Open Source 西门子

Beijing · 2026

Oct. 29
Industrial Open Source

Oct. 30
Open Source Robotics

Agenda

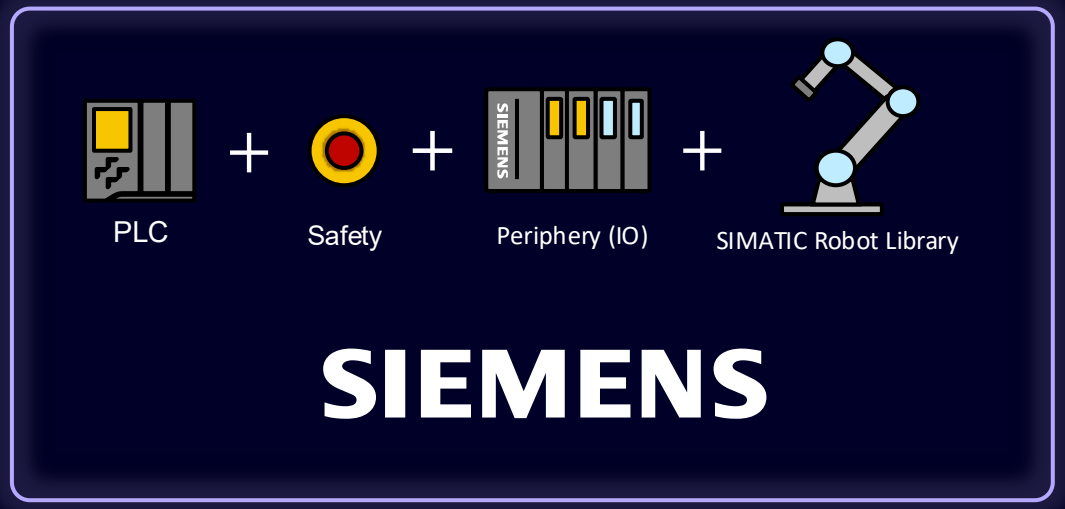
ROXSIE

Bridging the gap between ROS 2 and SIMATIC.



