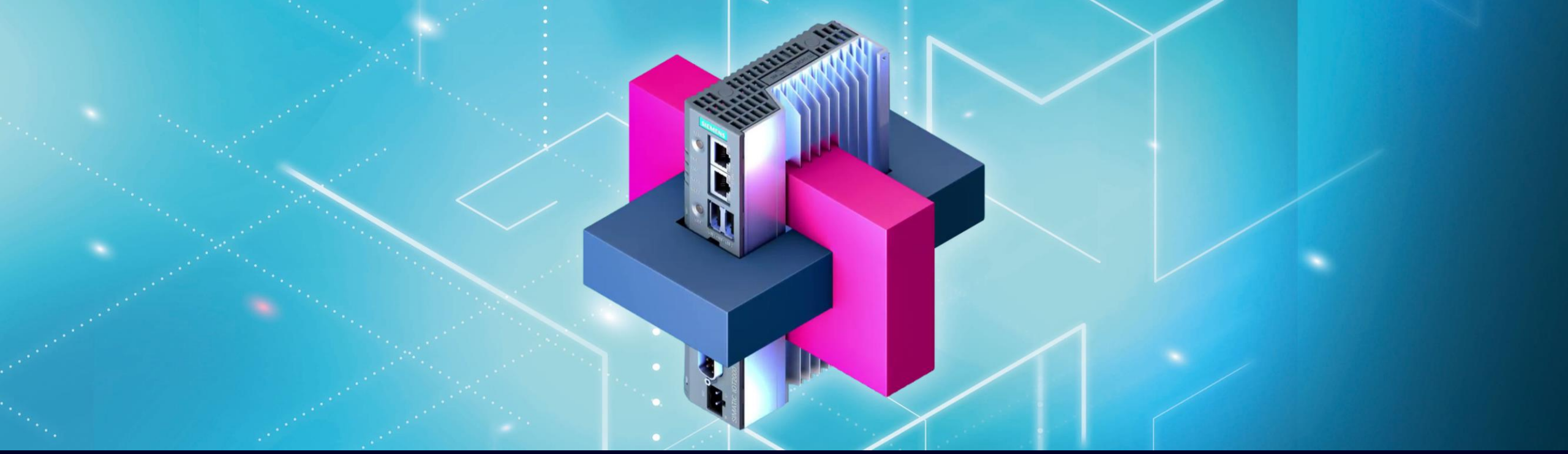

# Be ahead of the curve in education with **SIMATIC IOT2000**

**Siemens Automation Cooperates with Education**



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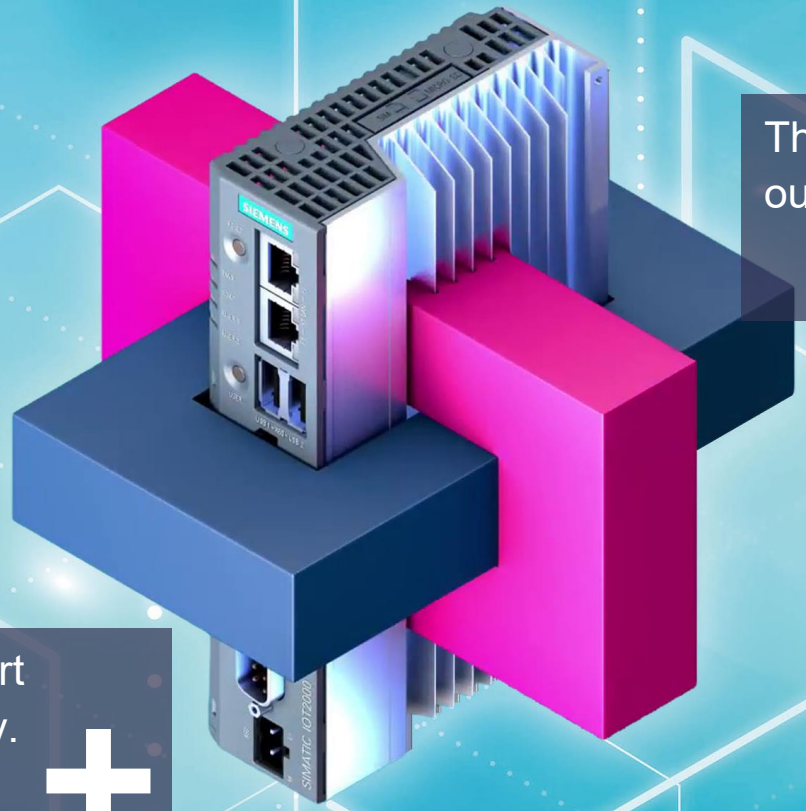
# SIMATIC IOT2000 at a glance

