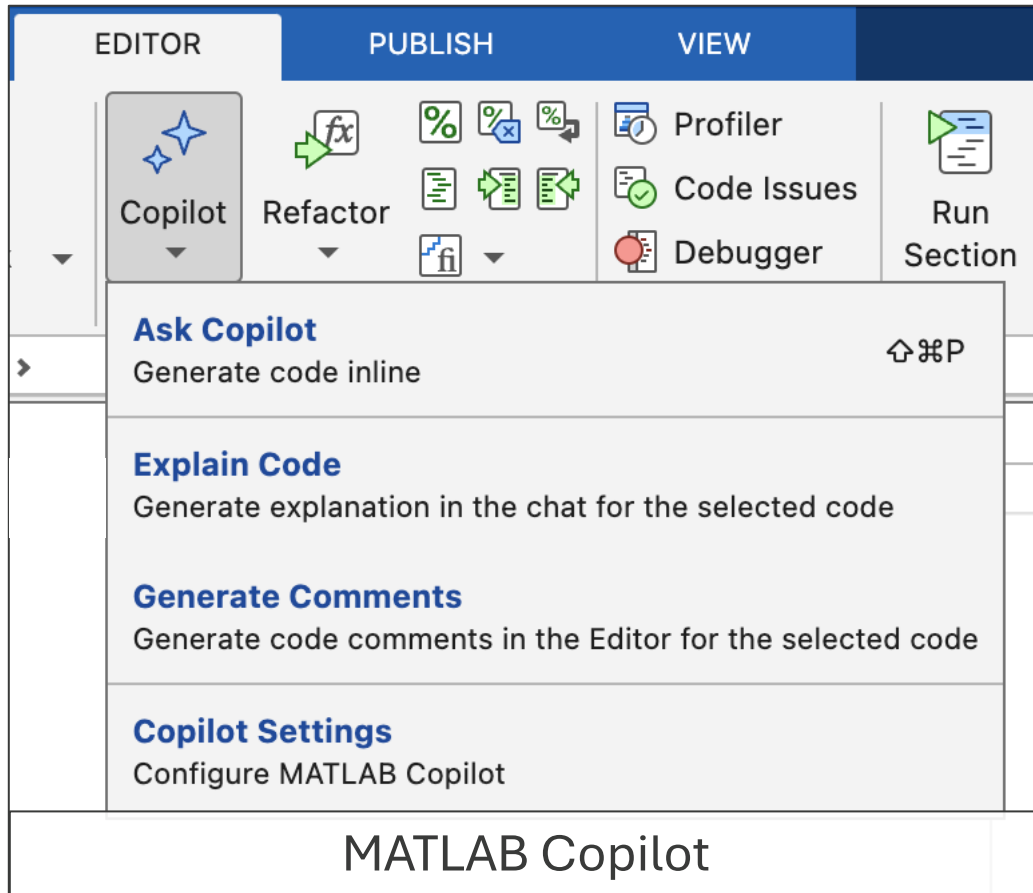


AI píše kód priamo.  
Spustíte ho a ladíte.

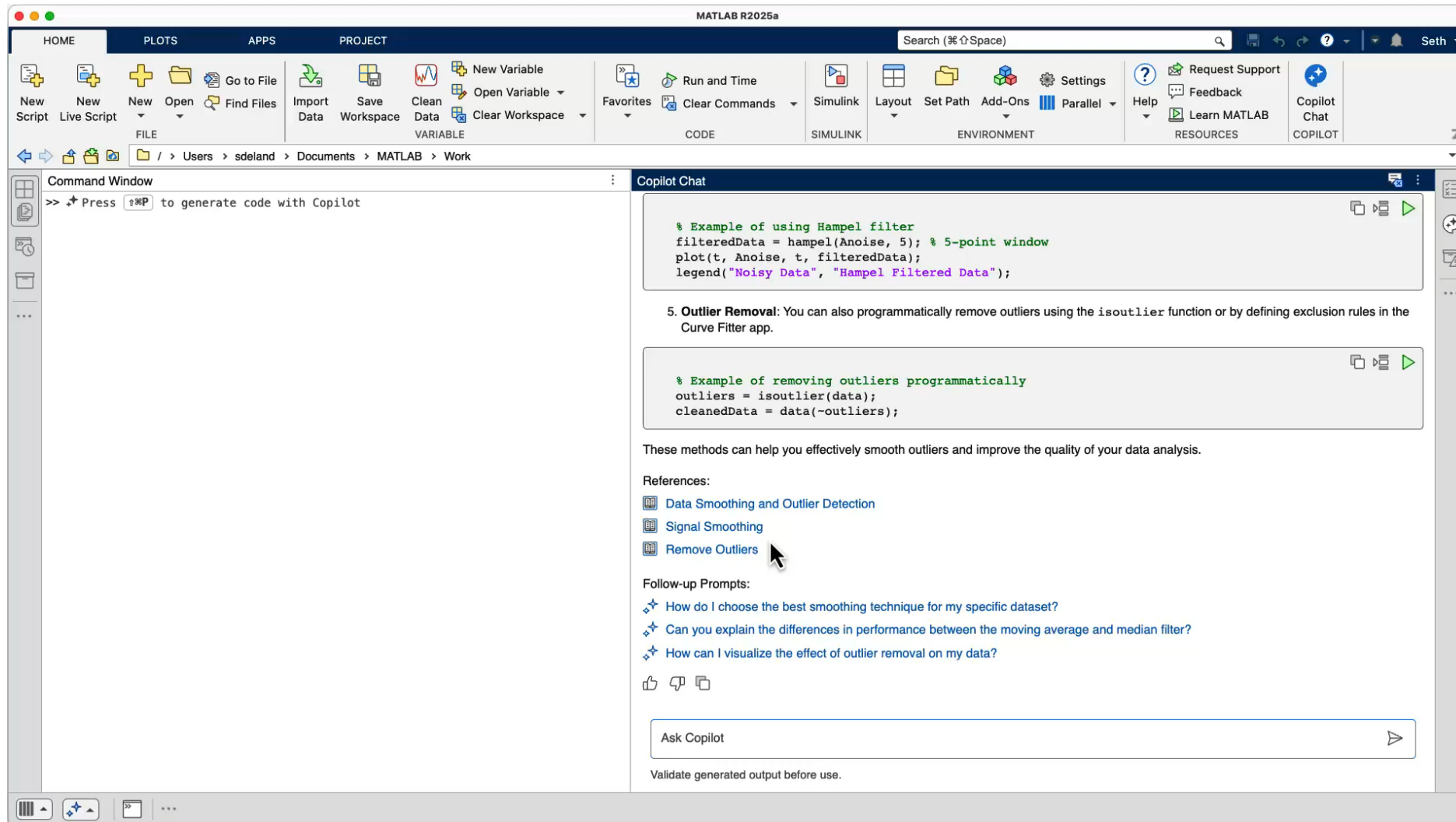


AI píše, spúšťa a ladí kód.  
Vy kontrolujete výsledky.

# GenAI optimalizovaná pre MATLAB a Simulink



# MATLAB Copilot – AI asistent pre vývoj v prostředí MATLAB



MATLAB R2025a

HOME PLOTS APPS PROJECT

Search (% ⬆ ⬆ Space)

New Script New Live Script New Open Go to File Import Save Clean New Variable Open Variable Favorites Run and Time Clear Commands Simulink Layout Set Path Add-Ons Settings Help Request Support Feedback Learn MATLAB Copilot Chat

FILE VARIABLE CODE SIMULINK ENVIRONMENT RESOURCES COPILOT

/ > Users > sdeland > Documents > MATLAB > Work

Command Window

>> Press **[Ctrl]P** to generate code with Copilot

Copilot Chat

```
% Example of using Hampel filter
filteredData = hampel(Anoise, 5); % 5-point window
plot(t, Anoise, t, filteredData);
legend("Noisy Data", "Hampel Filtered Data");
```

5. **Outlier Removal:** You can also programmatically remove outliers using the `isoutlier` function or by defining exclusion rules in the Curve Fitter app.

```
% Example of removing outliers programmatically
outliers = isoutlier(data);
cleanedData = data(~outliers);
```

These methods can help you effectively smooth outliers and improve the quality of your data analysis.

References:

- [Data Smoothing and Outlier Detection](#)
- [Signal Smoothing](#)
- [Remove Outliers](#)

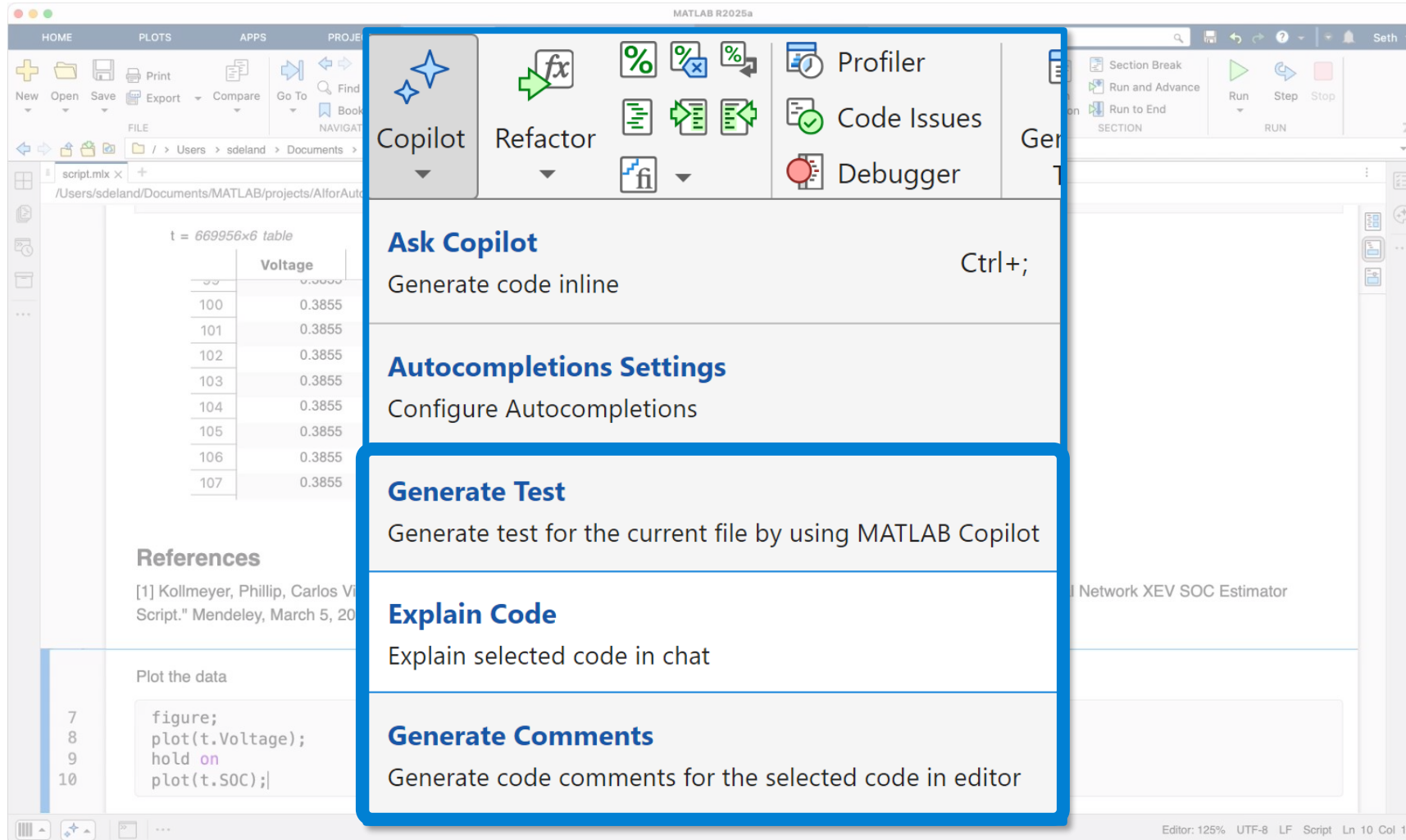
Follow-up Prompts:

- How do I choose the best smoothing technique for my specific dataset?
- Can you explain the differences in performance between the moving average and median filter?
- How can I visualize the effect of outlier removal on my data?

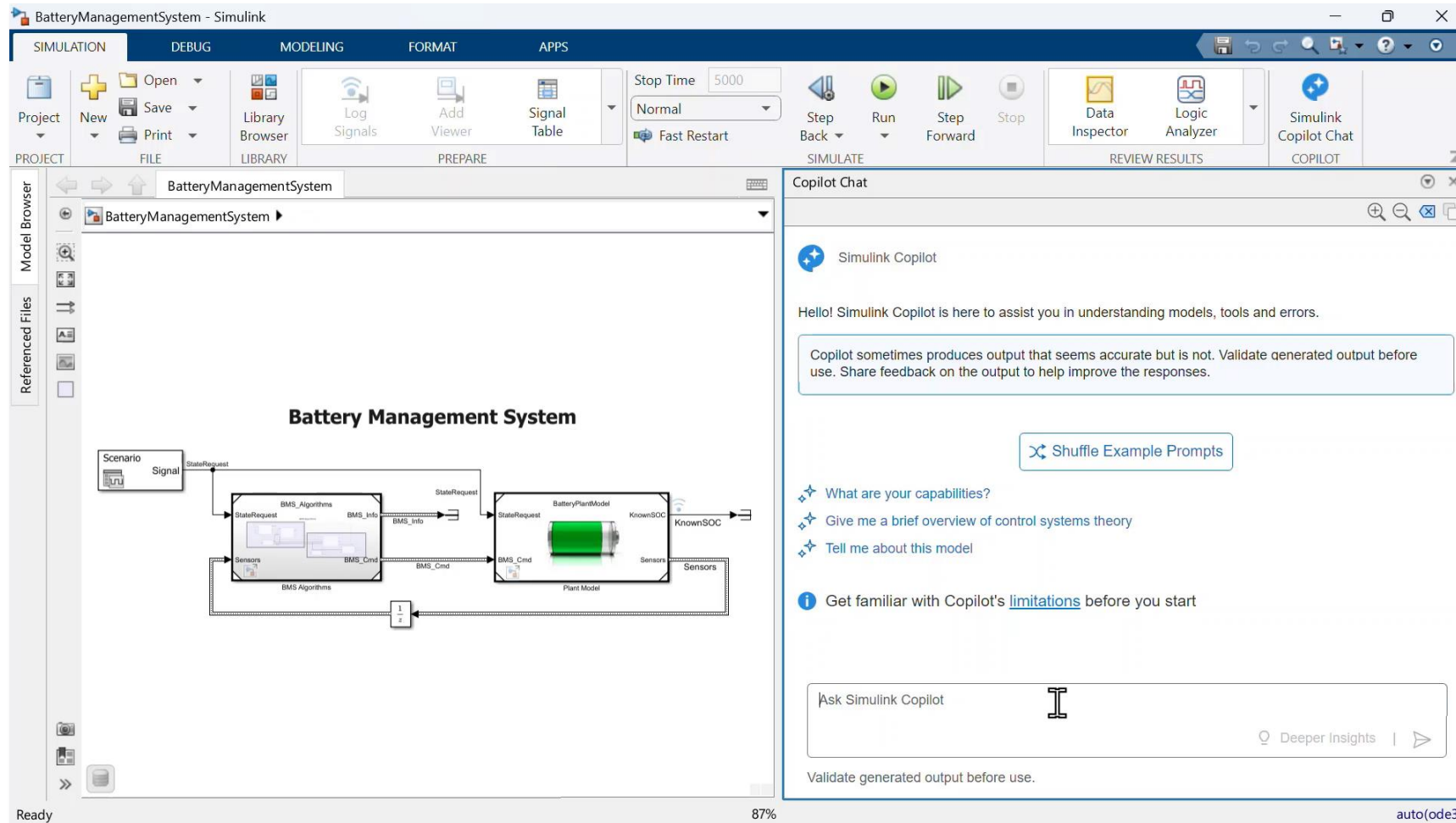
Ask Copilot

Validate generated output before use.