ROS ecosystem

SIMATIC ecosystem

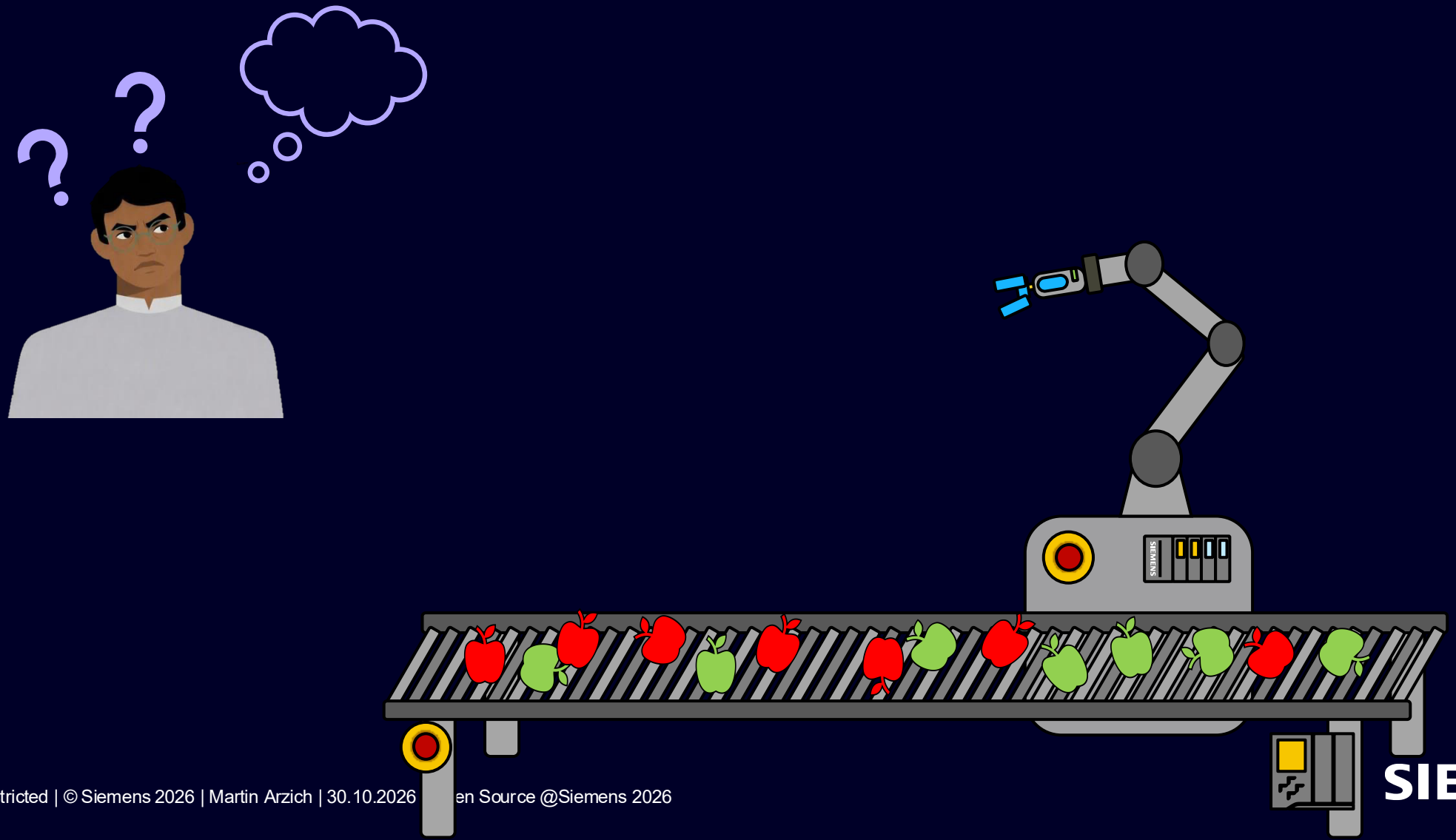


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Customer problem

How can we can we automate such a complex task?



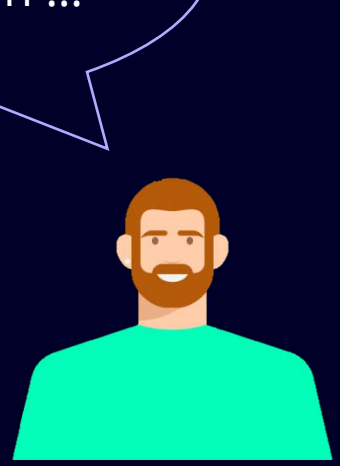
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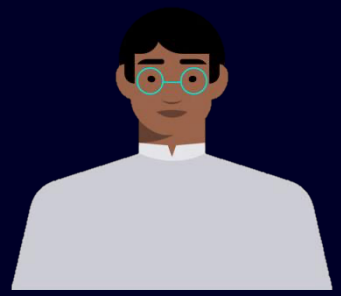
Customer´s Challange

