Hello (Industrial) Cloud

Building cloud-connected industrial machines

Our Presenters

Brian Berner

Brian is a Processor Platform Marketing Manager working with global partners to deliver system-level solutions using TI's portfolio of Arm®-based processors. The Platform Marketing is dedicated to creating a thriving ecosystem built around low-cost starter kits, open-source SBC community boards, and a wide range of SOM offerings to help customers go to market faster.

True Loan

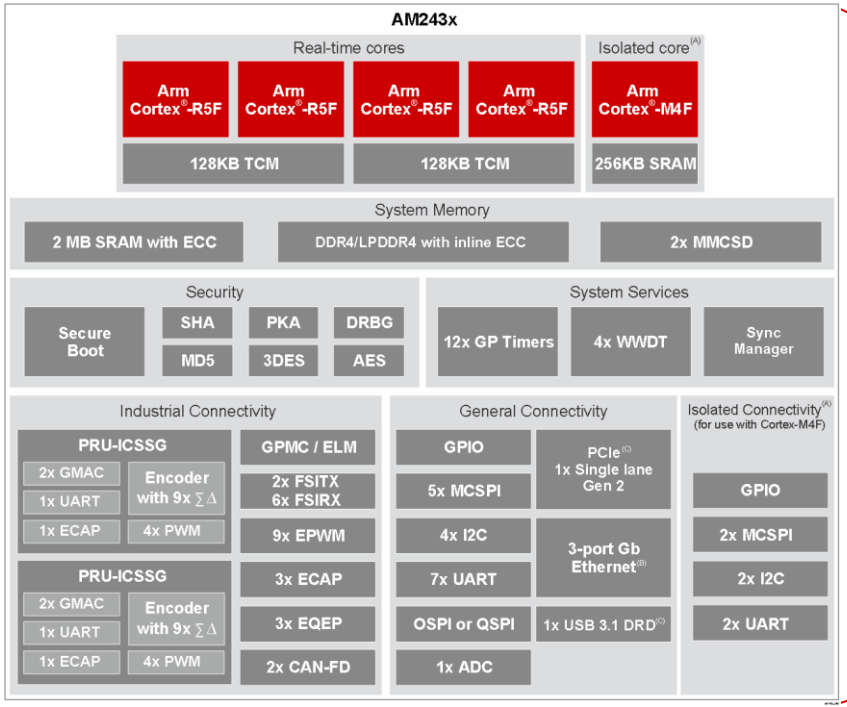
True is an Applications Engineer at PHYTEC. He works with Texas Instruments Arm-based processors daily supporting PHYTEC's wide range of customers. With expertise in hardware and software combined with enthusiasm, True helps customers hands-on to bring their product ideas to life.

Ashok Bhaskar

Ashok is a Senior Solutions Architect for the Partner IoT team at Amazon Web Services. His responsibilities include IoT solution architecture, partner enablement, design and integration support, and device qualification.

