

How to Select the Right Microcontrollers for an Application

# DAY 1: The Microcontroller Industry Today

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## THE SPEAKER



# Jacob Beningo

Visit 'Lecturer Profile'

## Beningo Embedded Group - President

Focus: Embedded Software Consulting

An independent consultant who specializes in the design of real-time, microcontroller based embedded software.

He has published two books:

- [Reusable Firmware Development](#)
- [MicroPython Projects](#)
- [Embedded Software Design \(https://bit.ly/3PZCtNO\)](https://bit.ly/3PZCtNO)

Writes a weekly blog for DesignNews.com focused on embedded system design techniques and challenges.

Visit [www.beningo.com](http://www.beningo.com) to learn more ...

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# Course Sessions

- **The Microcontroller Industry Today**
- MCU Selection Criteria
- The Modern MCU Selection Process
- Microcontroller Selection Use Cases
- Microcontroller Selection Best Practices

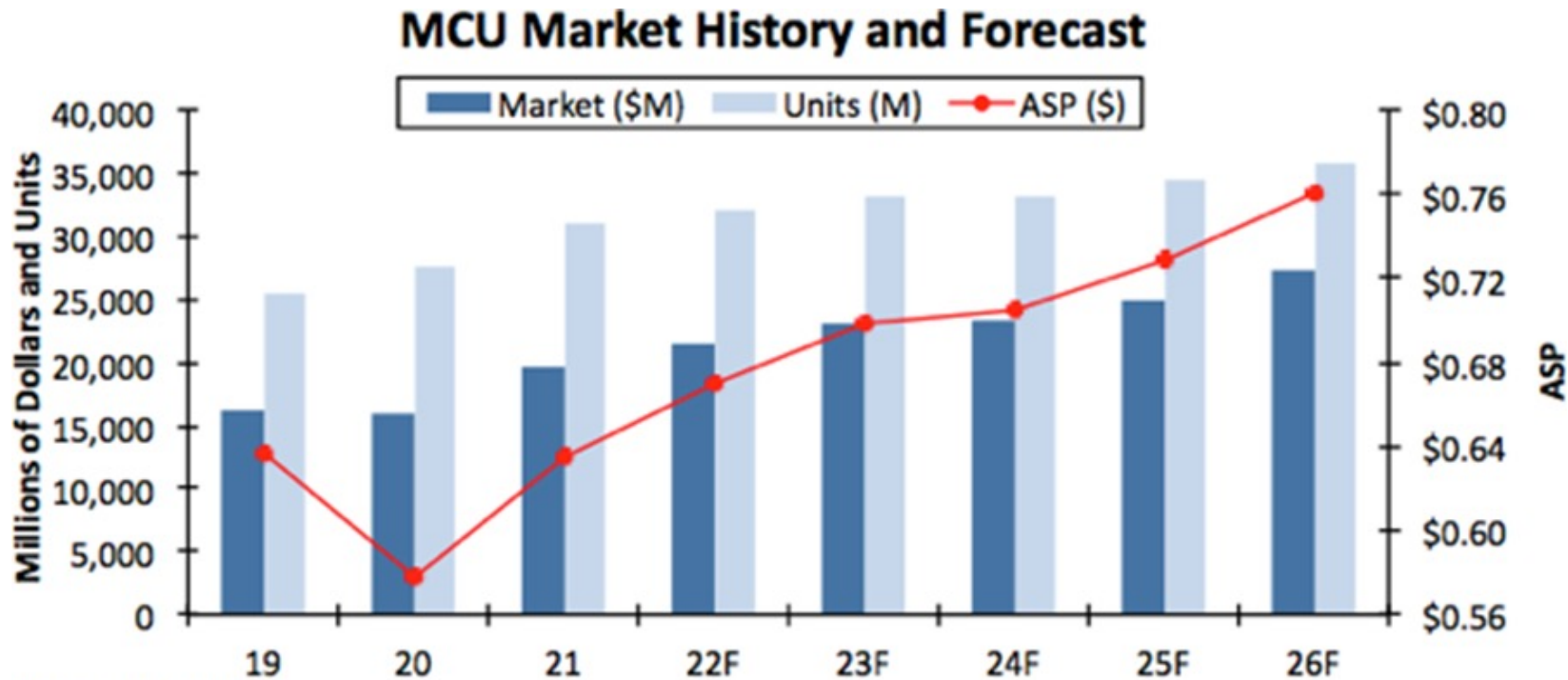
1

# The Microcontroller Industry Today

Where does the industry stand today?