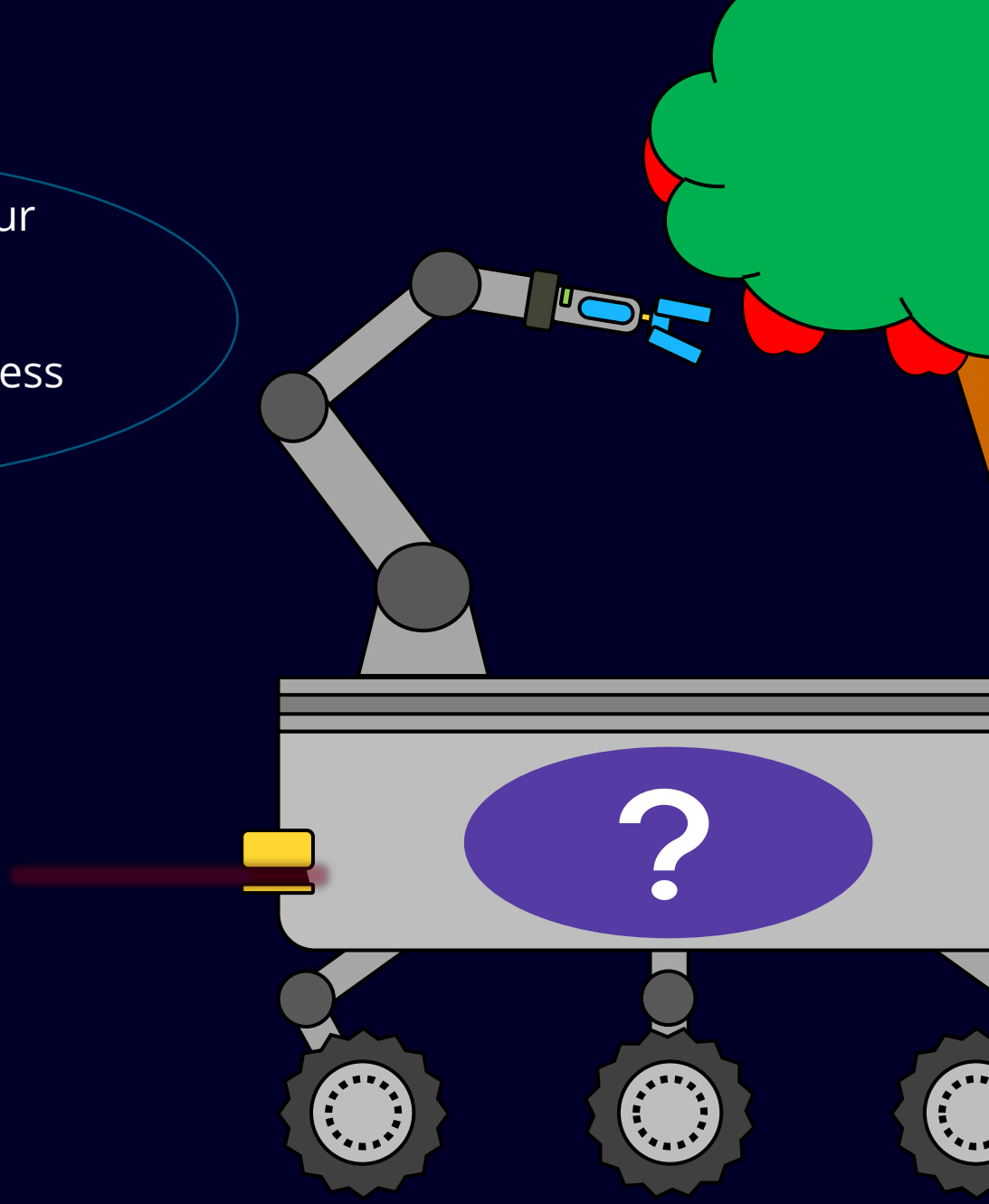
What started in 2024 …

We like to combine our research project “Apple Picker” with industrial robustness and safety