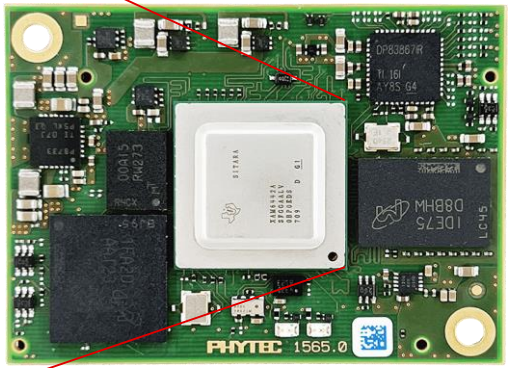
TI Processors | AM243x MCU device

MCU functional block diagram



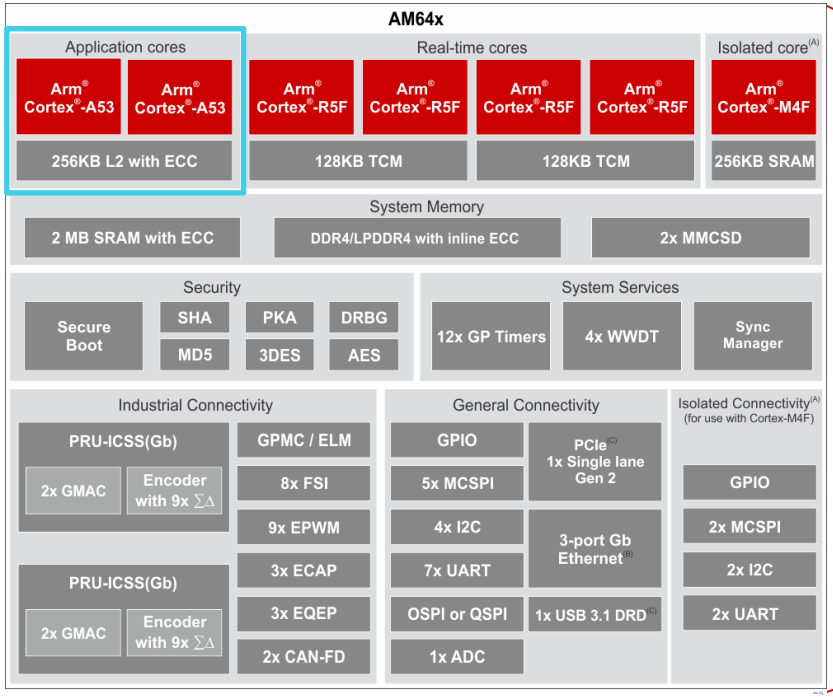
PHYTEC System-on-Module

phyCORE-AM64x populated with AM2434



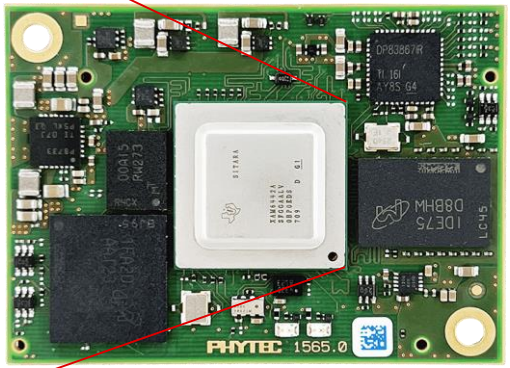
TI Processors | AM64x MPU device

MPU functional block diagram



PHYTEC System-on-Module

phyCORE-AM64x populated with AM6442



TI Processors | AM64x AWS IoT Greengrass

SK-AM64

AWS Partner Device Catalog Overview Search FAQ Partners

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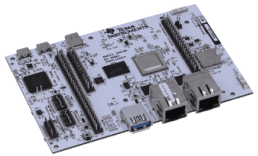
AM64x Starter Kit for the Sitara™ AM64x Processor

by Texas Instruments Incorporated



The AM64x starter kit is a stand-alone test and development platform that is ideal for accelerating the prototype phase of your next design. The kit includes: wired and wireless connectivity, three expansion headers, multiple boot options, and flexible debug capabilities.

The starter kit is equipped with a TI AM64x processor and an optimized feature-set to allow the user to create commercial and industrial solutions using Ethernet-based, USB, and serial wired interfaces plus 2.4-GHz and 5-GHz wireless communications. Two 1-Gbps Ethernet Ports for wired connectivity are on-board, in addition to three expansion headers to expand the board's functionality. Using standard serial protocols such as UART, I²C, and SPI, the starter kit can interface with a multitude of other devices, acting as a communications gateway.

This starter kit enables evaluation by running Linux on the A53 cores, making it the central engine in a remote industrial communication network.

AWS Service

AWS IoT Greengrass 2.5.3

Device Type

Development Kit

Industry

Agriculture, Energy / Utilities, Healthcare / Life Sciences, Industrial, Smart City, Smart Home, Transportation

Application

Building Automation, Fleet Management, Home Automation, HVAC, Industrial Automation, Lighting, Manufacturing, Process Control / Automation, Public Transit, Railway, Remote Monitoring, Robotics, Security / Access Control, Smart Grid

phyCORE-AM64x Development Kit

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phyCORE-AM64x Development Kit

by PHYTEC

The phyCORE®-AM64x is a robust and reliable embedded solution designed for headless industrial communication systems. The 50 mm x 37 mm System On Module has an extensive 280-pin interconnect supporting common factory communication protocols such as EtherCAT, Profinet, EtherNET/IP, CAN, UART, I2C, and other automation-specific interfaces such as EPWM, ECAP, and EQEP. Due to the heterogeneous architecture of the TI AM64x processor, you can run the majority of your application using Linux and off load critical components to the specialized low latency best-in-class real-time cores.