# MATLAB Copilot – AI asistent pre vývoj v prostredí MATLAB



# Simulink Copilot – AI asistent pre pochopenie Simulink modelov



The screenshot displays the Simulink environment for a 'BatteryManagementSystem' model. The main workspace shows a block diagram titled 'Battery Management System' with components like 'Scenario', 'BMS\_Algorithms', 'BMS\_PlantModel', and 'Sensors'. The 'Copilot Chat' window is open on the right, showing a welcome message from Simulink Copilot and a list of example prompts.

**Battery Management System**

**Copilot Chat**

Simulink Copilot

Hello! Simulink Copilot is here to assist you in understanding models, tools and errors.

Copilot sometimes produces output that seems accurate but is not. Validate generated output before use. Share feedback on the output to help improve the responses.

[Shuffle Example Prompts](#)

- What are your capabilities?
- Give me a brief overview of control systems theory
- Tell me about this model

Get familiar with Copilot's [limitations](#) before you start

Ask Simulink Copilot

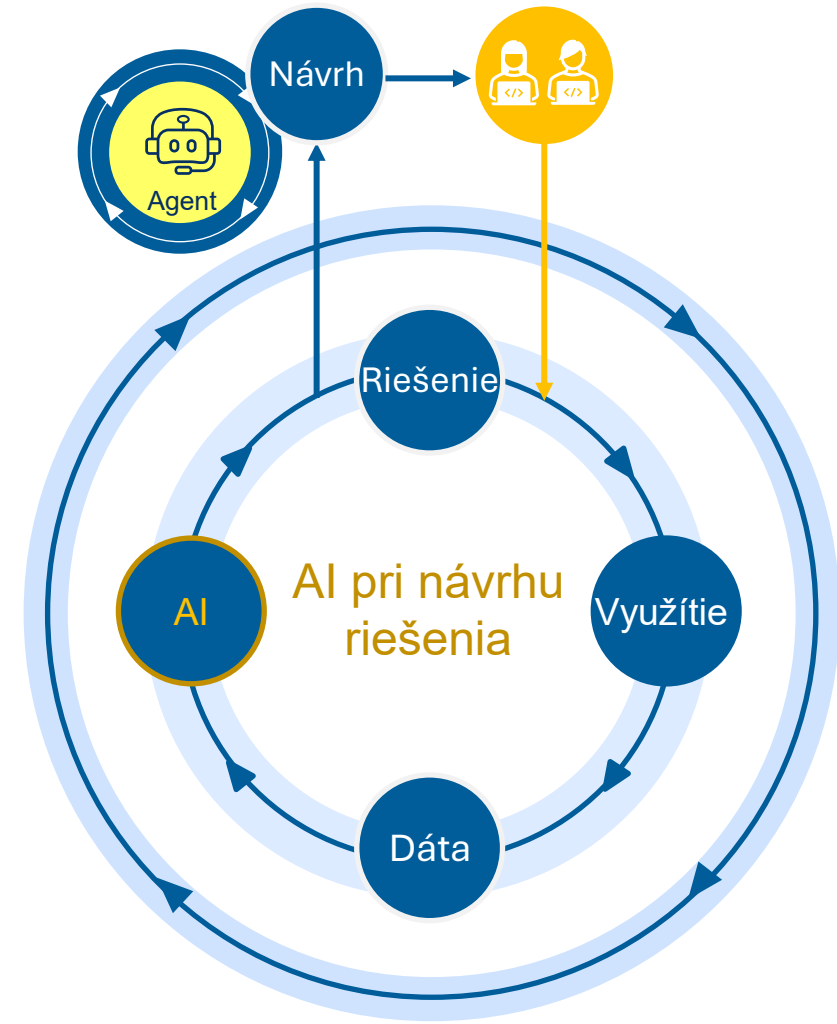
Deeper Insights

Validate generated output before use.

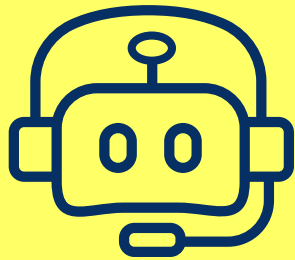
# AI agent automatizuje úlohy a urýchľuje vývoj



AI píše, spúšťa a ladí kód.  
Vy kontrolujete výsledky.

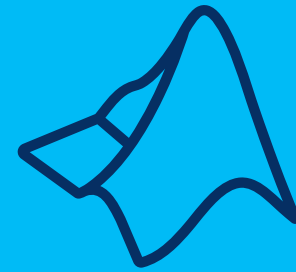


# MATLAB a externí AI agenti



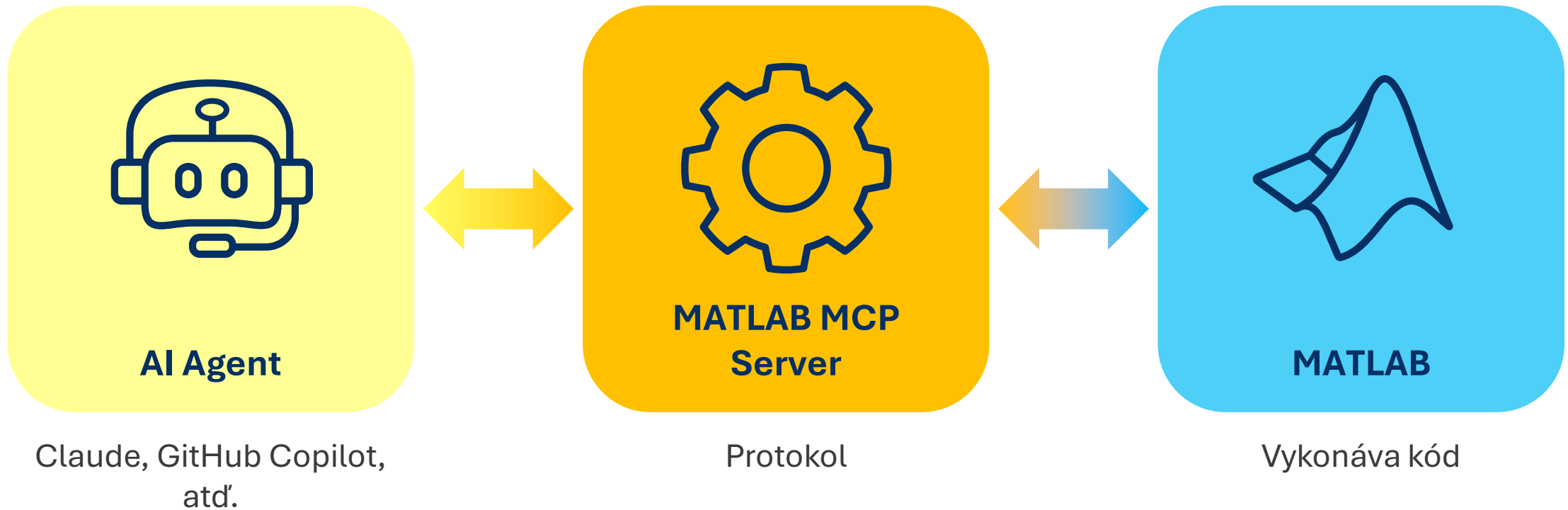
**AI Agent**

Claude, GitHub Copilot,  
atd.

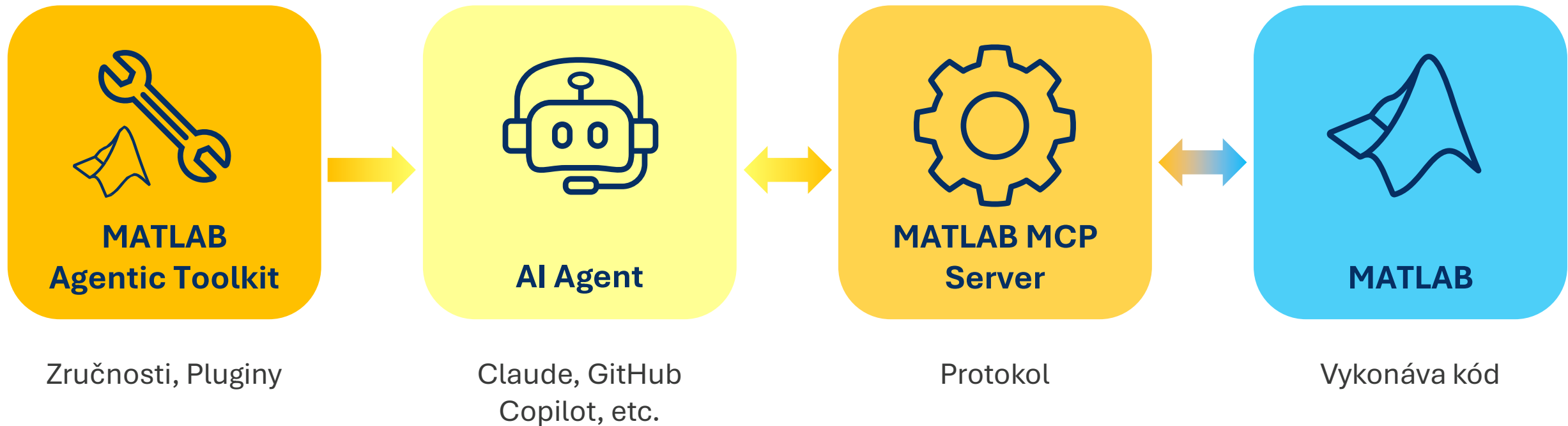


**MATLAB**

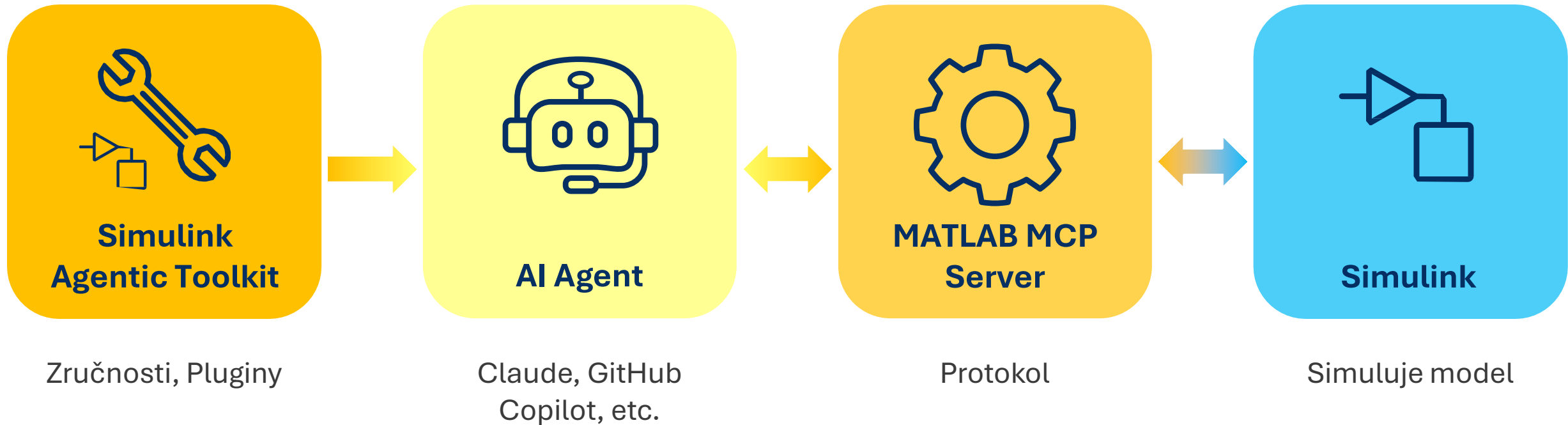
# MATLAB a externí AI agenti pomocou MATLAB MCP Server



# Zavedenie MATLAB zručností do AI agenta



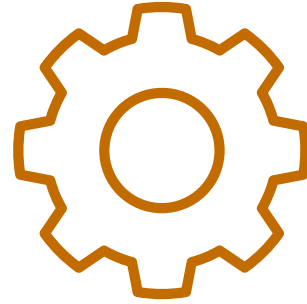
# Zavedenie Simulink zručností do AI agenta



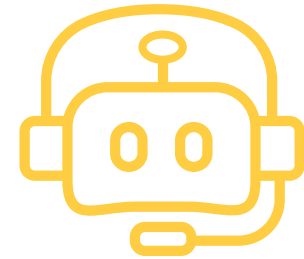
# Využitie generatívnej AI v prostredí MATLAB a Simulink