With this, Siemens offers a solution for open source applications for training – with **SIMATIC quality for 24/7 operation**.



The Internet of Things is changing our world.

**SIMATIC IOT2000** is the smart gateway for cloud connectivity.

You benefit from the open, expandable hardware, the Debian-based Linux operating system, and the PCIe-compatible and Arduino Uno R3-compatible interface.

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# Fields of application for SIMATIC IOT2000

**No matter your branch of study:**

- Electrical-, automation-, process engineering
- Computer science
- Civil engineering
- Mechanical engineering
- Mechatronics
- Robotics or
- Embedded systems

**SIMATIC IOT2000 is the right open IOT platform for:**

- Technical high schools
- Vocational/engineering schools
- Community colleges
- In-house vocational training departments
- Technical colleges/universities
- R&D institutions

**Because IOT2000 covers a wide range of education subjects, such as:**

- Micro controllers
- Software
- High-level languages
- Cloud connection
- Manage machine and production data




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# The Highlight

**SIMATIC IOT 2050** enables students to gain hands-on experience on challenging projects, including on

- sensor and open- and closed-loop control applications with high-level language programming such as C/C++, Python, Java, JSON and Node.js/Node-RED.

“Be ahead of the curve and prepare yourself for the larger disruptive innovations taking place in education and industry with our new open source platform ecosystem.”

**The new SIMATIC IOT2050** Industrial IoT gateway is an open, industrial PC-like platform for implementation of diverse IoT, gateway and Edge applications.

It is distinguished by its large number of interfaces, expandability and user-programmability in high-level languages.




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# IOT2050
# Overview




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# IOT2050 Overview

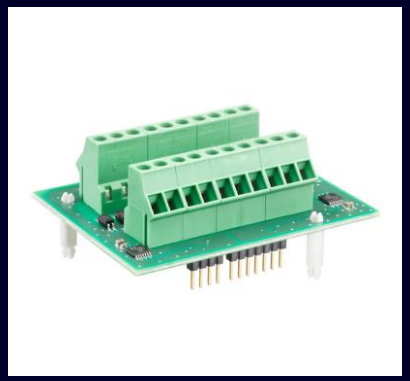
## SIMATIC IOT2050

**IOT2050 for high-level language programming**

**with**

- Quad Core processor (AM6548 HS)
- 2 GB RAM (DDR4)
- 16GB eMMc
- 2x Ethernet Gigabit (IE/PN), RJ45
- 2x USB 2.0
- 1x serial interface (switchable RS 232/485/422)
- SD Card slot
- preinstalled SIMATIC Industrial OS 2.0 (incl. License) on the eMMc
- included battery for RTC
- 24 V DC supply voltage

## IO-Shield expansion



**IOT2000 IO-Shield for connection of external signals**

### SIMATIC IO-Shield

- SIMATIC IOT2000 Input/Output Module with
  - 5 DI
  - 2 DO
  - 2 AI
  - ARDUINO Shield for IOT2020 / IOT2040 / IOT2050

### 3rd Party IO-Shield

- IKHDS-Powershield for IOT2050 with
  - 10 DE
  - 8 DA (PWM)
  - 2 AE
  - CE testing