# Market History and Forecast



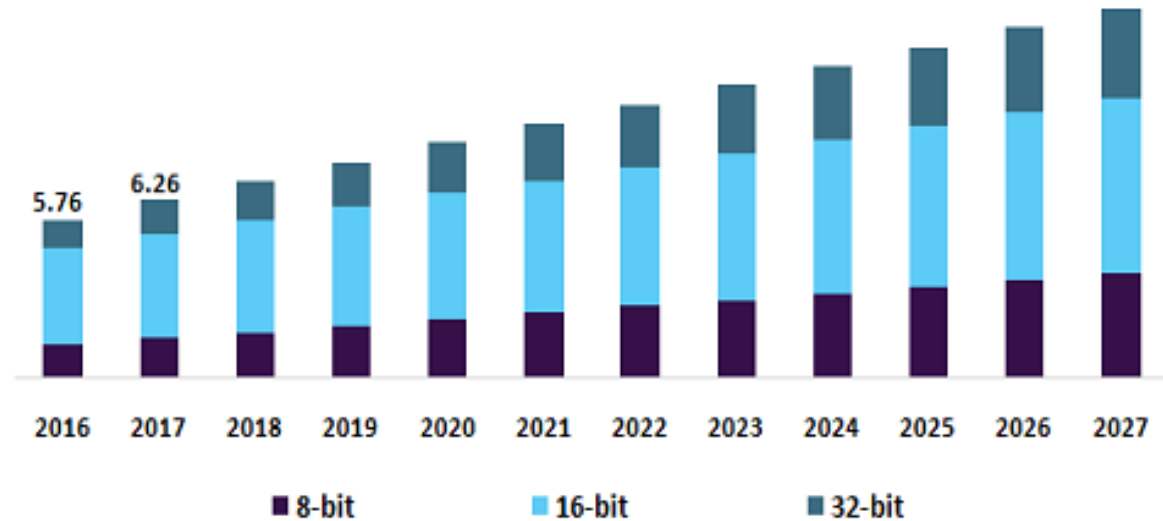
Source: IC Insights

Image Source: IC Insights

# 8-bit, 16-bit, 32-bit Microcontrollers

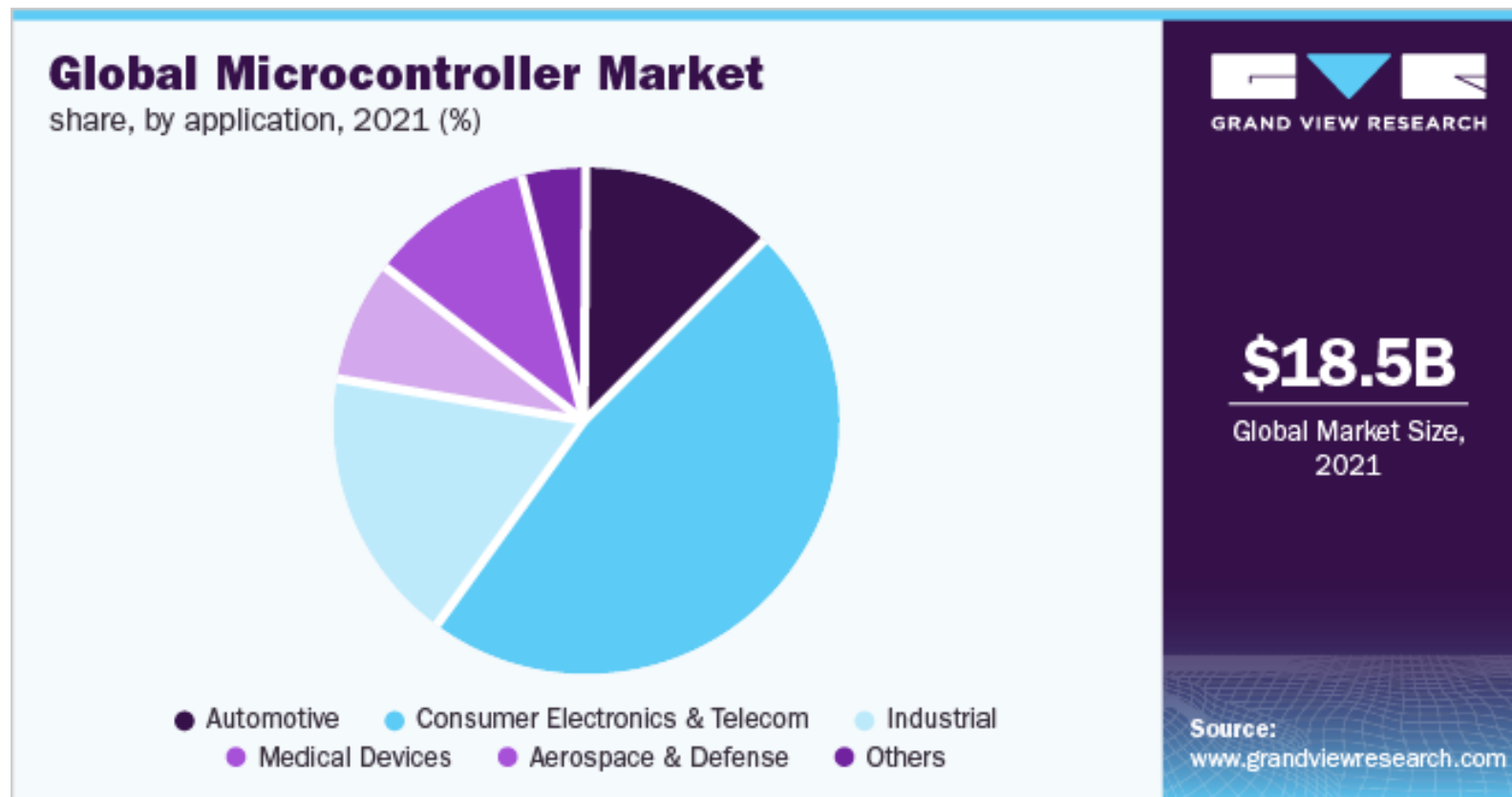
- 2021 – 18.5 Billion USD
- 2021 – 29 Billion units sold
- CAGR: 9.8 – 10.8% through 2030