Copilots



MCP Server



AI Agents

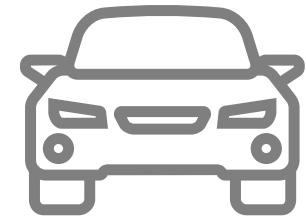
MATLAB®  
& SIMULINK®



**Transformácia vývoja  
s Generatívnou AI**

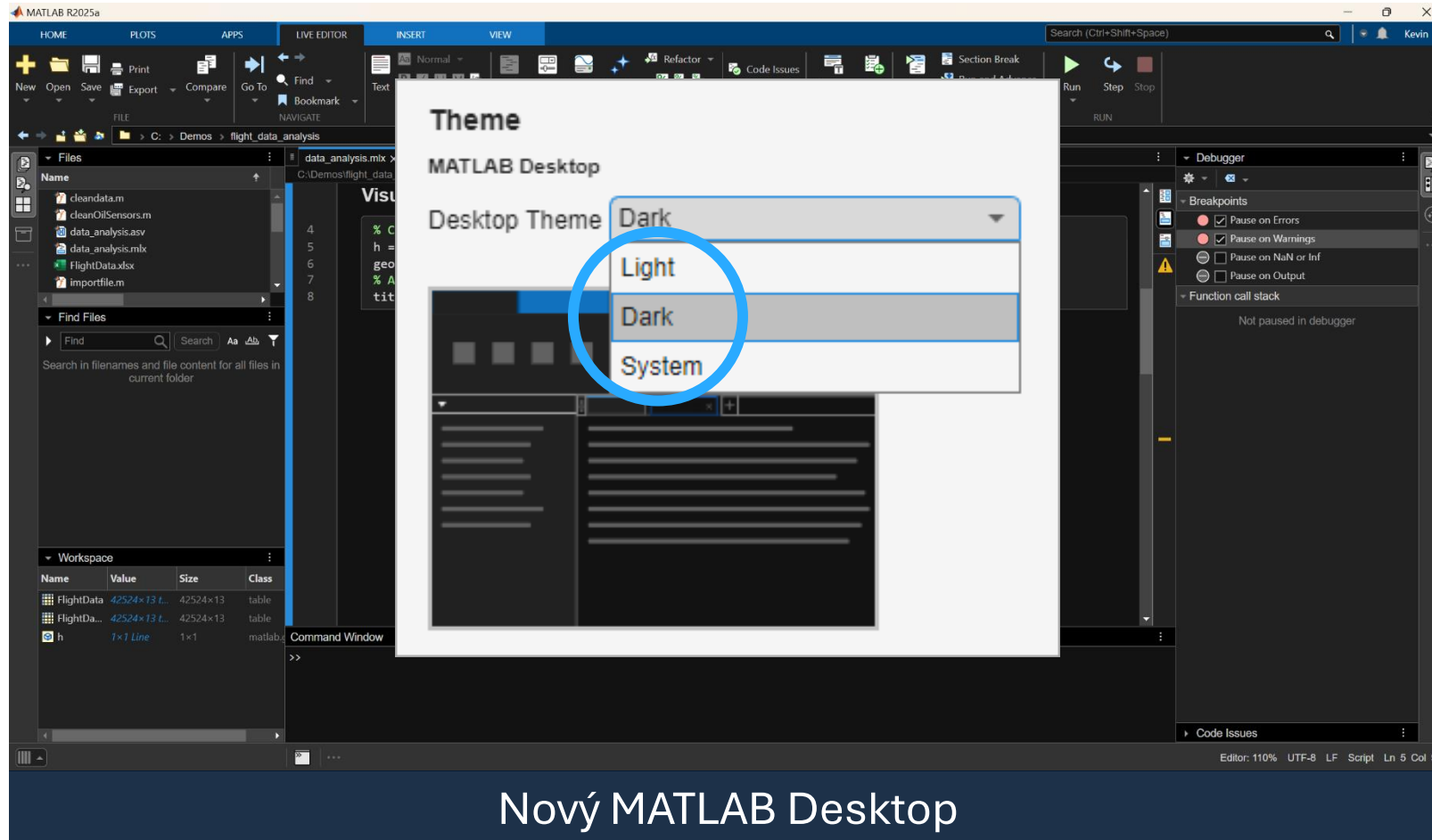


**Od konceptu po  
nasadenie**



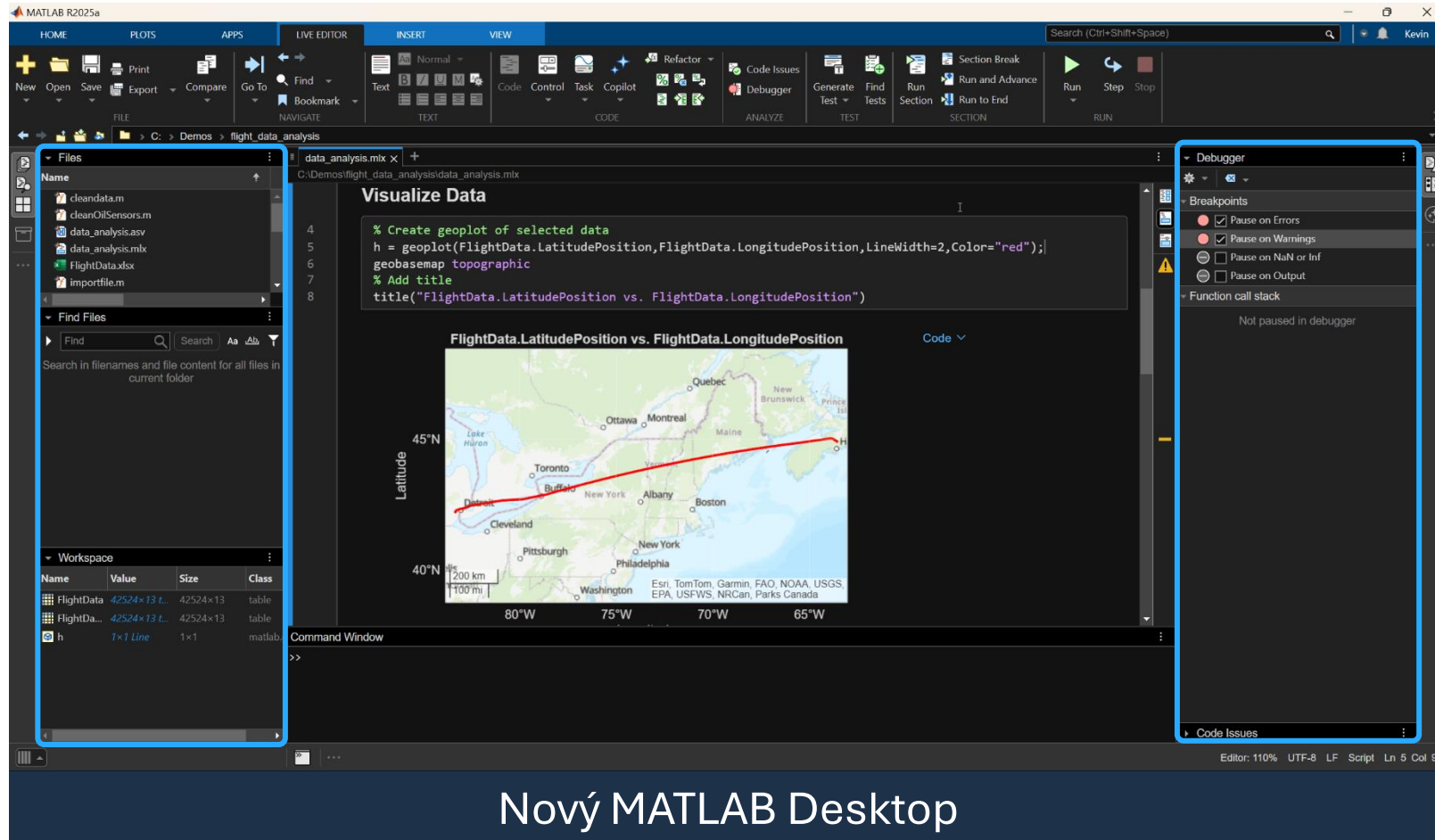
**Komplexné  
systémy**

# Prostredie pre urýchlenie tvorby a iterácií



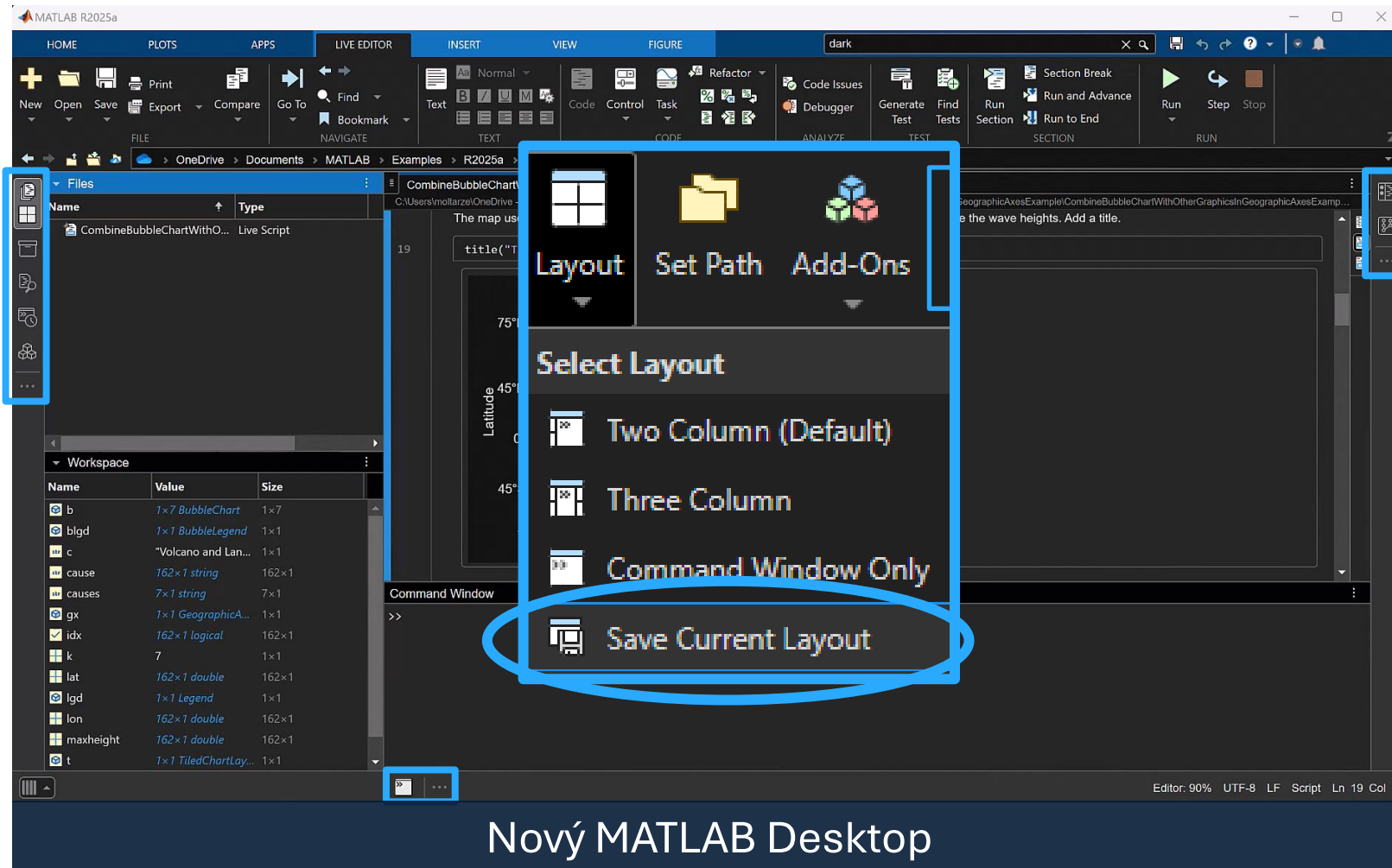
Nový MATLAB Desktop

# Prostredie pre urýchlenie tvorby a iterácií



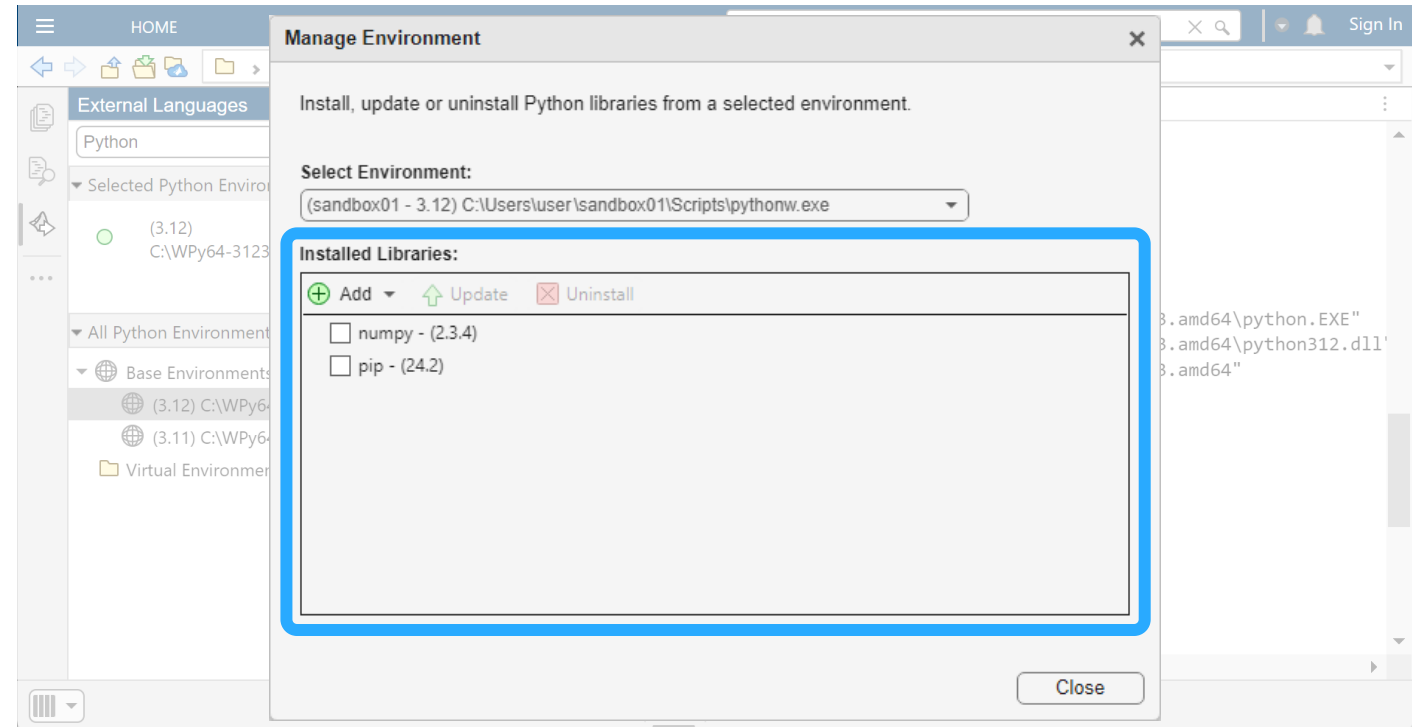
Nový MATLAB Desktop

# Prostredie pre urýchlenie tvorby a iterácií



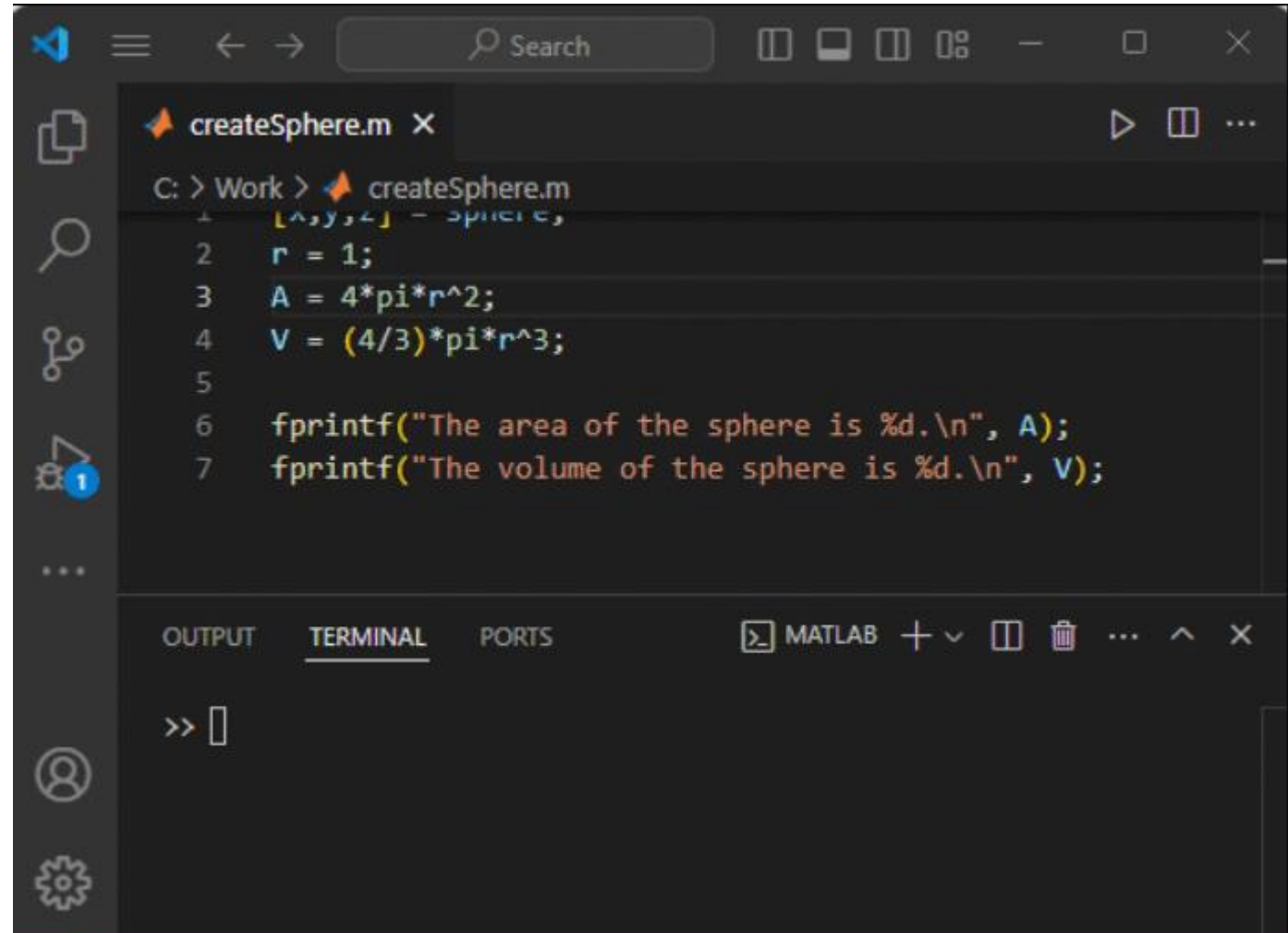
# Prostredie pre urýchlenie tvorby a iterácií

Správa **Python** prostredia s panelom **External Languages**



# Prostredie pre urýchlenie tvorby a iterácií

Editovanie a spustenie MATLAB  
kódu vo **Visual Studio® Code**  
(VS Code)