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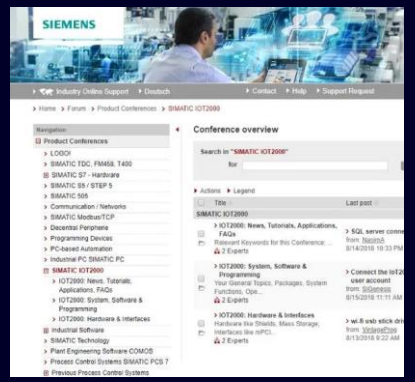
# IOT2050 Overview

## Setup

**Simplified short guide for setting up your IOT2050** (6ES7647-0BA00-1YA2)




| Installation with MicroSD Card | Installation with eMMc |
|---|---|
| 1. Provide needed hardware and install the "Win32 disc imager, Eclipse" software on the PC. | |
| 2. Install IO-Shield for connection of external signals. | |
| 3. Insert MicroSD card in the PC. It is designated for the operating system and provides space for programs and data. | |
| 4. Save Debian Linux SD Card example image to the SD card and insert in the IOT2000. | Save EMMc example image into the IOT2000 via USB Stick. |
| It contains the ready-to-use Linux operating system with runtime environment for all supported programming languages. | |

## Programming

**High-level language programming with IOT2050**

The Quick Install Guide and the Operating Instructions help you to get started with high-level programming with C/C++ and Eclipse.

Other programming environments are described using programming examples and FAQs in the IOT2000 Forum.

For example: Python, Java, Json, Node.js/Node-RED.



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# IOT2020/2040 – **Previous models**




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# IOT2020/2040 – Previous models

## SIMATIC IOT2020/2040

**IOT2020 or IOT2040 for high-level language programming**

### SIMATIC IOT2020

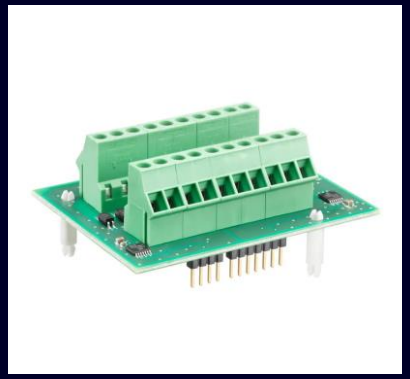
- Intel Quark® CPU, x1000 (Galileo)
- 512 MB RAM
- 1x 10/100 Mbps Ethernet RJ45 interface
- 1x USB2.0
- 1x USB client
- SD Card slot
- 24 V DC supply voltage

### SIMATIC IOT2040

- Intel Quark® CPU, x1020 (+Secure Boot)
- 1 GB RAM
- 2x 10/100 Mbps Ethernet interfaces RJ45
- 1x USB2.0, 1x USB client
- 2x RS232/485 interfaces
- SD Card slot
- Battery-buffered real time clock (RTC)
- 24 V DC supply voltage

## IO-Shield expansion

**IOT2000 IO-Shield for connection of external signals**



### SIMATIC IO-Shield

- SIMATIC IOT2000 Input/Output Module with
  - 5 DI
  - 2 DO
  - 2 AI
  - ARDUINO Shield for IOT2020 / IOT2040

### 3rd Party IO-Shield

- E.g. IKHDS Power Shield for IOT2020/2040 with
  - 6 DI
  - 5 DO (Relay)
  - 1 DO (PWM)
  - 2 AI
  - 1 AO



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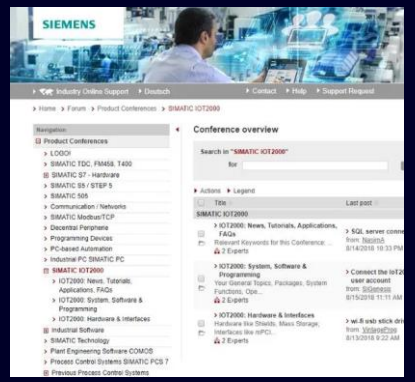
# IOT2020/2040 – Previous models