AWS Service

AWS IoT Greengrass 2.8.0

Device Type

SOM/COM

Industry

Industrial

Application

Industrial Automation

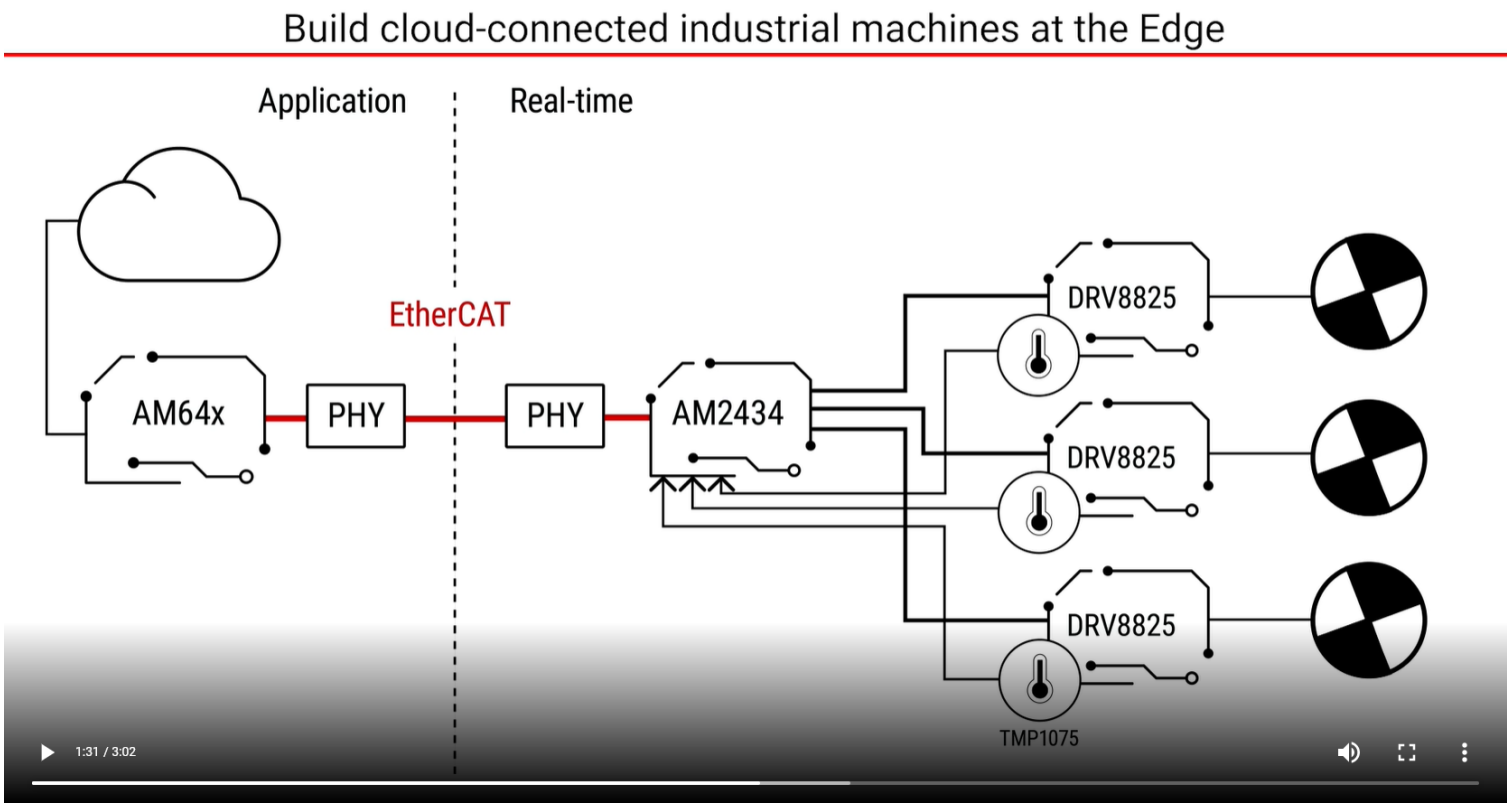
Shop now

Product page »

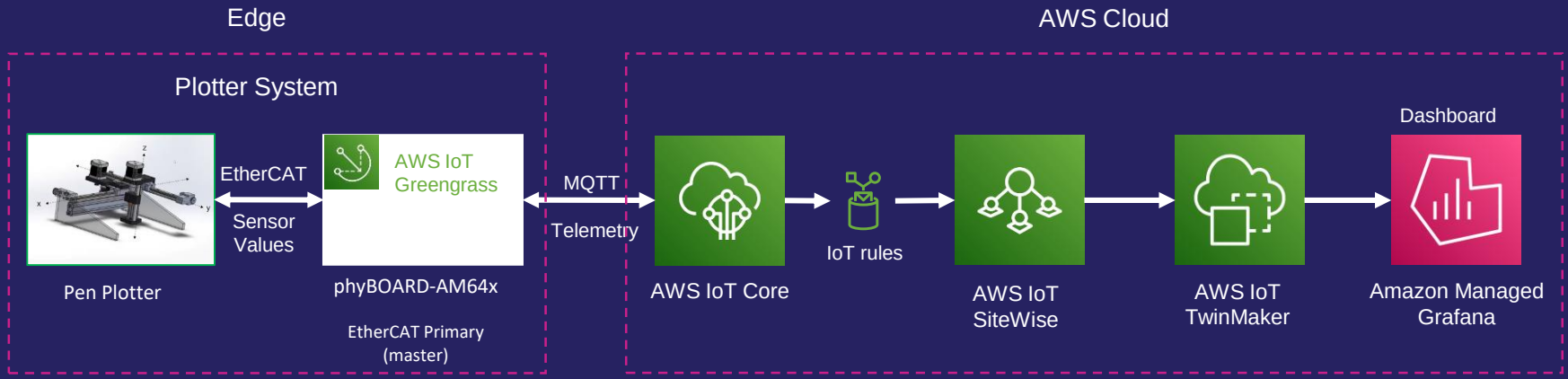
Product data sheet »

Getting started »