We might have the perfect solution …



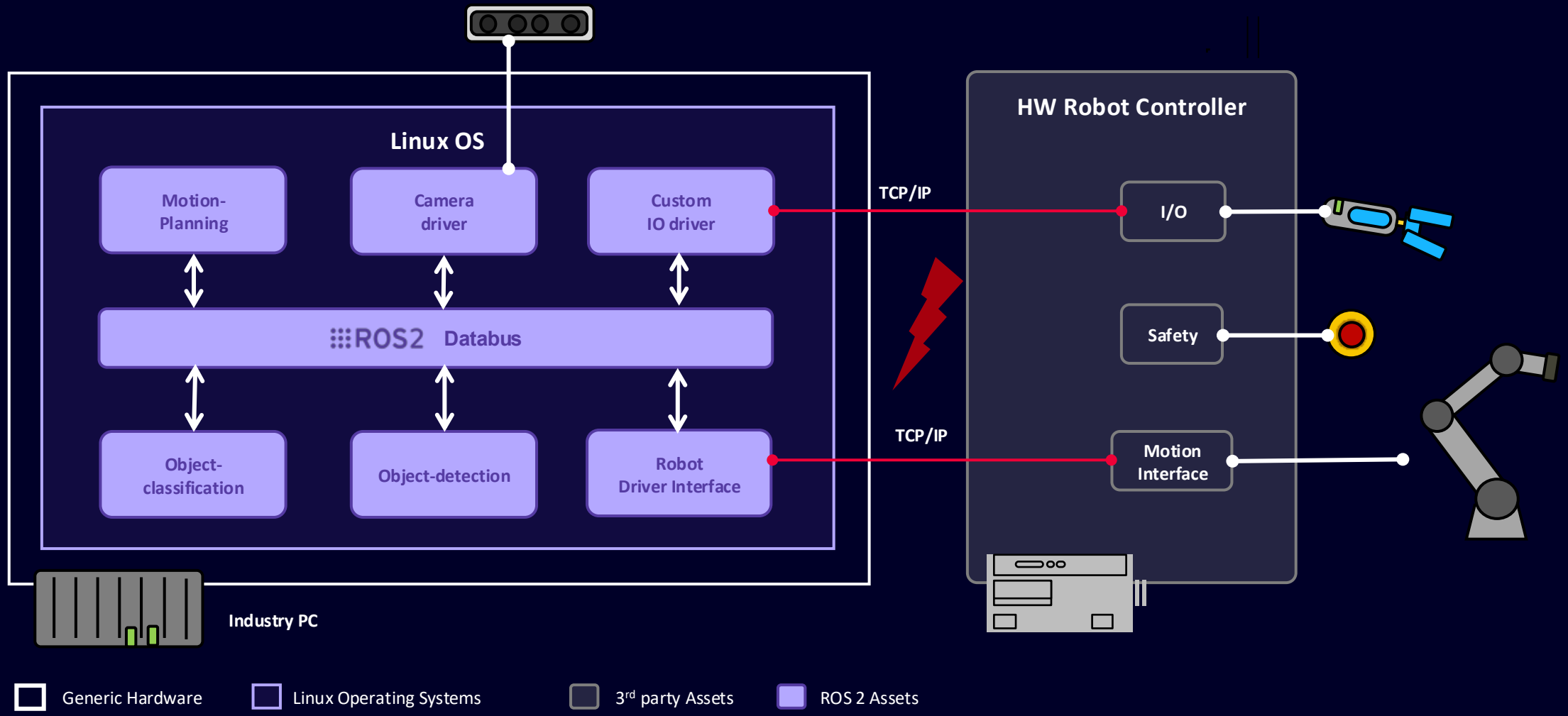




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Customer CSIA
Software layout before ROXSIE



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ROS meets SIMATIC

Connecting the SIMATIC automation ecosystem with open-source ecosystem ROS



Faster development.
Rich package ecosystem.
Active Global Community.

Industrial-grade Reliability.
Proven Automation.
Seamless Robot Integration.

With ROXSIE, manufacturers get industrial robustness and open-source agility in one integration.

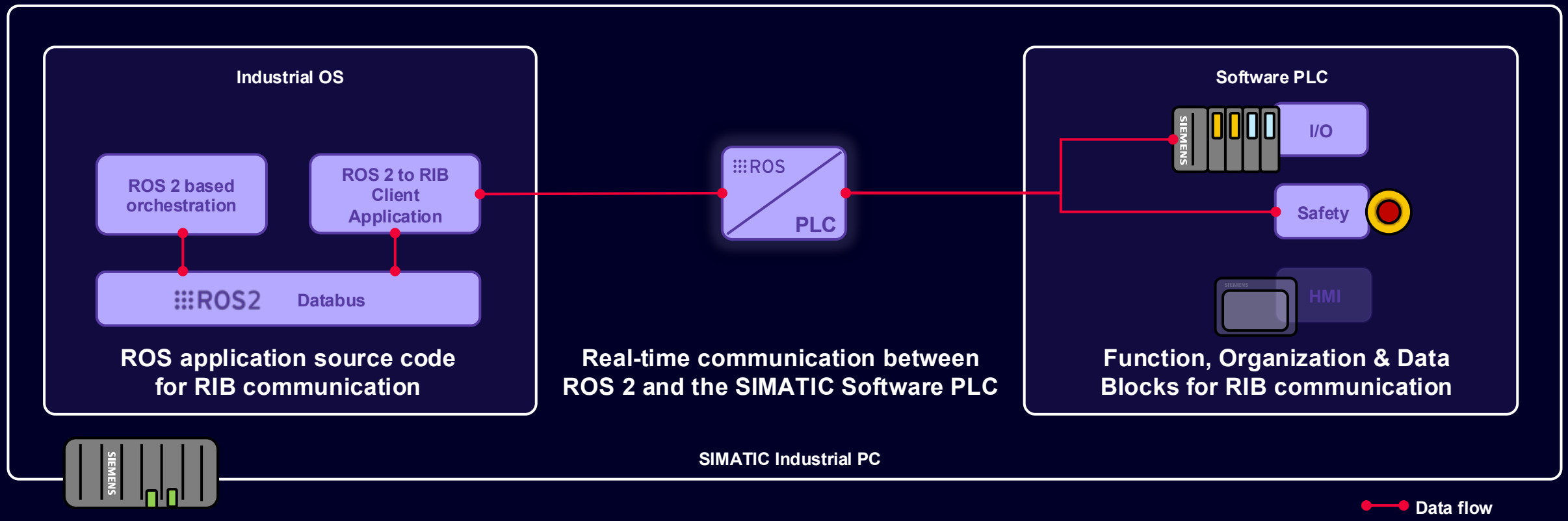
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Strong on its own. Stronger together. Combining Siemens Automation and