## Setup



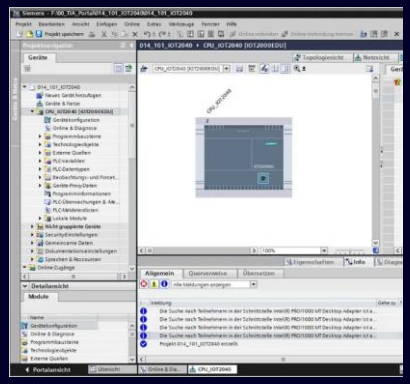

**Simplified short guide for setting up your IOT2020 or IOT2040**

1. Provide needed hardware and install the "Win32 disc imager, Eclipse" software on the PC.
2. Install IO-Shield for connection of external signals.
3. Insert MicroSD card in the PC. It is designated for the operating system and provides space for programs and data.
4. Save Yocto Linux  SD Card example image to the SD card and insert in the IOT2000. It contains the ready-to-use Linux operating system with runtime environment for all supported programming languages.

Use the following guide to perform steps 1-4:
Setting up the SIMATIC IOT2000

Experts are available in the IOT2000 Forum  The forum provides instructions on the first project steps, application examples, introduction videos, downloads and FAQs.

## Programming



**High-level language programming with IOT2000**

The Getting Started helps you get started with high-level programming with C/C++ and Eclipse. Other programming environments are described using programming examples and FAQs in the IOT2000 Forum.

For example: Python, Java, Json, Node.js/Node-RED.

### Specific hardware configuration with SIMATIC IOT2000EDU

- In this module you will learn
  - how to setup the IOT2000 and
  - how to prepare the TIA Portal for the IOT2000.
  - Afterwards, a project is created and the hardware is configured.

### FC programming with SIMATIC IOT2000EDU

- In this module you will learn
  - the basic elements of a controller program, organization blocks (OB), functions (FC), function blocks (FB) and data blocks (DB).
  - In addition, we introduce library-compatible functions and function block programming.
  - You learn more about the Function Block Diagram (FBD) programming language and use it to program a function (FC1) and an organization block (OB1).



