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Middle East & Africa Embedded Systems Market Forecast to 2030 - Regional Analysis - by Component [Hardware (Sensor, Microcontroller, Processors and ASICS, Memory, and Others) and Software], Functionality (Real-Time Embedded Systems, Standalone Embedded Systems, Networked Embedded Systems, and Mobile Embedded Systems), and Application (Automotive, Telecommunication, Healthcare, Industrial, Consumer Electronics, and Others)

https://marketpublishers.com/r/M8AC44B5B9C0EN.html
Date: April 2024
Pages: 106
Price: US$ 3,550.00 (Single User License)
ID: M8AC44B5B9C0EN

Abstracts

The Middle East & Africa embedded systems market was valued at US$ 5,330.24 million in 2022 and is expected to reach US$ 7,161.19 million by 2030; it is estimated to register a CAGR of 3.8% from 2022 to 2030.

Development of AI-based Embedded System Drives Middle East & Africa Embedded Systems Market

An embedded system is an integral part of numerous applications such as vehicles, industrial plants, and household appliances. The use of embedded systems in these applications promotes control, regulation, and information-processing tasks. Many companies have adopted embedded systems in their products, such as sports wearables, smart speakers, digital solutions in retail, and condition monitoring for industrial machines.

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Artificial intelligence (AI) is transforming the way embedded systems operate, especially in the development of autonomous vehicles. AI has become vital in the development of embedded systems. AI allows systems to handle complex tasks such as image processing, speech recognition, and identification and response to specific situations. Incorporating AI into embedded systems helps businesses to streamline operations and automate tasks. AI-based systems can recognize, think, and make decisions autonomously. For instance, companies such as Nanoprecise and PTC are working to implement AI-predictive maintenance to prevent asset failures and unplanned downtime in manufacturing and production sectors. AI is used to develop predictive maintenance models for industrial equipment. It analyzes data from sensors in the equipment to support the model to predict maintenance requirements, which allows businesses to schedule maintenance before a breakdown occurs. This saves time and money for businesses by preventing costly downtime. Moreover, many institutions are working on developing AI-enabled embedded systems to streamline industrial operations by reducing additional costs. This enables AI applications to be capable of operating independently of a cloud server, thus making the system energy-efficient and safeguarding control of data. These benefits allow companies to use AI-based embedded systems in various applications.

In March 2023, The Fraunhofer Institute for Microelectronic Circuits and Systems IMS announced the showcase of its AIfES solution integrated with the AIRISC family of embedded RISC-V processors. This helps the institute offer secure and efficient embedded AI hardware for sensor applications that are further implemented on customer-specific extensions. The embedded AI hardware provides optimal performance for special applications. However, several benefits provided by AI-based embedded systems, such as the capability of handling complex tasks, real-time data processing, understanding natural languages, and image recognition, are anticipated to boost the market growth.

Middle East & Africa Embedded Systems Market Overview

The market in the Middle East & Africa is segmented into South Africa, Saudi Arabia, the UAE, and the Rest of Middle East & Africa. The embedded system market in the Middle East & Africa is gaining traction. There is an increase in the adoption of embedded systems in an extensive range of industries, including automotive, consumer electronics, healthcare, and industrial automation. Additionally, the market is also driven by the increasing demand for smart and connected devices and the growing adoption of the Internet of Things (IoT).

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Geographically, the embedded system market in the Middle East & Africa is segmented into South Africa, Saudi Arabia, the UAE, and the Rest of Middle East & Africa. The demand for cars among consumers is increasing in the Middle East, especially in Saudi Arabia and Dubai, which creates opportunities for embedded system market players to streamline business operations. Dubai is perceived as an automotive hub for exports and re-exports of vehicles. The demand for luxury cars is growing in Dubai, which increases the demand for embedded systems among luxury car manufacturers. The system helps control pollution, provides accurate monitoring features such as tyres pressure monitoring, and ensures various automatic safety features such as airbags, anti-lock braking systems, seat belts, and self-parking cars. The government of Dubai estimated that the city will have 18 million cars and 9 million commercial vehicles by the end of 2023, respectively. The rising demand for cars and commercial vehicles increases the adoption of embedded systems among automotive manufacturers, fueling the market.

The market in North Africa is projected to grow in the near future due to the growing agricultural activities. Embedded system offers significant benefits to precise and smart agriculture, which is expected to drive the market. For instance, as per the GSM Association Report 2021, smart agriculture activities have the potential to reduce the ecological footprint of farming and reduce costs by increasing agricultural productivity in the countries of North Africa. The government of Morocco is prioritizing smart farming by launching its "Green Generation 2020-2030" strategy, which includes the introduction of new technologies, precise and smart farming, and digitalization in the agricultural sector. The use of embedded systems in precision agriculture helps farmers to collect and analyze data on various aspects of agriculture, such as soil moisture, nutrient levels, and temperature. This data is further used to make informed decisions on fertilization, irrigation, and other critical aspects. However, significant benefits offered by the embedded system to increase yield productivity are driving the market.

Middle East & Africa Embedded Systems Market Revenue and Forecast to 2030 (US$ Million)

Middle East & Africa Embedded Systems Market Segmentation

The Middle East & Africa embedded systems market is segmented based on component, functionality, application, and country.

Based on component, the Middle East & Africa embedded systems market is bifurcated into hardware and software. The hardware segment held a larger Middle East & Africa

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embedded systems market share in 2022.

In terms of functionality, the Middle East & Africa embedded systems market is segmented into real-time embedded systems, standalone embedded systems, networked embedded systems, and mobile embedded systems. The mobile embedded systems segment held the largest Middle East & Africa embedded systems market share in 2022.

By applications, the Middle East & Africa embedded systems market is segmented into automotive, telecommunication, healthcare, industrial, consumer electronics, and others. The consumer electronics segment held the largest Middle East & Africa embedded systems market share in 2022.

Based on country, the Middle East & Africa embedded systems market is categorized into the UAE, South Africa, Saudi Arabia, and the Rest of Middle East & Africa. The UAE dominated the Middle East & Africa embedded systems market in 2022.

Advantech Co Ltd, Infineon Technologies AG, Intel Corp, Marvell Technology Inc, NXP Semiconductors NV, Qualcomm Inc, Renesas Electronics Corp, STMicroelectronics NV, and Texas Instruments Inc are some of the leading companies operating in the Middle East & Africa embedded systems market.

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