The screenshot shows the Visual Studio Code interface with a MATLAB script named 'createSphere.m' open in the editor. The code calculates the area and volume of a sphere with radius r = 1. The interface includes a search bar, file explorer, and a terminal window at the bottom.

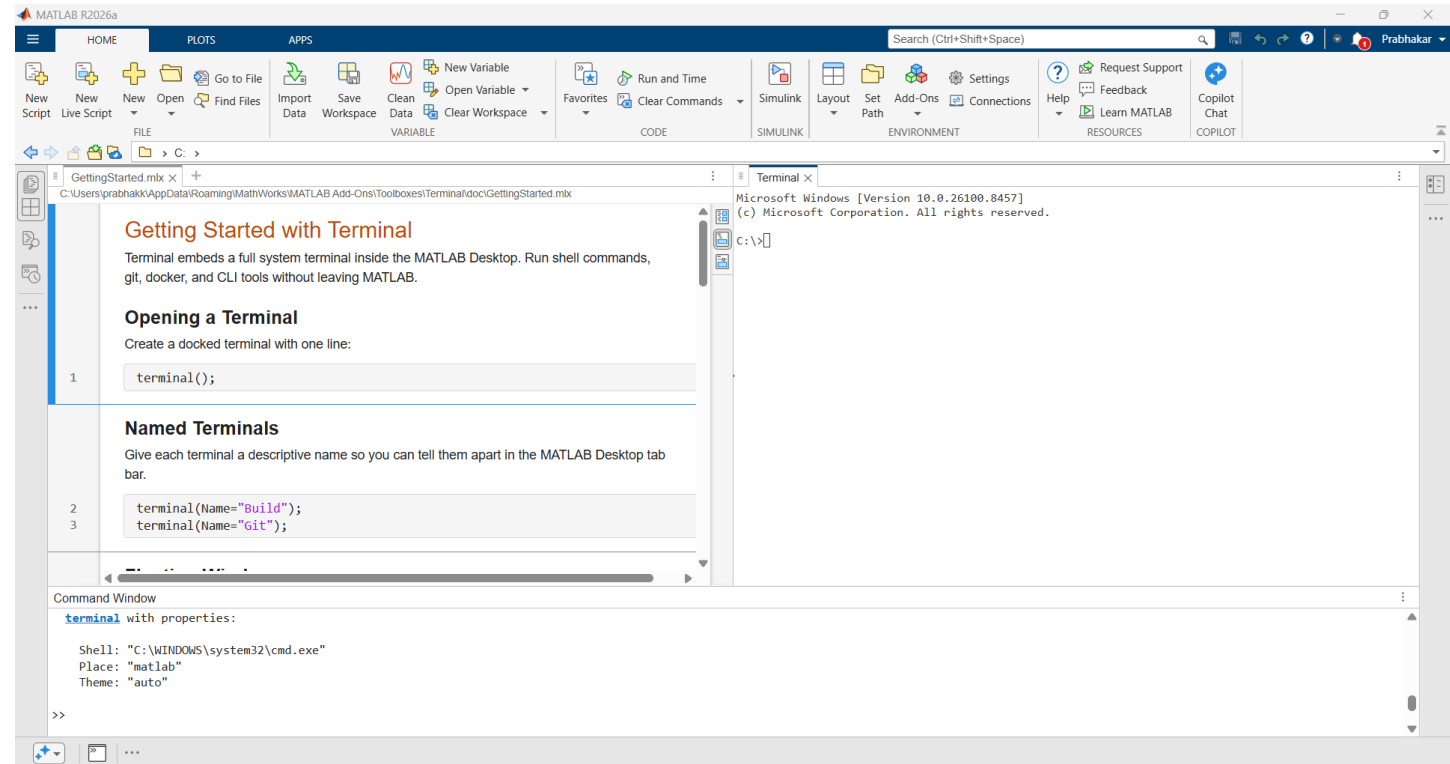
```
createSphere.m X
C: > Work > createSphere.m
1  [^,y,z] = sphere;
2  r = 1;
3  A = 4*pi*r^2;
4  V = (4/3)*pi*r^3;
5
6  fprintf("The area of the sphere is %d.\n", A);
7  fprintf("The volume of the sphere is %d.\n", V);
```

OUTPUT TERMINAL PORTS MATLAB + v [ ] [ ] ... ^ X

>> [ ]

# Prostredie pre urýchlenie tvorby a iterácií

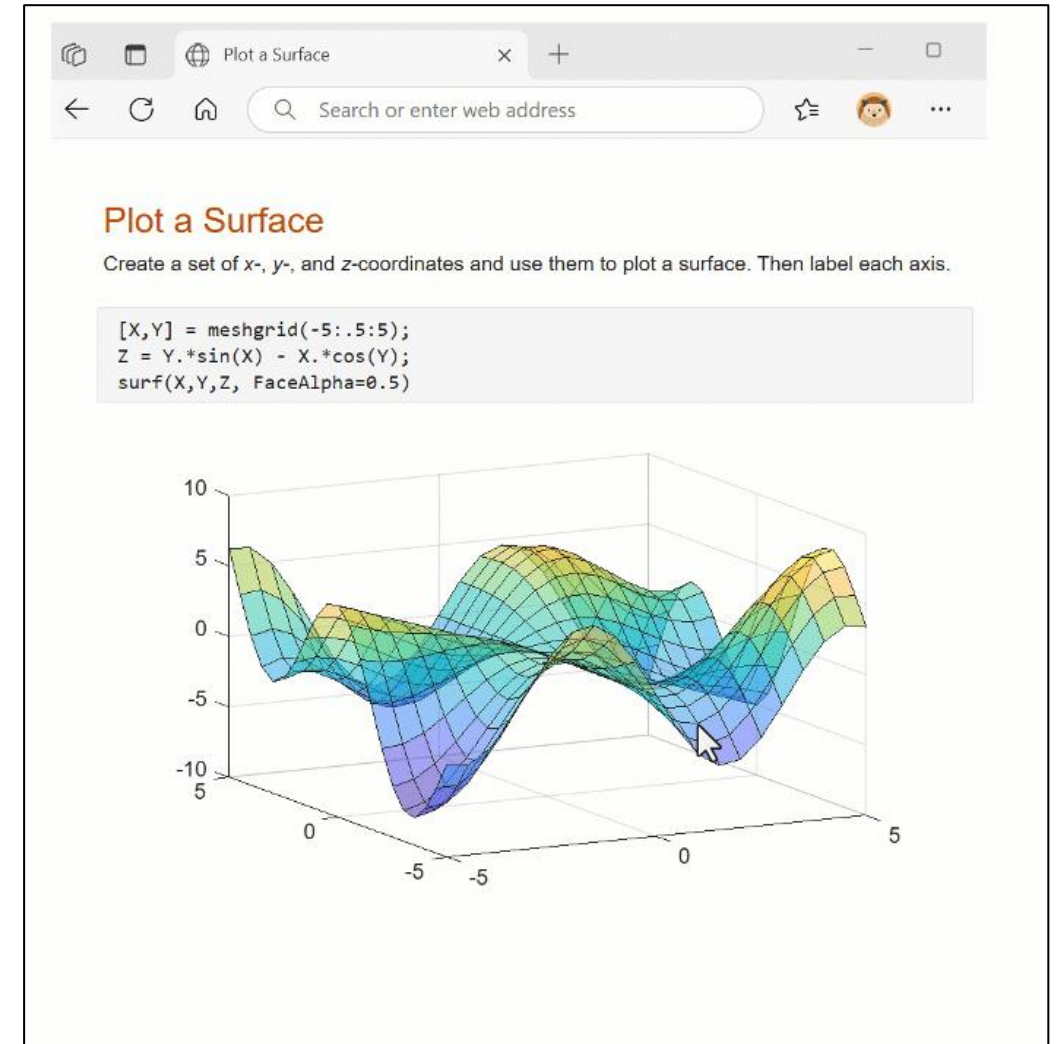
**Terminál** na spúšťanie nástrojov príkazového riadka ako sú Agenti AI, git a docker.



# Prostredie pre urýchlenie tvorby a iterácií

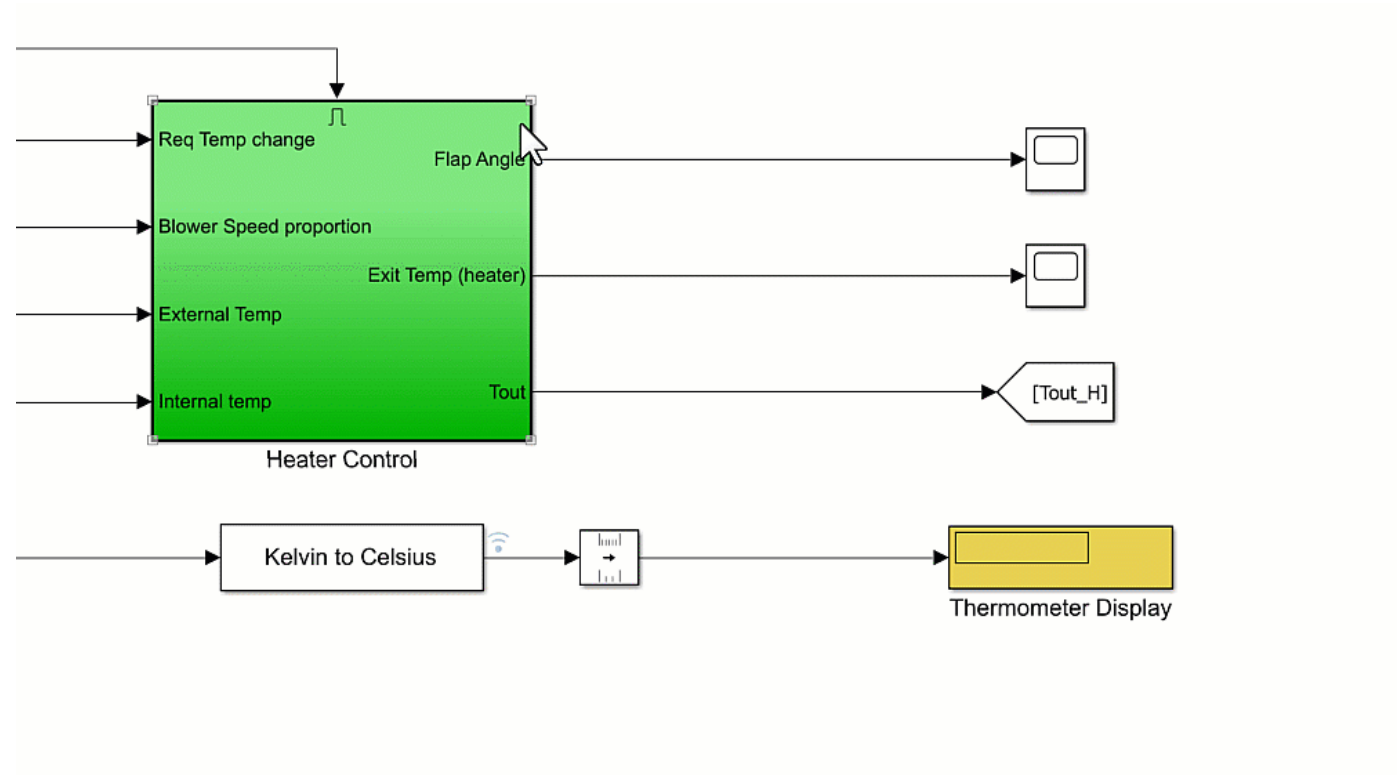
Export Live skriptov do **HTML s interaktívnou grafikou** na webových stránkach