ROXSIE example usecase

Access safety data and industrial Input/Output (IO) signals in open-source ecosystem ROS



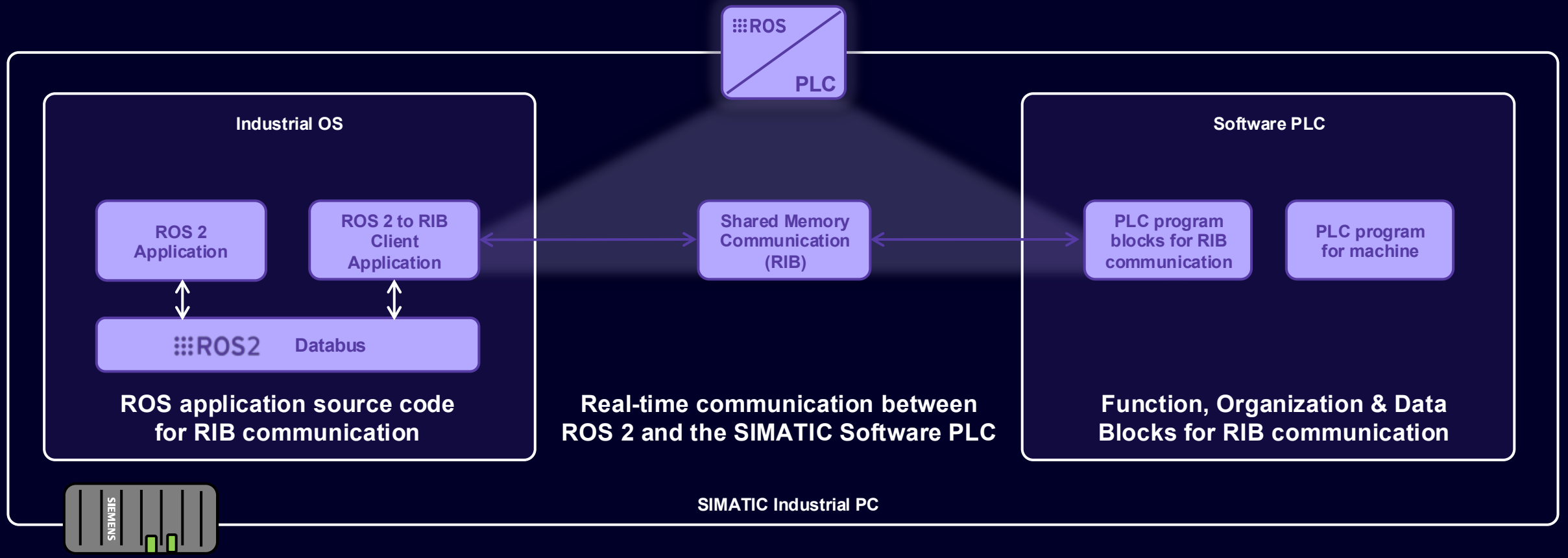
Bring SIMATIC‘s industrial safety and reliable I/O to the ROS ecosystem.