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# Videos


- SIMATIC IOT2040 – the intelligent gateway for industrial IoT solutions
- SIMATIC IOT2040 from Siemens – The IoT Gateway
- IoT 2040 – Digitalisierung | Siemens | Conrad Business Supplies
- SIMATIC IOT2000 – What is it
- Winner Announcement IOT2020 Contest
- SIMATIC IOT2000 & Arduino IDE Sketches
- IOT2020 Firmware 2.1.3 Preview
- Virtuelle Anlagenmodelle für das Siemens IOT2020
- Learn with Massimo Banzi how to build up a PCB reflow application with IOT2020
- Win the hardware needed to Win a Lab Kit worth $4800USD
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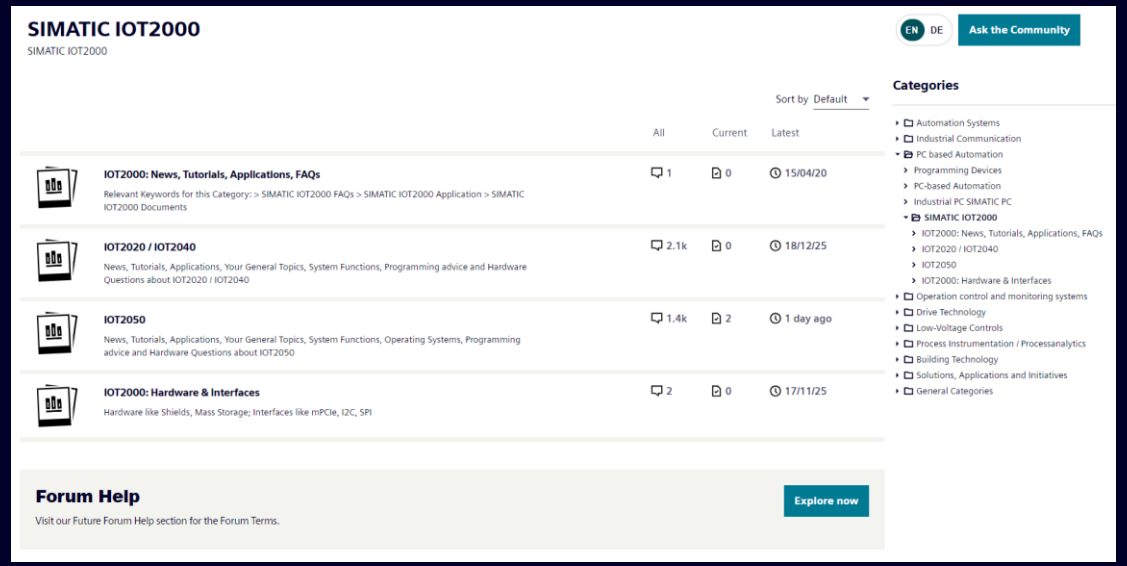
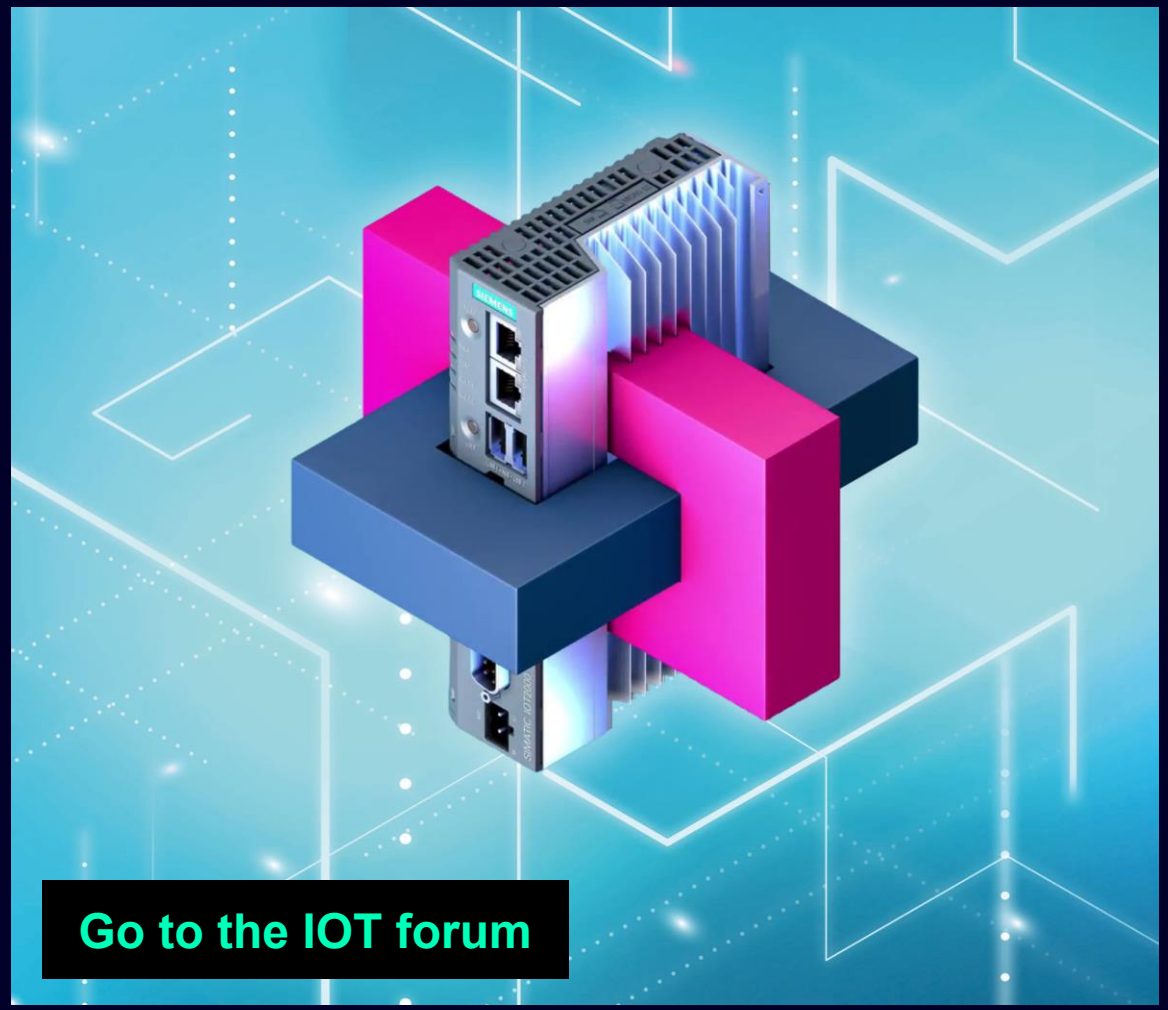
# Join the SIMATIC IOT2000 community