- nevyžaduje licenciu
- nevyžaduje MATLAB Runtime



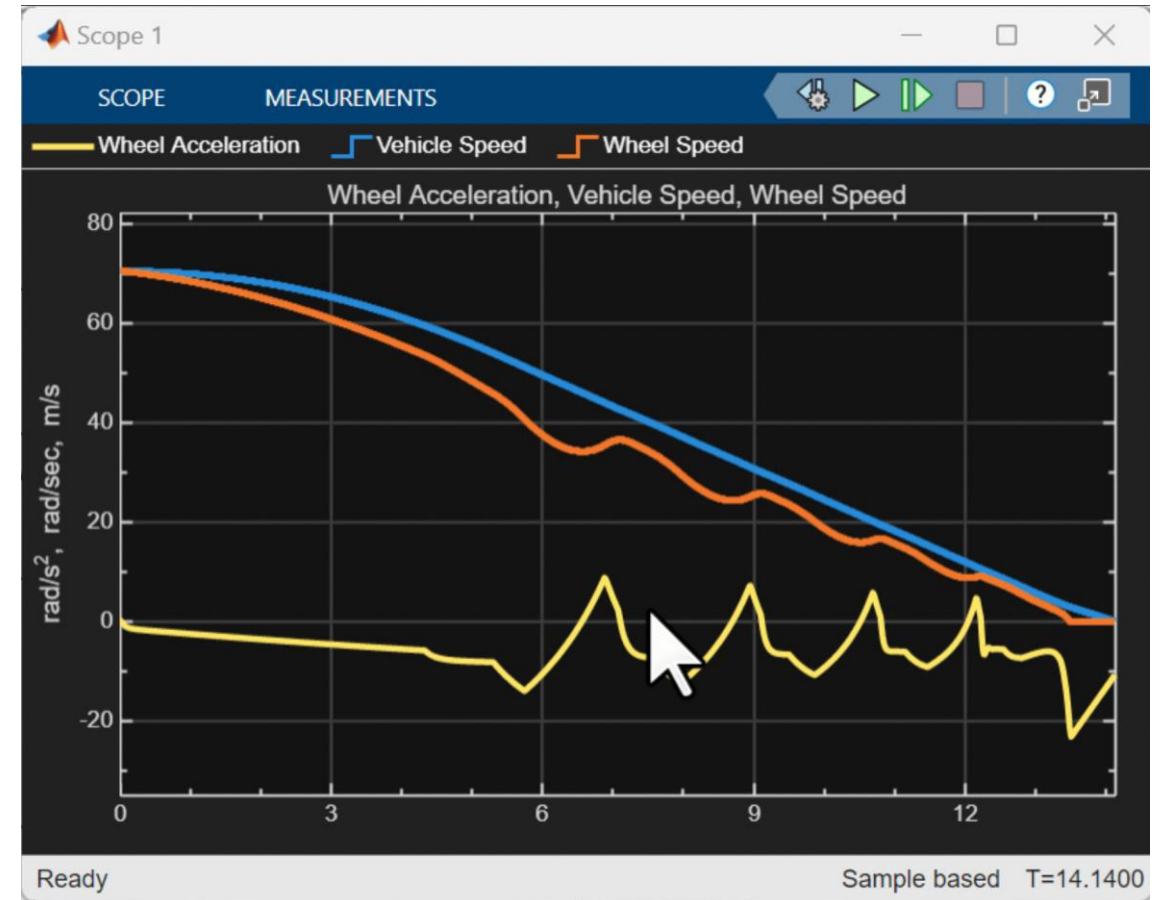
# Prostredie pre urýchlenie tvorby a iterácií

Ľahko dostupná funkcionálna s  
vylepšeným kontextovým menu

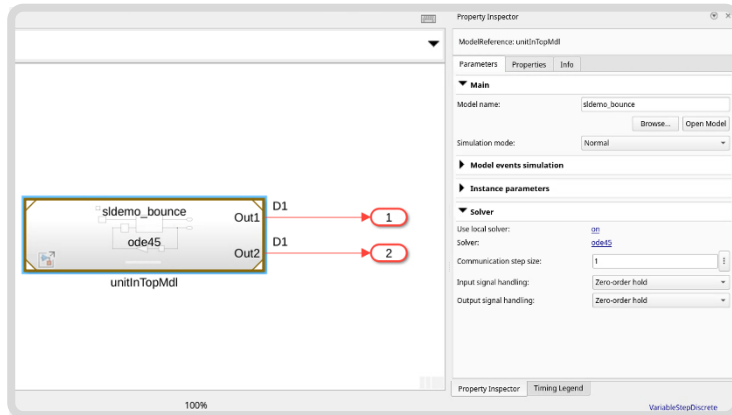


# Prostredie pre urýchlenie tvorby a iterácií

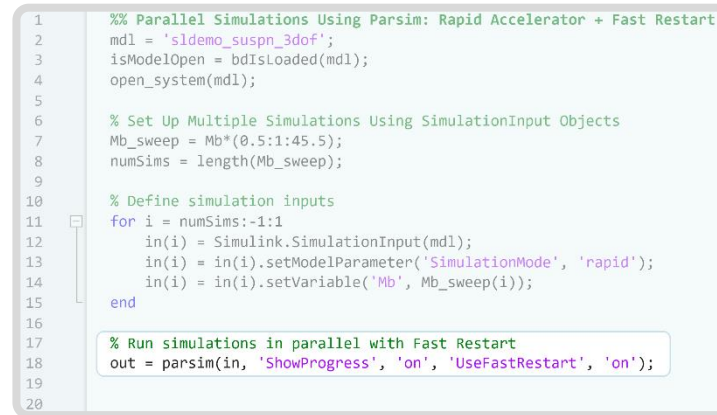
Analýza signalových dát v modernom prostredí a zoskupovanie grafov spoločne v novom **Simulink Scope**



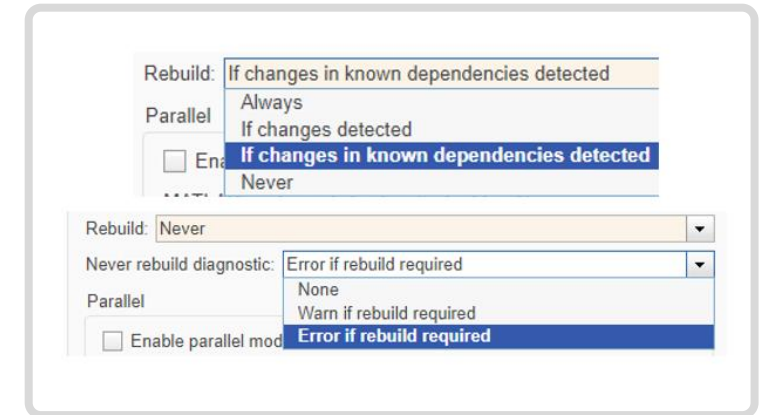
# Prostredie pre urýchlenie tvorby a iterácií



**Optimalizujte rýchlosť a presnosť simulácie**  
pomocou lokálnych riešičov pre referencované modely



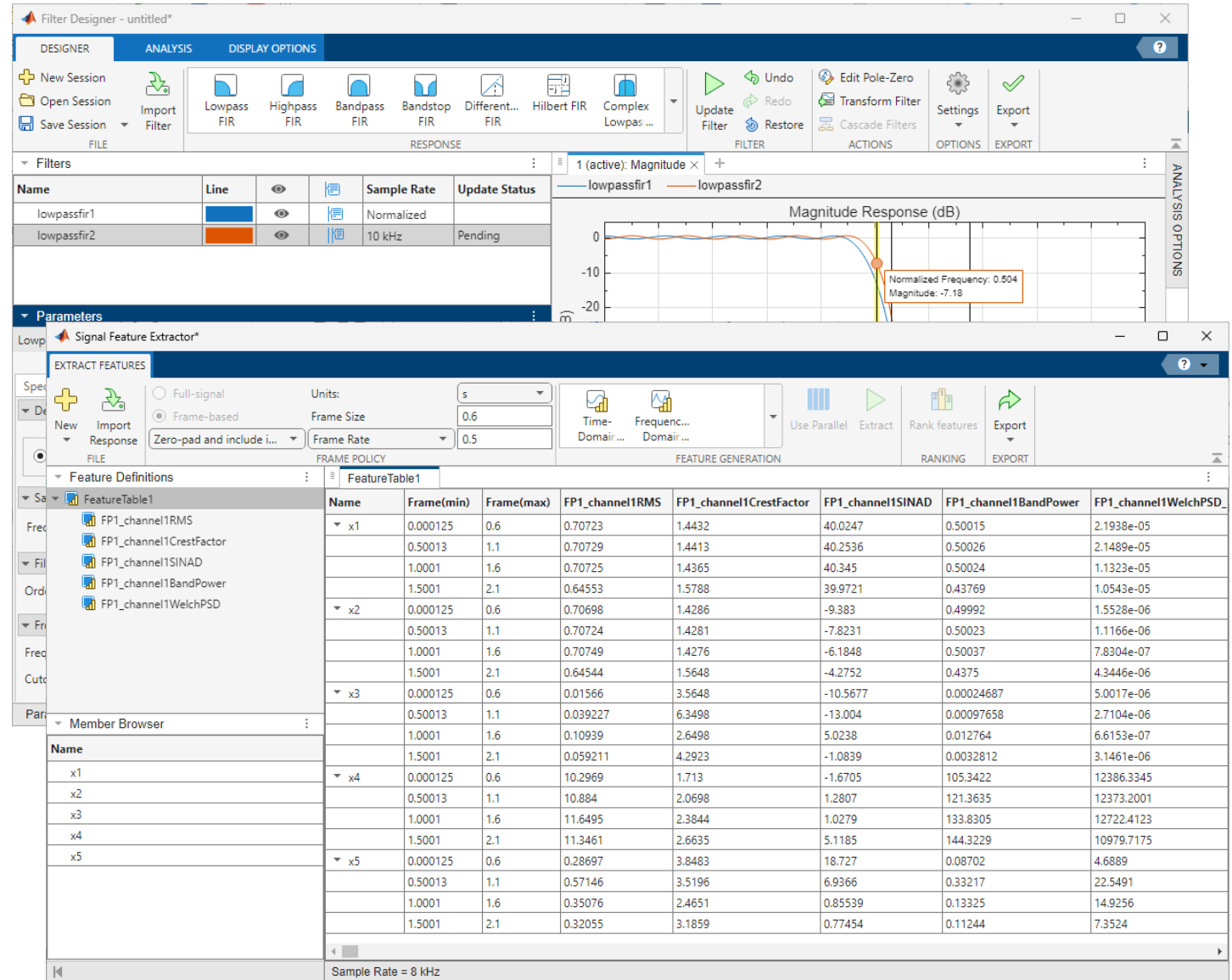
**Spustite viacero simulácií rýchlejšie**  
pomocou Fast Restart pre Rapid Accelerator