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How ROXSIE works

Connecting ROS and SIMATIC – from config to runtime



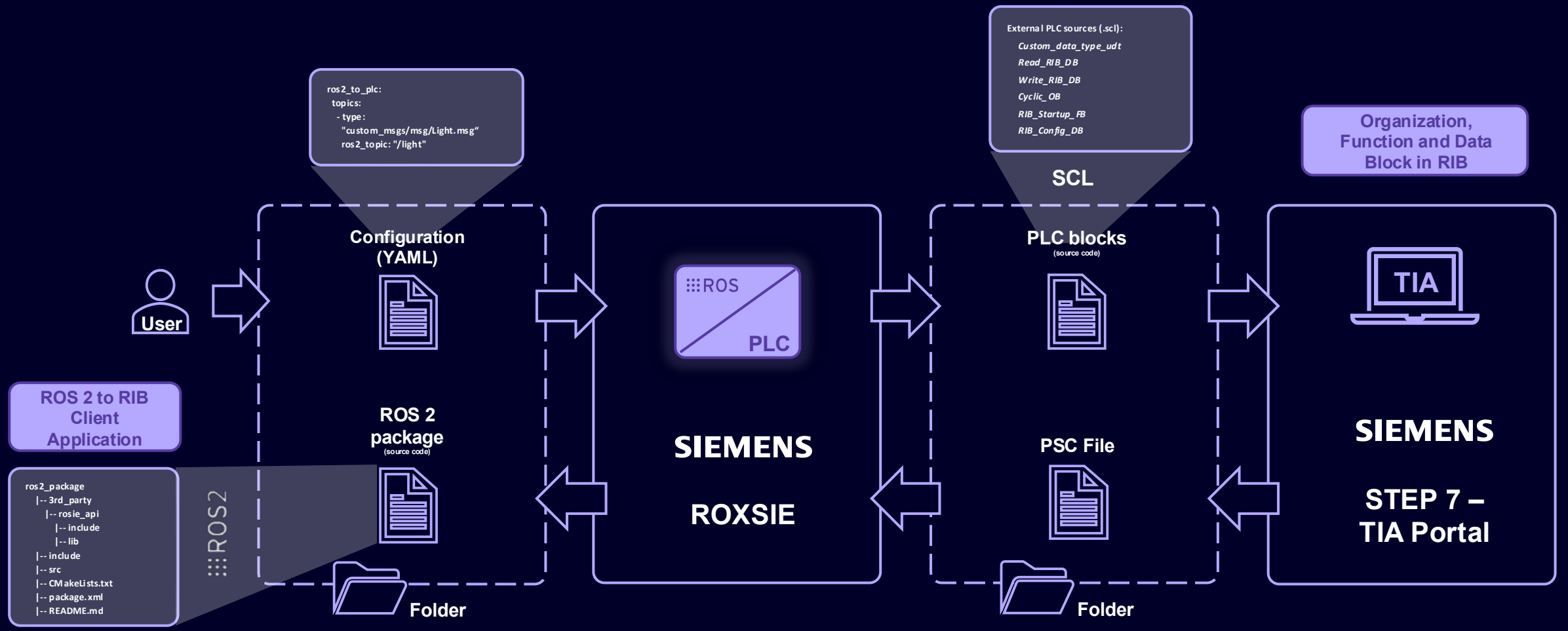
Focus on your business logic while communication is generated automatically.

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Setup software connection between ROS 2 and SIMATIC

Connecting ROS and SIMATIC – from config to runtime



ROXSIE automates the bridge between ROS 2 and SIMATIC to simplify your engineering workflow.

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What you need to run ROXSIE
Engineering and runtime system requirements

⚠️ ROS runs on Linux. PLC programming requires Windows (TIA Portal). You need either WSL on one machine or two separate devices.

💻 To generate your code – Engineering system

- Any x86/x64 machine
- ROXSIE container running on a Linux environment
- Linux + Windows 10/11
- ROS 2 Humble or Jazzy
- Docker ≥ v20
- TIA Portal v19 or v20+