**SIMATIC IOT2000** gives you lots of room for ideas. In our IOT forum, we supply you with updates, information, introductory videos, expert tips, and numerous applications that our users have implemented with **SIMATIC IOT2000**.







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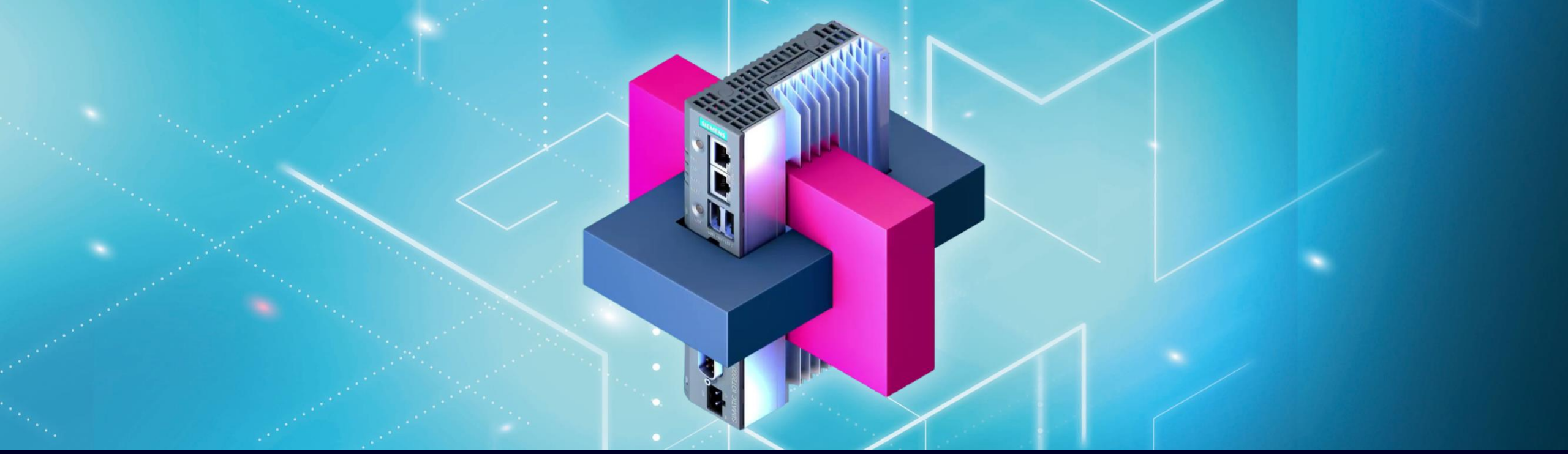

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