**Vyhnete sa kompiláciám**  
pomocou rebuild nastavení

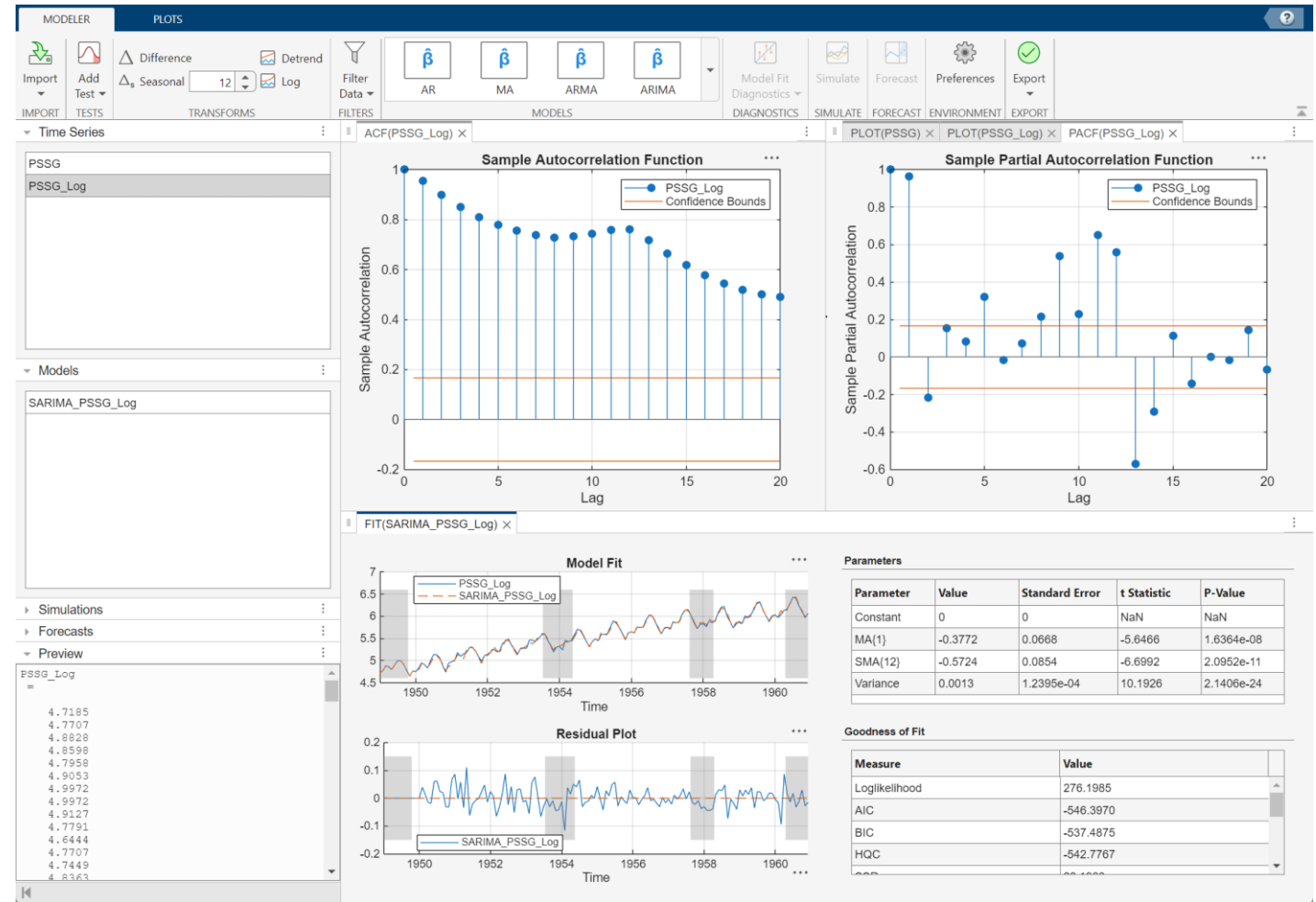
# Aplikácie pre zjednodušenie práce

Návrh viacerých filtrov  
a výber prediktorov zo signálov



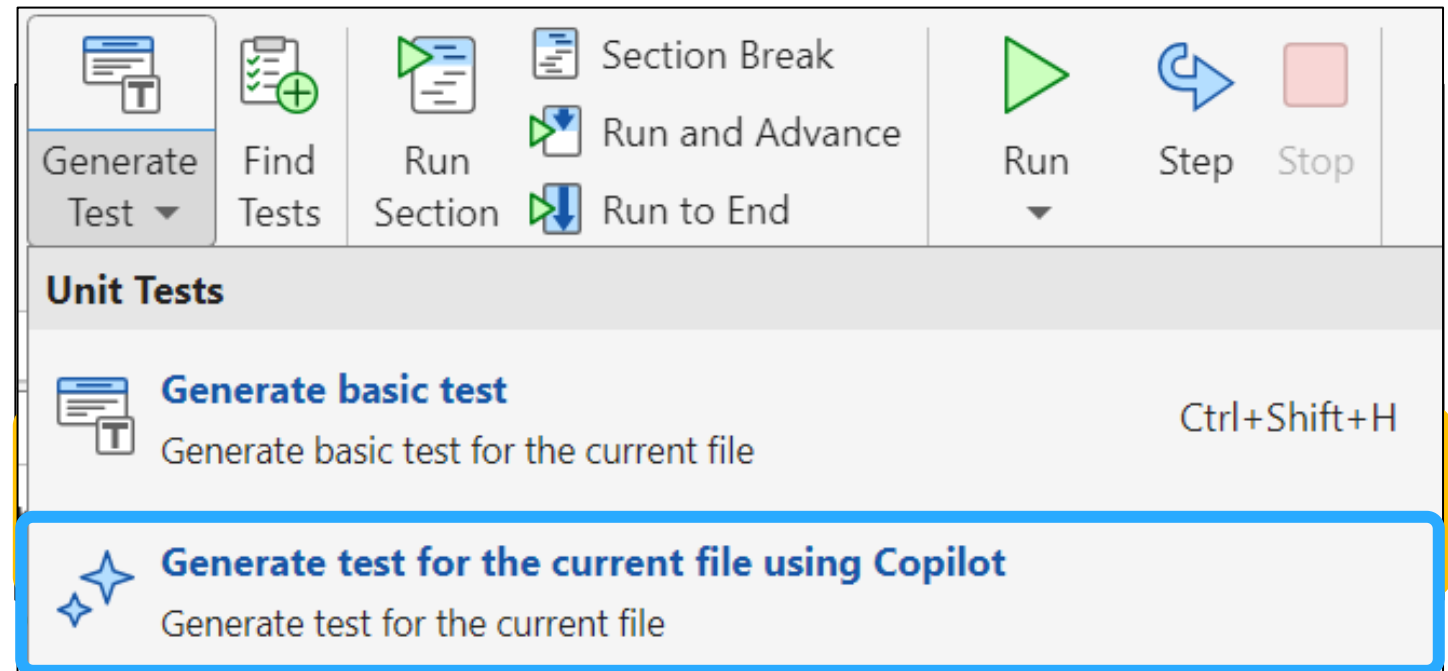
# Aplikácie pre zjednodušenie práce

Kompletná práca s časovými  
radami, nástroje pre forecasting  
a podpora DSGE modelov.



# Splnenie požiadaviek pomocou verifikácie a validácie

Rýchle písanie testov pre  
MATLAB kód



# Splnenie požiadaviek pomocou verifikácie a validácie

Bezpečnejší a spoľahlivejší  
C/C++ kód s Polyspace

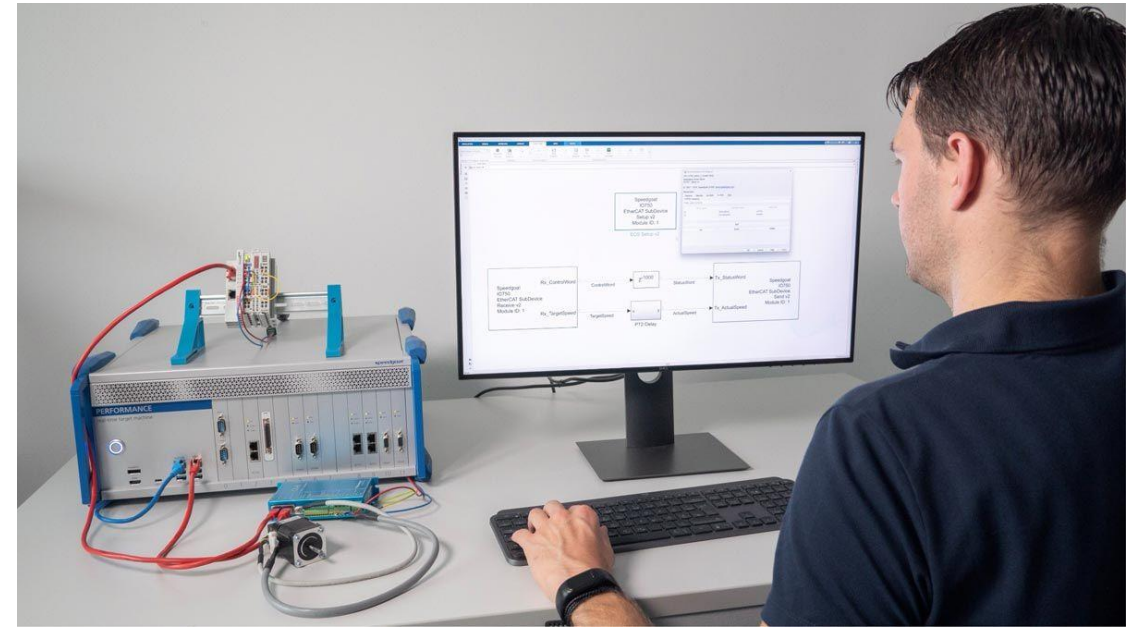


## Používateľské rozhranie Polyspace

Zjednotený Dashboard pre Statickú Analýzu a Výsledky Testov

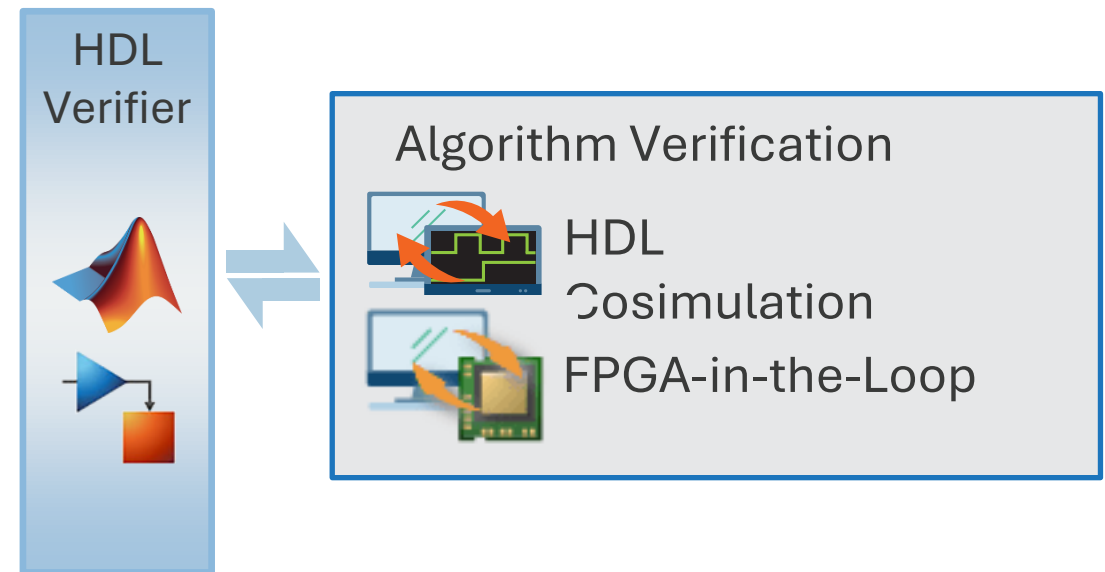
# Splnenie požiadaviek pomocou verifikácie a validácie

**Simulink Real-Time** využíva operačný systém založený na Linuxe a obsahuje vylepšenia s logovaním dát, ktoré redukujú preklad modelov



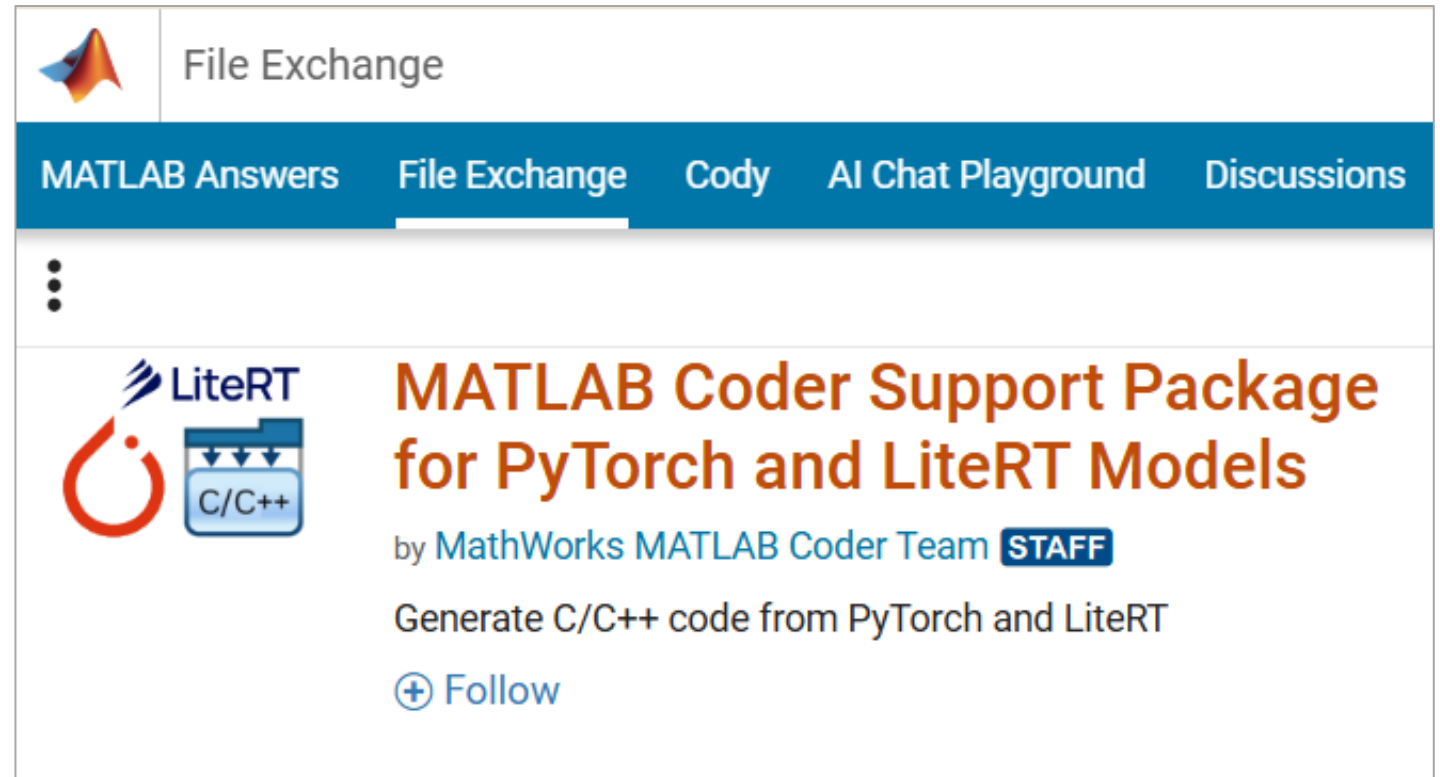
# Splnenie požiadaviek pomocou verifikácie a validácie

**HDL Verifier** podporuje cosimulácie s najznámejšími HDL simulátormi a poskytuje FPGA-in-the-loop testovanie



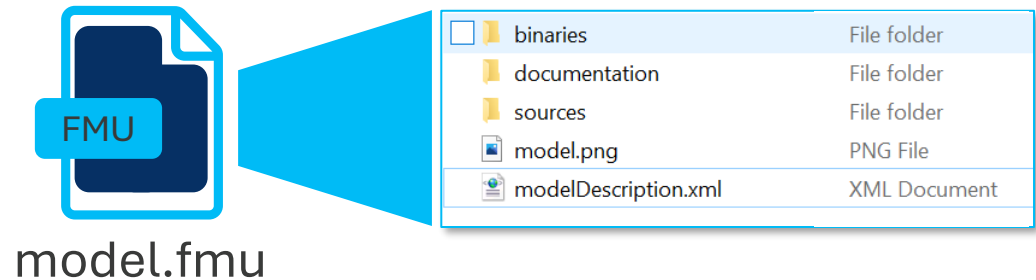
# Nasadenie a integrácia pre efektívne škálovanie