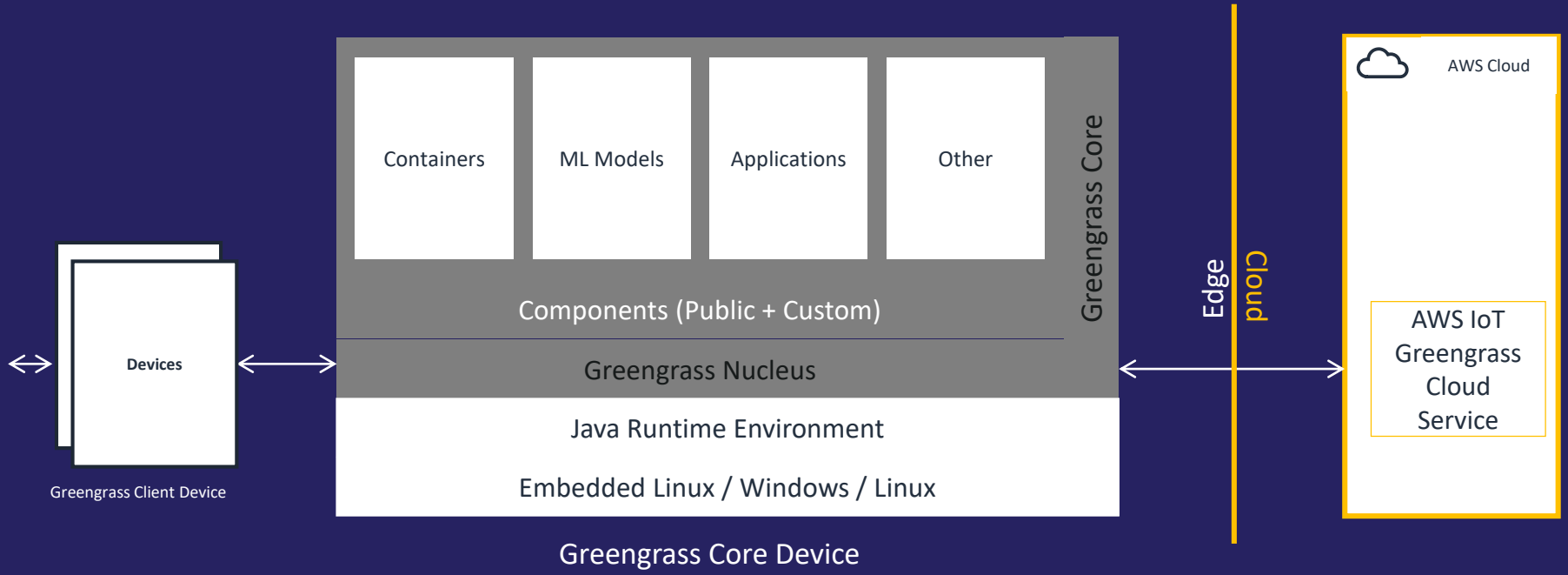
TI Processors | Demo video



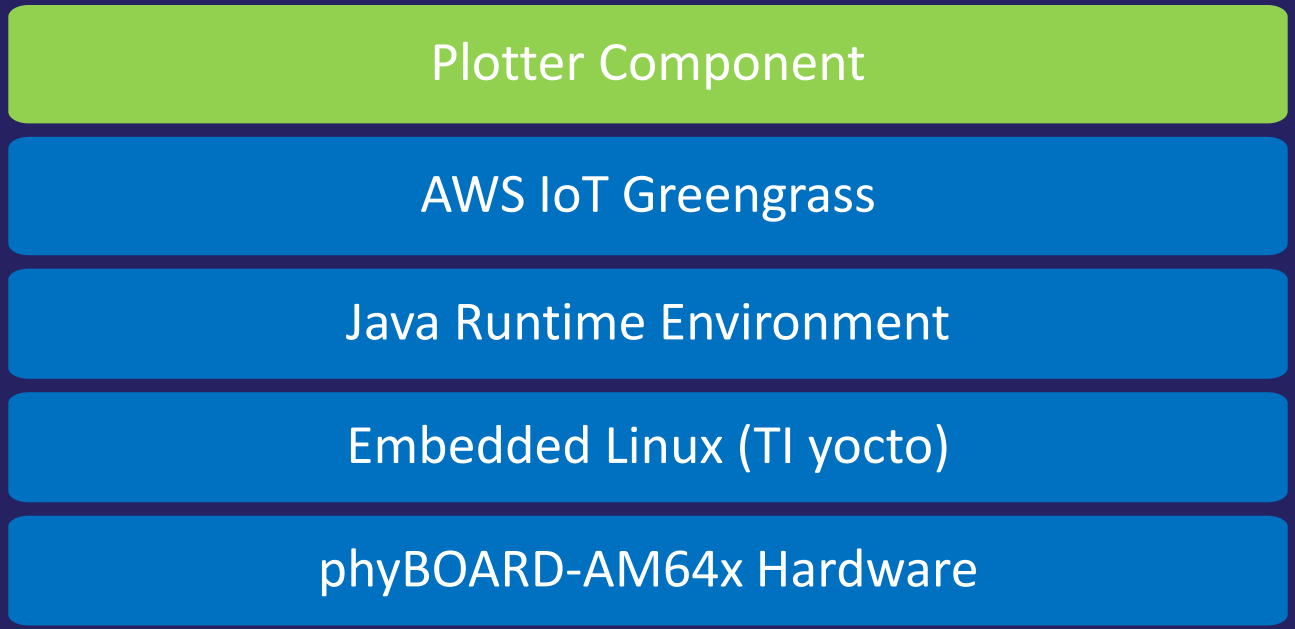
Demo Overview



AWS IoT Greengrass

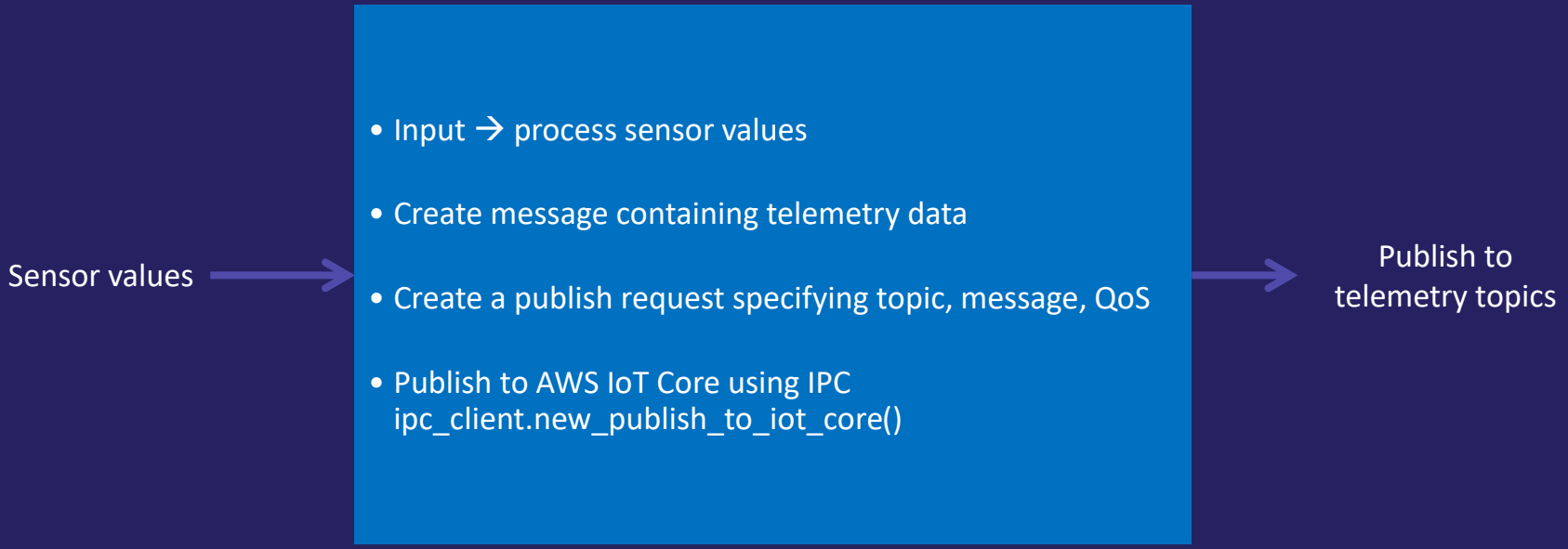


Demo application – Building Blocks



Plotter Component

Collect and send telemetry data to AWS IoT Core



Single IPC API to publish to AWS IoT Core

IoT Core - Rules Engine

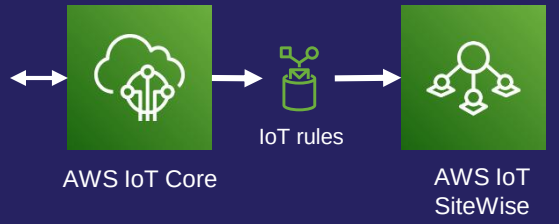
Pre-process data, and make it available to 20+ services for analytics, reporting, and visualization

Transform data with built-in functions