⚙️ To run your application – Runtime system

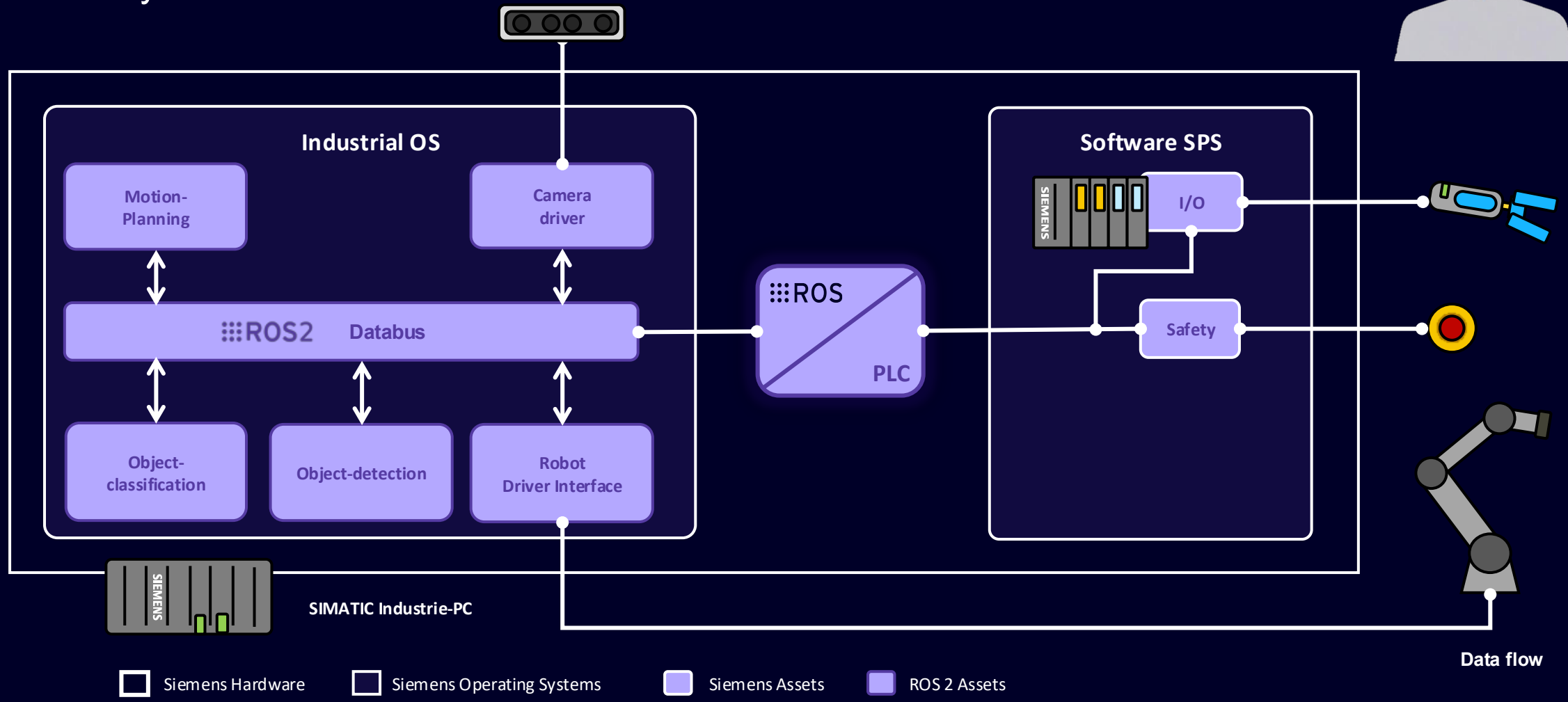
- SIMATIC ET 200SP Open Controller CPU 1515SP PC2 / PC3 (F) **OR** SIMATIC IPC 427E / BX-39A
- SIMATIC Industrial OS
- SIMATIC S7-1500 Software Controller
- ROS 2 Humble or Jazzy

Standard tools on your side. Proven hardware on the other.

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Customer CSIA
Software layout with ROXSIE



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Apple Picker including
ROXSIE extension



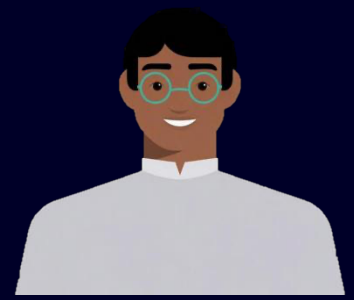
CSIA
Developed a custom
ROS2 service POC