Generovanie C a C++ kódu  
pomocou MATLAB Coder

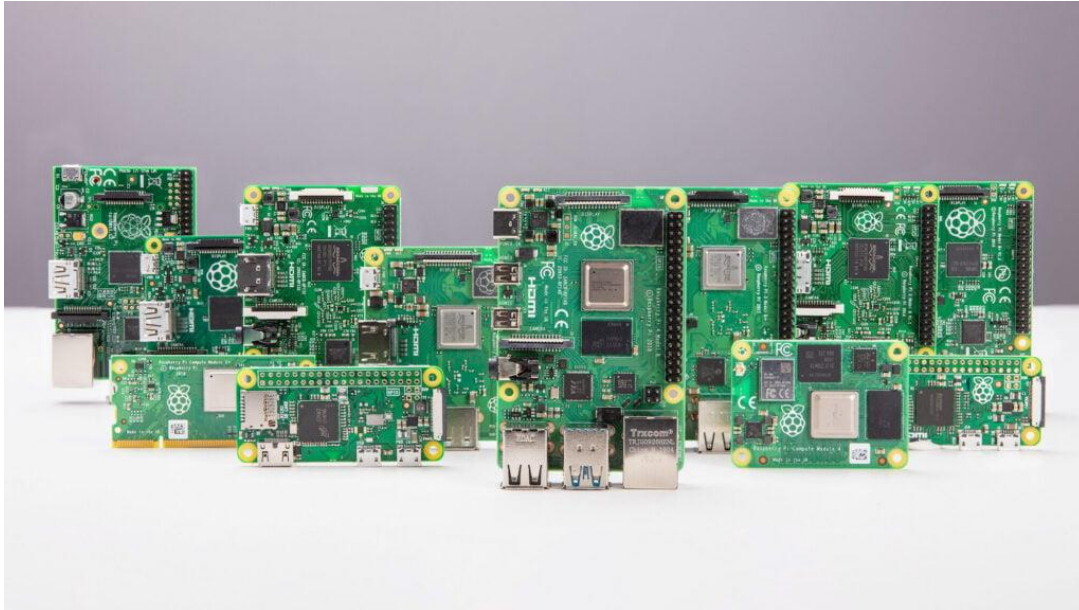


# Nasadenie a integrácia pre efektívne škálovanie

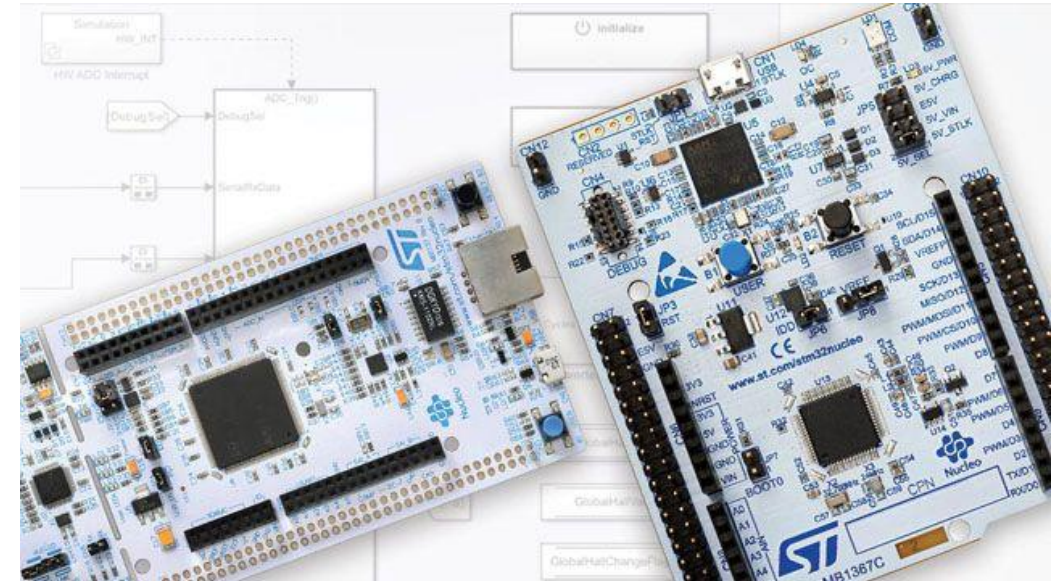
**Simulink FMU Builder** umožňuje zabaliť Simulink modely do FMU, ktoré bežia na HIL a v prostrediach tretích strán



# Nasadenie a integrácia pre efektívne škálovanie



Raspberry Pi Blockset



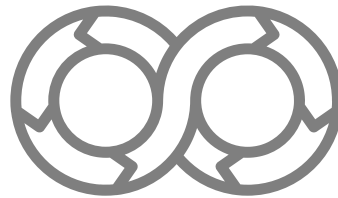
STM32 Microcontroller Blockset

# Od návrhu po nasadenie

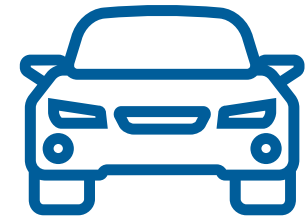




**Transformácia vývoja  
s Generatívnou AI**



**Od konceptu po  
nasadenie**



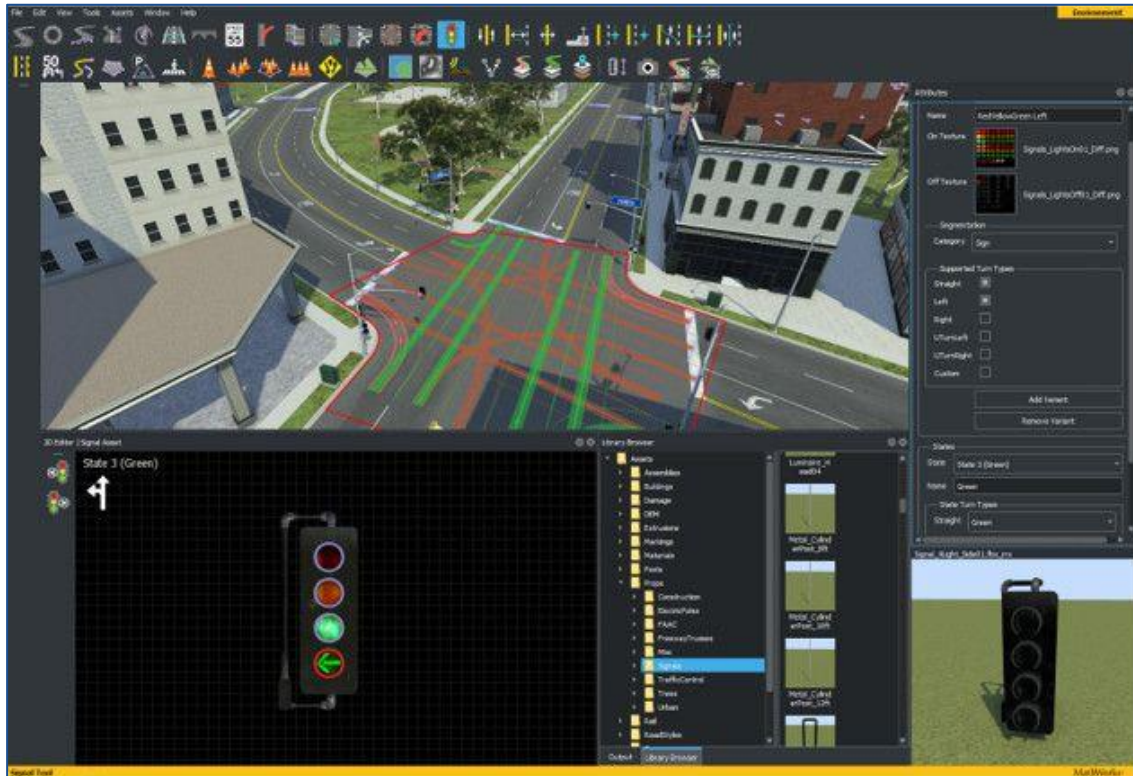
**Komplexné  
systémy**

# 3D scenáre na simuláciu autonómnych systémov



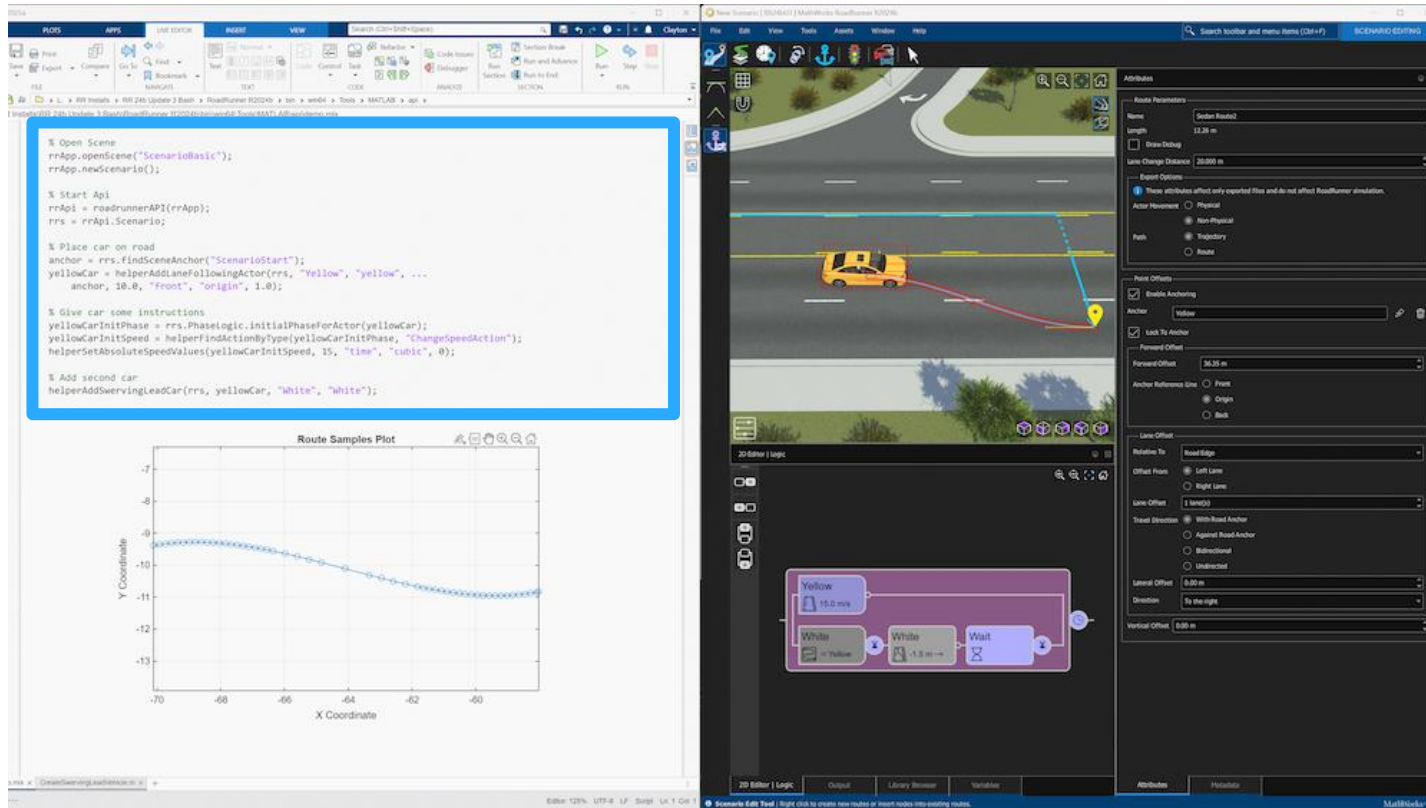
# Roadrunner na tvorbu 3D scén

## RoadRunner



The screenshot shows the NetLogo environment. The top view displays a road with a yellow car, a white car, and a pink car. The bottom view shows the 'Editor' window with a 'Sedan' and a 'CompactCar' block. The 'Output' window on the right shows a list of variables.

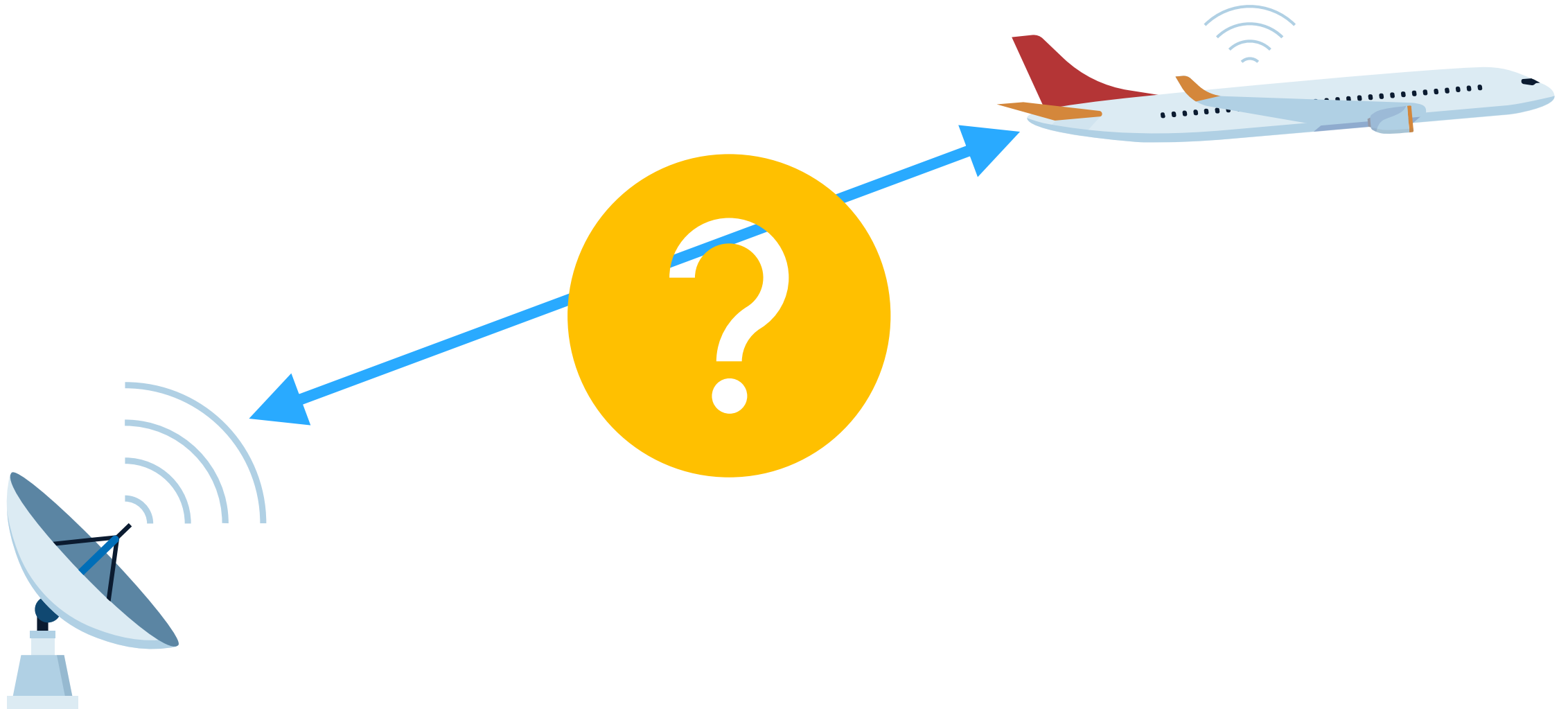
# Škálovanie pomocou programátorských rozhraní