Filter - retain only the data you want

Enrich - with context from AWS services or external sources

Route - send your data to over 20 AWS services and third-party services



Select data from plotter telemetry topics

IoT Rule Action

- Send this data to Asset properties in AWS IoT SiteWise

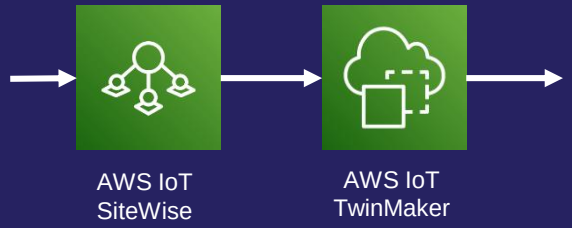
AWS IoT SiteWise

Collect, organize and analyze industrial data at scale

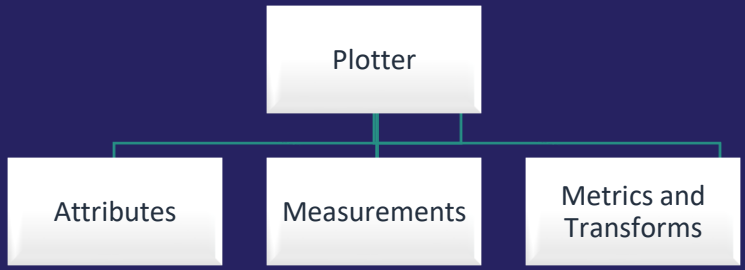
Collect - using protocols such as Modbus, OPC-UA, EtherNet/IP, MQTT