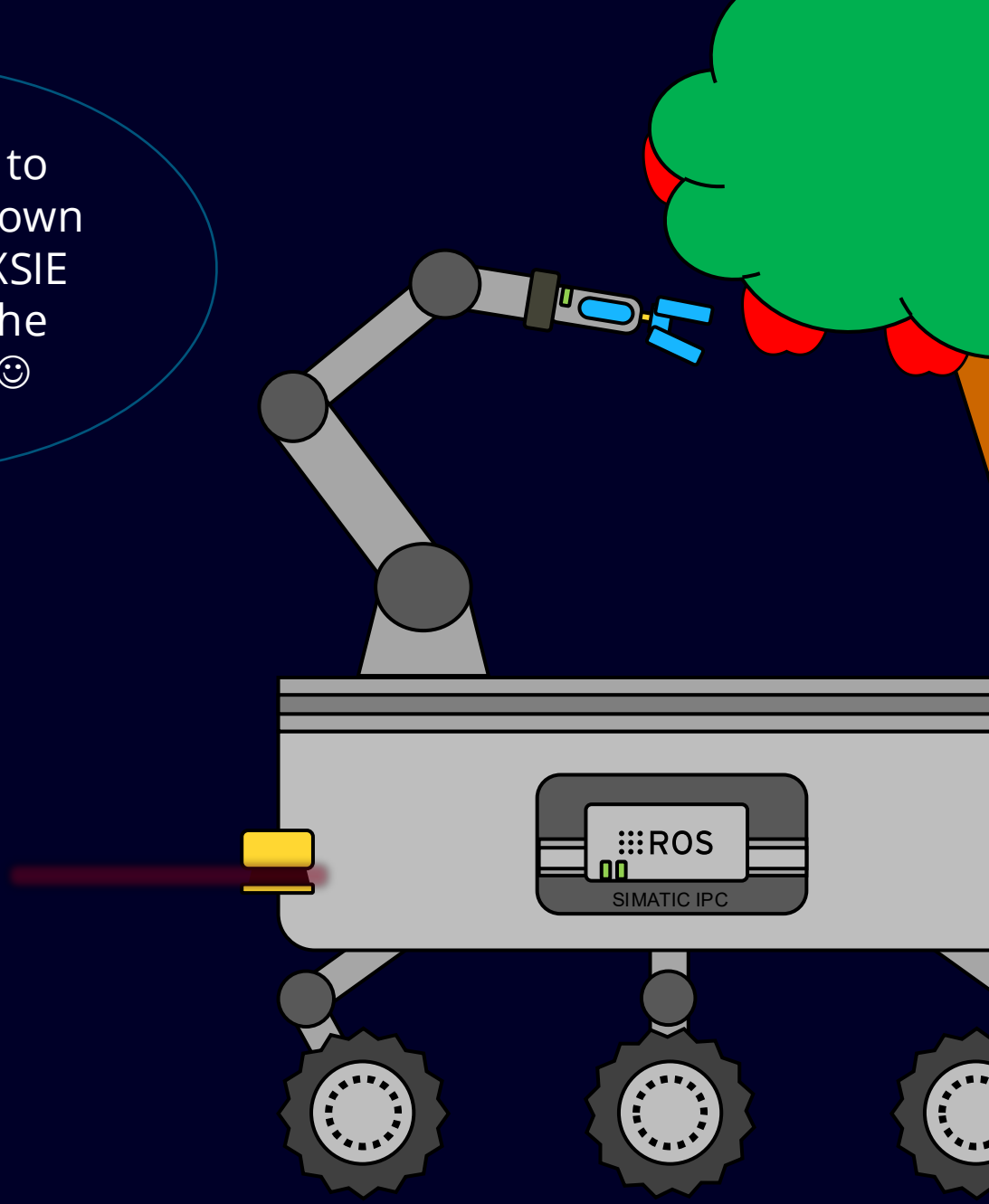
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Implementation in Apple Picker



We were able to implement our own developed ROXSIE extension at the apple picker ☺





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What ROXSIE V1.0.0 adds on top of the current release

Services & Actions, hardware PLC support, unlimited topics, automated generation

CURRENT RELEASE V0.3.2	NEXT RELEASE V1.0.0
No Services / Actions supported	**Services & Actions added**
Only compatible with Linux + Software PLC devices	**Hardware PLC support via PROFINET protocol**
Limit of 20 topics maximum (max. count of CyclicInterrupt OBs)	**Near unlimited topics with configurable prioritization**
Generation only via CLI	**Generation with VS Code extension + Agent Skill + CLI**
Manual steps in TIA Portal required	**Automatic code import via TIA Portal Openness**

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