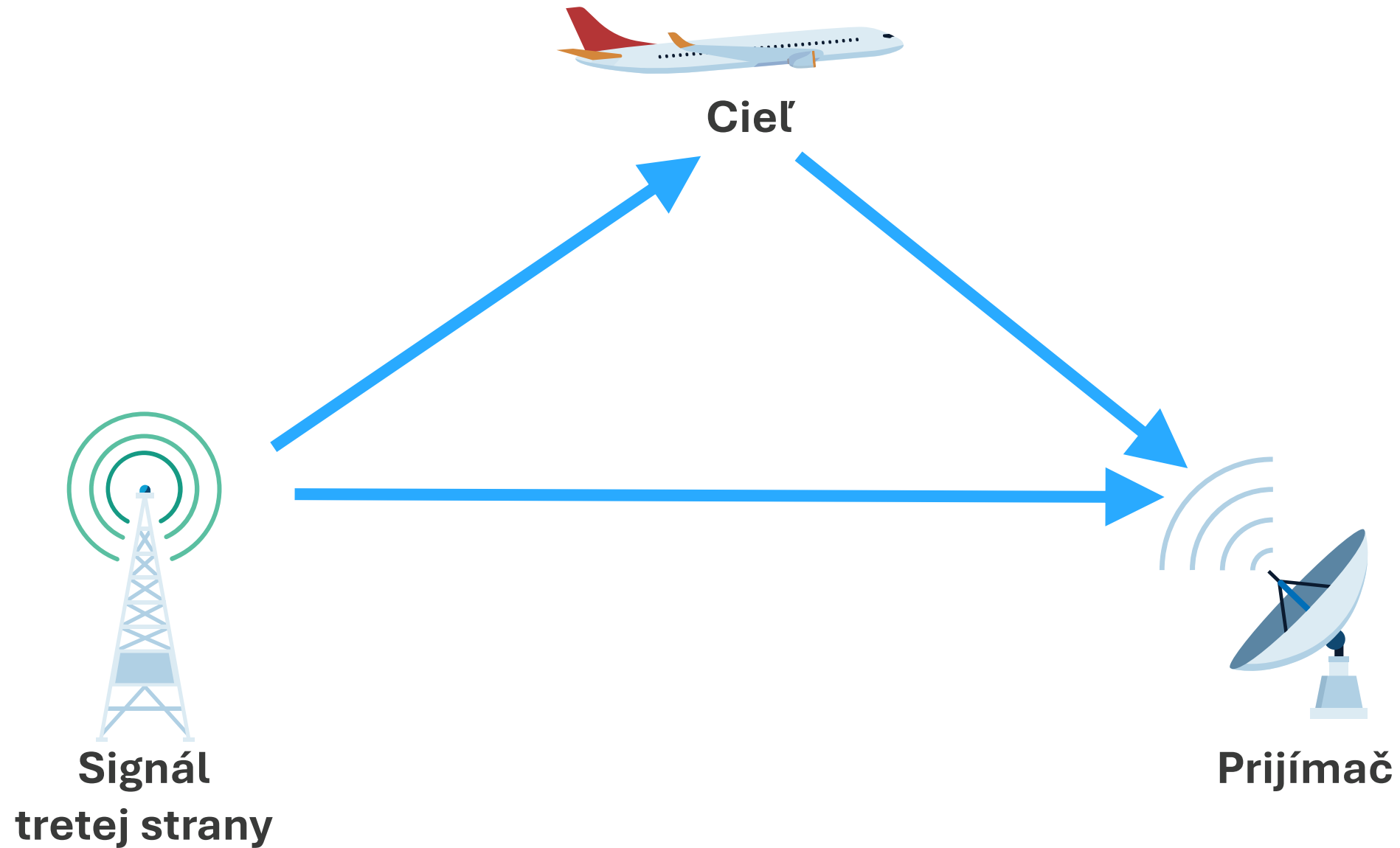
RoadRunner

RoadRunner Scenario

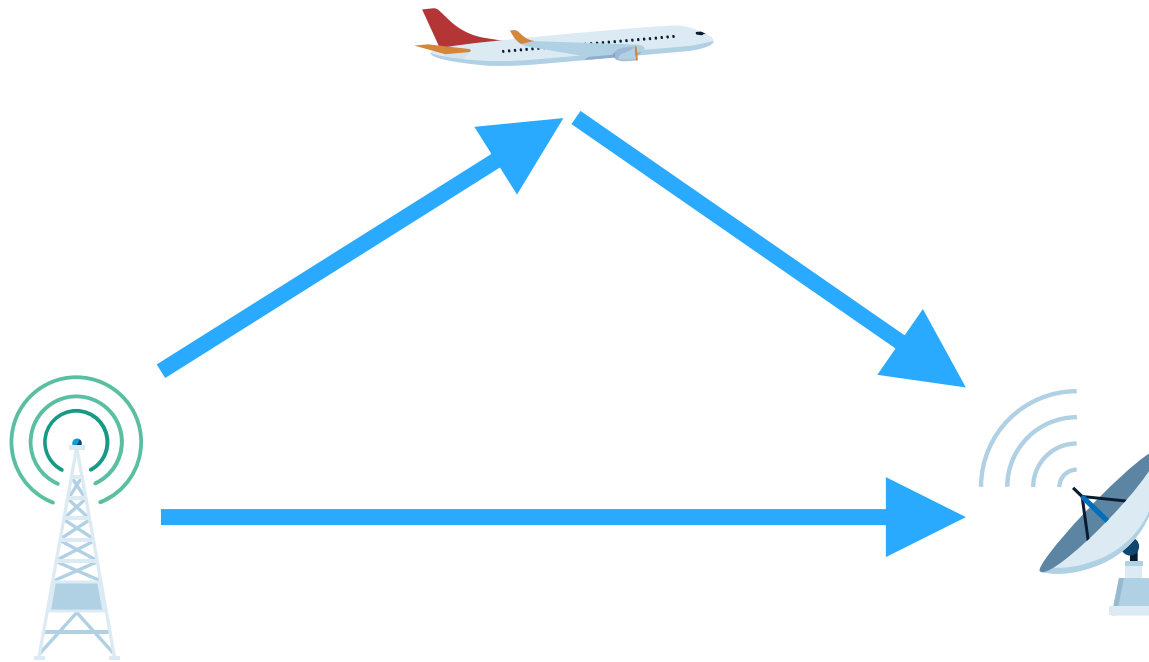
# Lokalizácia cieľa, ktorý nevysiela signál



# Lokalizácia cieľa, ktorý nevysiela signál



# Modelovanie pasivnych bistatických radarových systémov



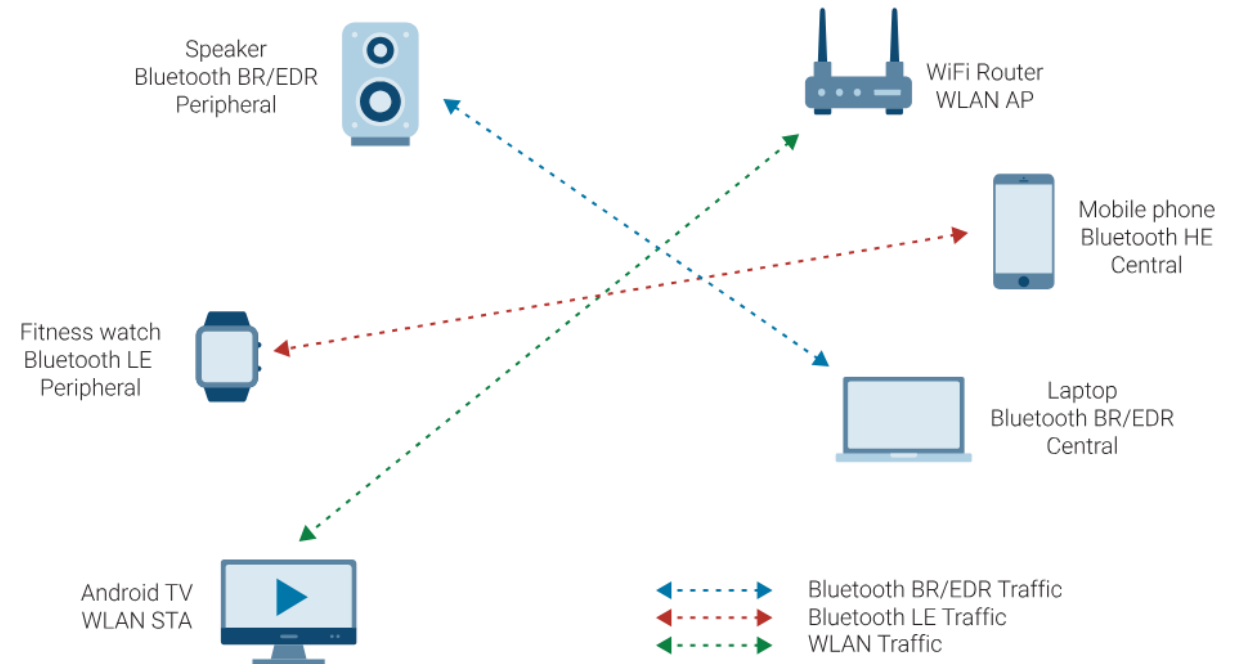
**Radar Toolbox**

**Phased Array  
System Toolbox**

# Modelovanie a simulácia bezdrôtových komunikačných sietí

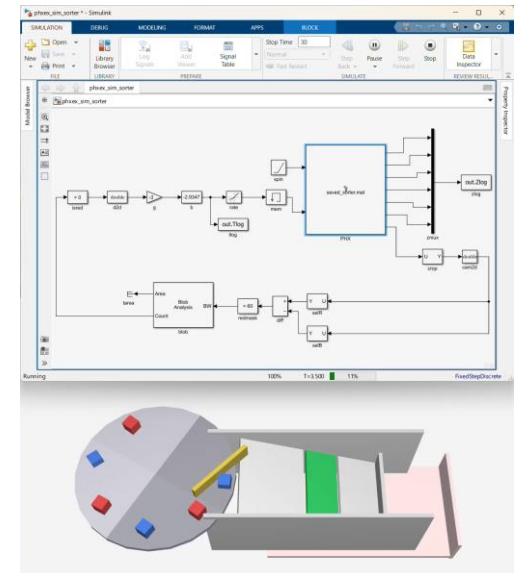
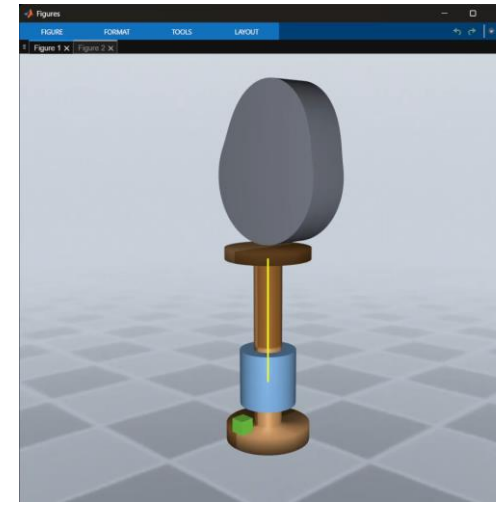
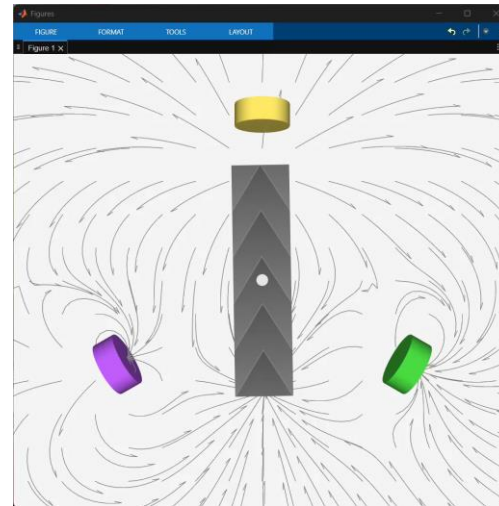
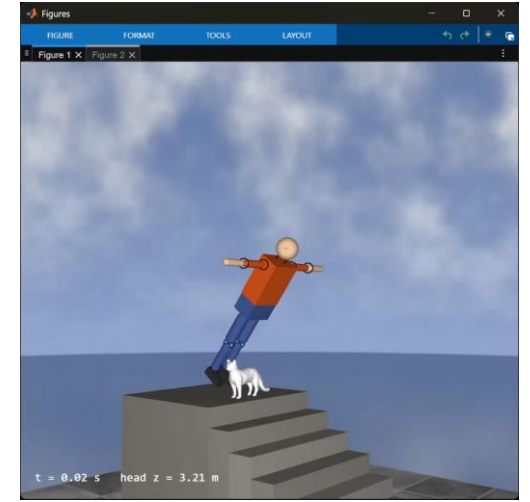
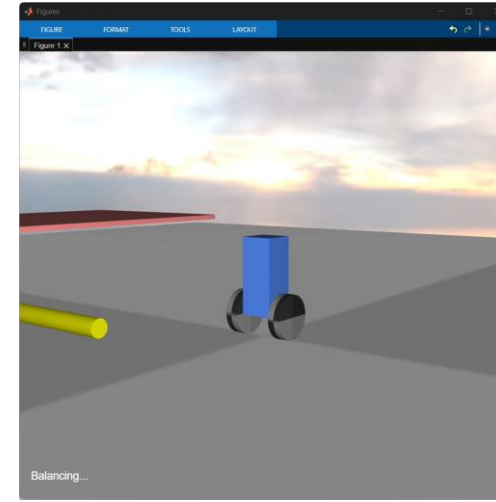
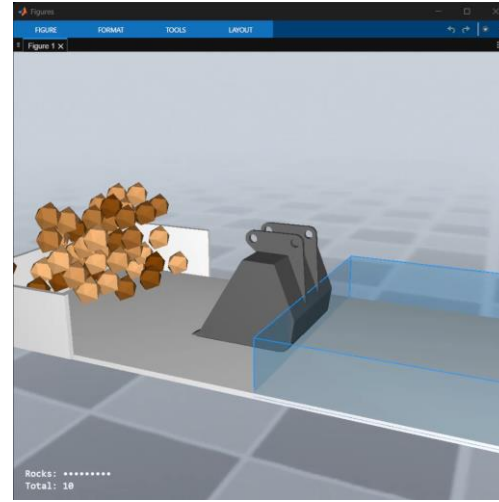
## Wireless Network Toolbox

- 5G
- WLAN
- Bluetooth
- Mobilné ad hoc siete (MANETs)



Simulácia a vizualizácia  
koexistencie bezdrôtových sietí

# PHX Toolbox - 3D Rigid-Body Physics for MATLAB and Simulink



# Zhrnutie



Generatívna umelá inteligencia mení spôsob, akým inžinieri pracujú, a my sa s ňou vyvíjame.



MATLAB a Simulink vám pomôžu prejsť od konceptu k nasadeniu.



Špecifické nadstavby podporujú návrh pokročilých komplexných systémov.