Model – create virtual representations of physical assets and data streams, and compute metrics

Monitor – via fully managed web applications



Create a Model for the Plotter



Instantiate the model as a specific Asset

Asset Properties → SiteWise Time series database

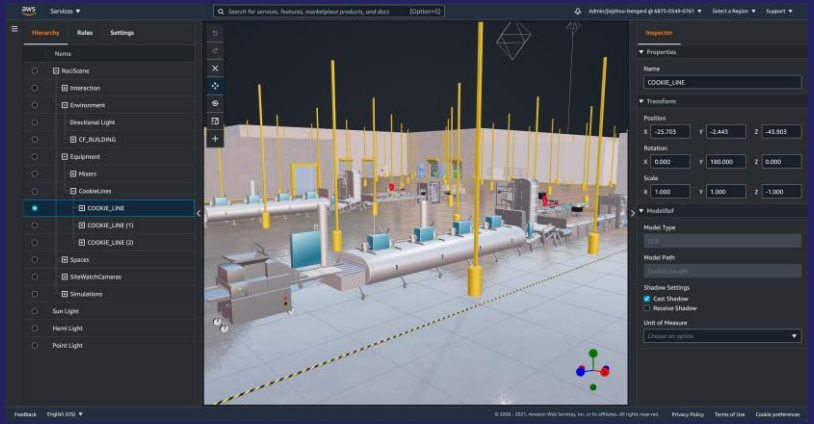
AWS IoT TwinMaker

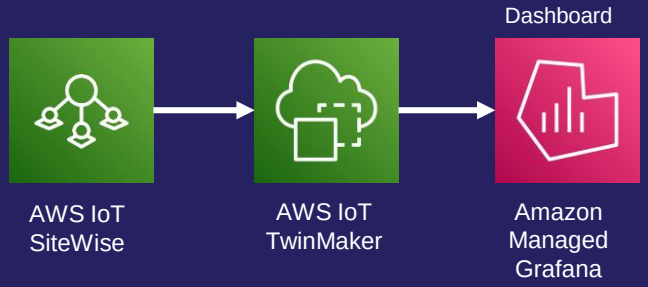
Create digital twins of real-world systems

Model: Create a knowledge graph of devices, equipment, spaces and processes

Connect: Access data where it lives

Compose: Create interactive 3D views of your environment combined with data





Create an Entity to represent the plotter.

Add pre-built components to fetch attributes and measurements from SiteWise

Create a scene with the plotter

Add tags, rules and alerts in the scene

Amazon Managed Grafana

A fully managed service based on open-source Grafana

TwinMaker Toolkit

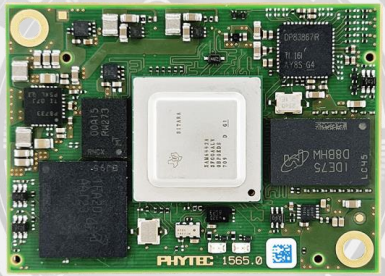
- Low-code app: TwinMaker Plug-in for Grafana
- Developer SDK: Custom app development
- Open-source GitHub: Sample code, tutorials, etc.

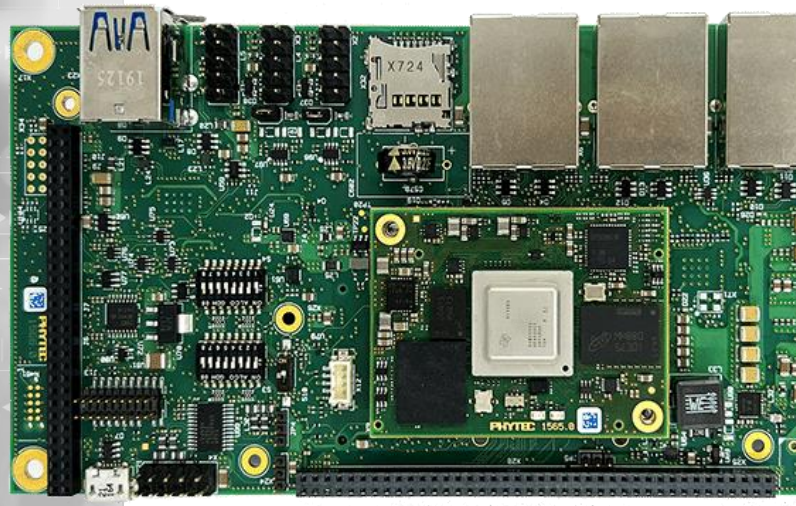
Add AWS IoT TwinMaker as a data source

Create a dashboard with panels for the plotter scene as well as asset properties

hello (industrial) cloud

Industrial Ethernet meets AWS Cloud





PHYTEC Industrial Ethernet Demo

phyCORE-AM6442 Demo Overview

hello (industrial) world – Last Webinar

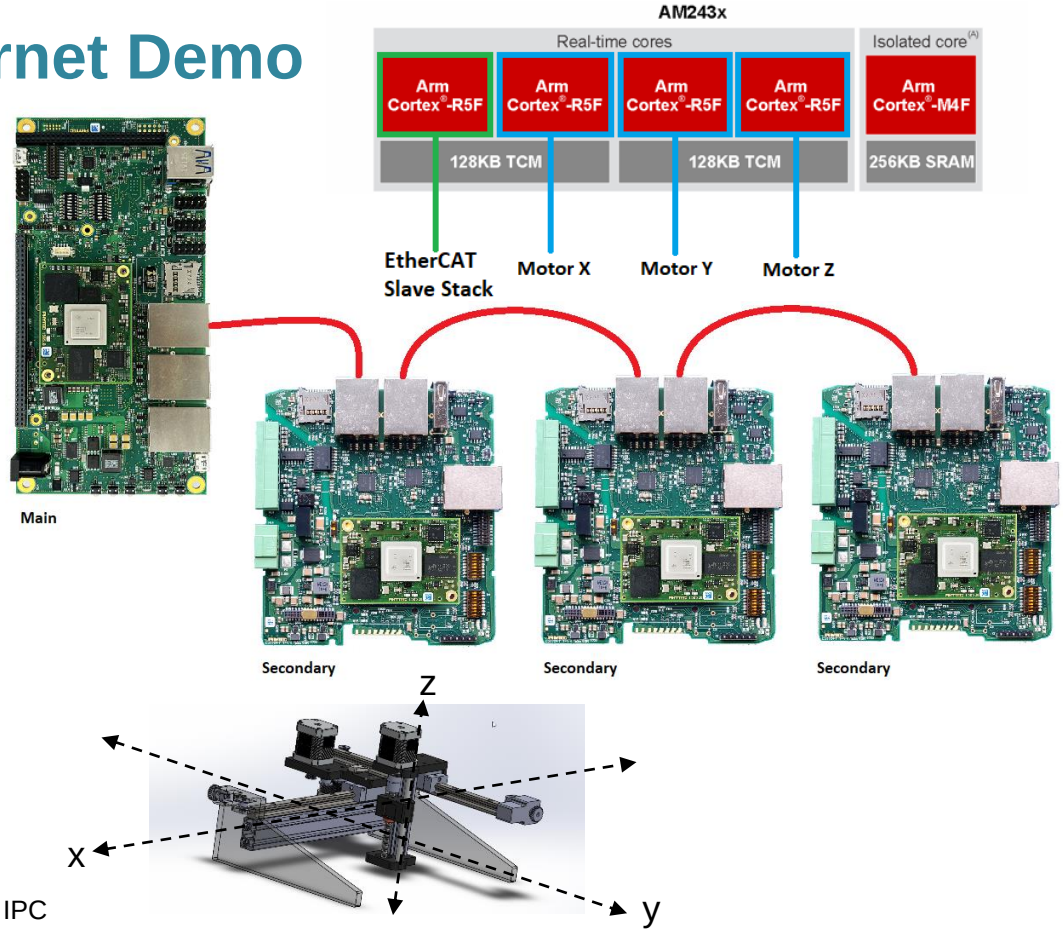
- Daisy Chain Topology (EtherCAT, EtherNET/IP, Profinet)
- Real-time LED control across the secondary devices

PHYTEC Pen Plotter v1

- CNC style pen plotter
- Daisy Chain Topology using EtherCAT
- Secondary devices are controlled/synchronized in real-time by the Main device
- Each secondary device drives its own stepper motor, one for each axis of the pen plotter

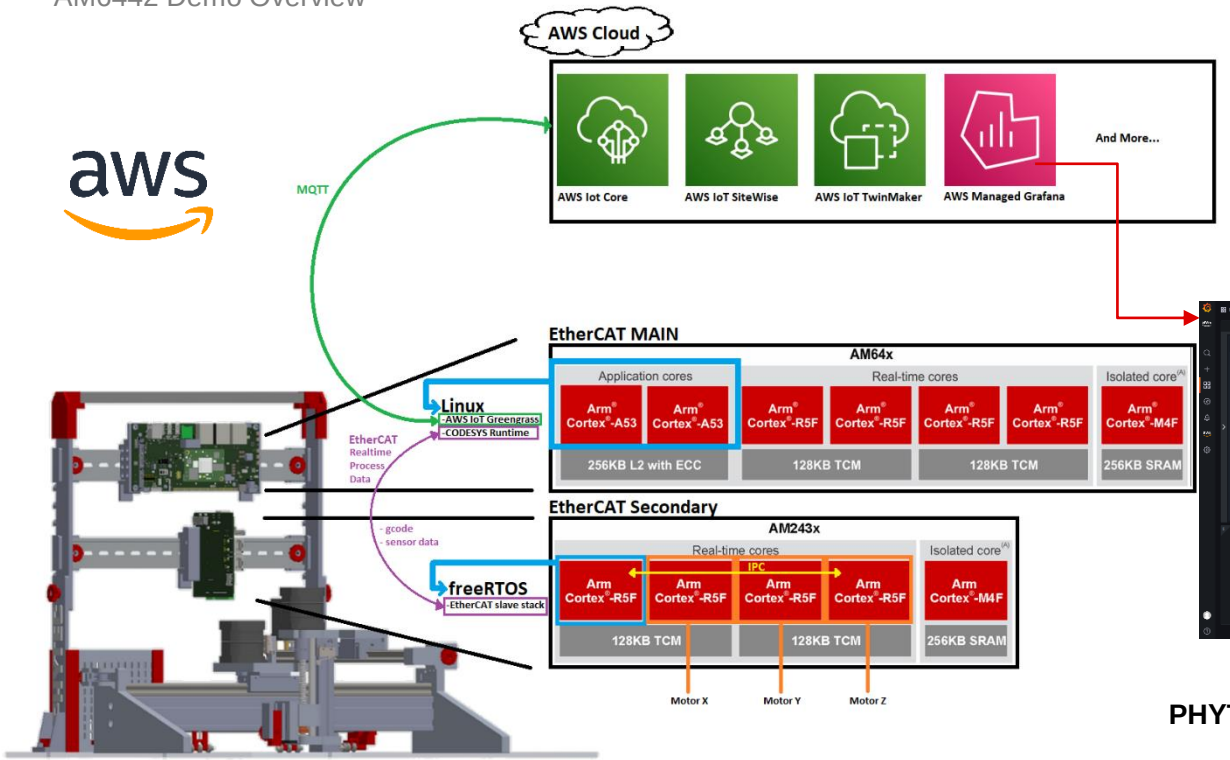
PHYTEC Pen Plotter v2

- CNC style pen plotter
- One-to-one topology using EtherCAT
- Three secondary devices consolidated into one:
  - Each motor driven by independent Cortex-R5F
  - Motors controlled and synchronized in real-time using IPC



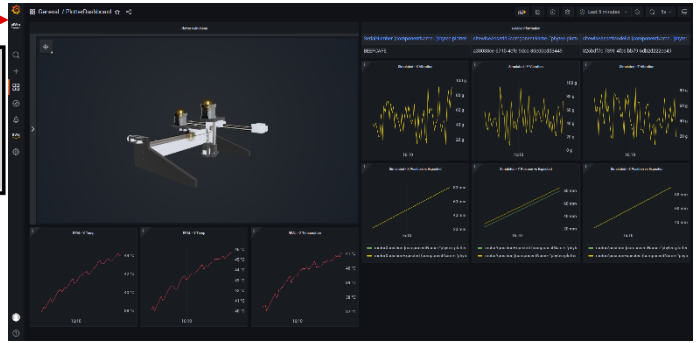
hello (industrial) cloud

AM6442 Demo Overview



By expanding the PHYTEC Pen Plotter with AWS Cloud Services, we can enable

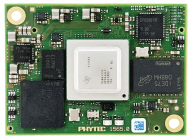
- remote data logging
- generate system/fleet metrics
- optimize preventative maintenance



PHYTEC Pen Plotter v2 + AWS IoT Greengrass

Get Started

Part Numbers and Order Details



System on Module

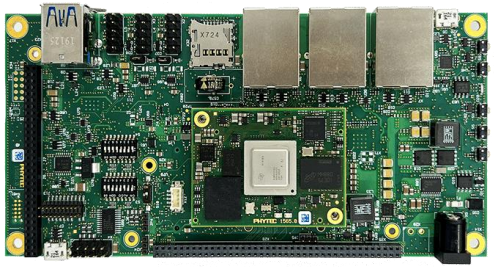
PCM-072.A0

TI AM6442, 1GB RAM, 4GB eMMC, OSPI NOR, Dual Ethernet, 4x PRU-ICSSG, Security Chip, 2x CAN FD, PCIe 2.0,
Industrial Temp -40 to +85 C

Availability:
Production Q3/2022

Learn More:

https://partners.amazonaws.com/devices/a3G8W000000NPnvUAG/phyCORE-AM64x%20Development%20Kit



Dev Kit

KPB-07225

phyCORE-AM64x SOM + phyBOARD-Electra Carrier Board

Micro USB, Ethernet, Power cables

Pre-loaded Linux SD card ALPHA-1

Availability:
ALPHA Program. Join Now
Production Q3/2022

Pinger Board

PBA-C-28.A0

phyCORE-AM24x SOM + phyGATE-AM64x Carrier Board

EtherCAT secondary device: DP83869HMRGZR
Motor Driver: DVR8825PWPR
I2C Temp Sensor: TMP1075DGKR

Pre-loaded freeRTOS SD card PINGER-ETHERCAT-DEMO

Availability:
Reference Schematics available
https://support.phytec.com

Add-ons

Software

FRTOS-BSP-ALPHA SD card

Application instructions
https://develop.phytec.com

AWS IoT Greengrass

Getting Started Guide
http://docs.phytec.com/phycore-am64x/software/UpdateAndDeviceManagement/aws-gg.html