North America microcontroller market size, by product, 2016 - 2027 (USD Billion)



source: <https://www.millioninsights.com/industry-reports/microcontroller-market>

# Where are microcontrollers used?





# Which microcontroller class do you use the most?

- 1) 8-bit microcontrollers
- 2) 16-bit microcontrollers
- 3) 32-bit microcontrollers
- 4) Other

2

# Hardware Architectures

What dominates the industry?

# What Microcontrollers are available today?

Product Index > Integrated Circuits (ICs) > Embedded - Microcontrollers

## Embedded - Microcontrollers

Results: 59,132

Search Within Results

Manufacturer

Adafruit Industries LLC	-
Advanced Micro Devices	*
Analog Devices Inc.	568xx
Analog Devices Inc./Maxim Integrated	56F800
Arduino	56F801
Atmel	56F836
Bridgetek Pte Ltd.	56F837
Broadcom Limited	56F8xx
Burr Brown	56F8xx
Cypress Semiconductor Corp	73S12x

All Results for "microcontroller" (48,383)

microcontroller

☐ In Stock ☐ Active ☐ RoHS Compliant

☐ Normally Stocked ☐ New Products

Select a category below to see filtering options and narrow down your search.

**Semiconductors >**

Sort Order: ☒ Result Count ☐ Alphabetical

- 8-bit Microcontrollers - MCU (13,928)
- ARM Microcontrollers - MCU (12,335)
- 16-bit Microcontrollers - MCU (9,572)
- 32-bit Microcontrollers - MCU (8,477)
- RF Microcontrollers - MCU (829)

# Microcontroller Vendors

**Manufacturer**

cms-search-filter

Adafruit Industries LLC  
Advanced Micro Devices  
AMD  
Analog Devices Inc.  
Analog Devices Inc./Maxim Integrated  
Arduino  
Atmel  
Bridgetek Pte Ltd.  
Broadcom Limited

**Manufacturer**

cms-search-filter

Burr Brown  
CTR Electronics  
Cypress Semiconductor Corp  
Dallas Semiconductor  
Digi  
EM Microelectronic  
Epson Electronics America Inc-Semiconduc...  
Fairchild Semiconductor  
Freescale Semiconductor

**Manufacturer**

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Freescale Semiconductor - NXP  
Harris Corporation  
Himax  
Honeywell Aerospace  
IBM  
Infineon Technologies  
Intel  
Intersil  
Kaga FEI America, Inc.

**Manufacturer**

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Lantiq  
Luminary Micro  
Lumissil Microsystems  
Microchip Technology  
Motorola  
National Semiconductor  
Nexperia USA Inc.  
Numonyx  
Nuvoton Technology Corporation of America

**Manufacturer**

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NXP Semiconductors  
NXP USA Inc.  
onsemi  
Panasonic Electronic Components  
Parallax Inc.  
Pericom  
Raspberry Pi  
Renesas  
Renesas Electronics America Inc

**Manufacturer**

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Rochester Electronics, LLC  
Rohm Semiconductor  
Sanyo  
Sharp Microelectronics  
SHARP/Socle Technology  
Siemens  
Silicon Labs  
SMSC  
Spansion

**Manufacturer**

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Spansion  
SparkFun Electronics  
STMicroelectronics  
Texas Instruments  
Toshiba Semiconductor and Storage  
Triscend  
WIZnet  
XMOS  
Zilog

62 vendors

# Most Popular Architectures



<https://www.digitaltrends.com/computing/arm-vs-risc-v/>





What microcontroller core architecture do you use the most?

- Arm
- RISC-V
- Other

3

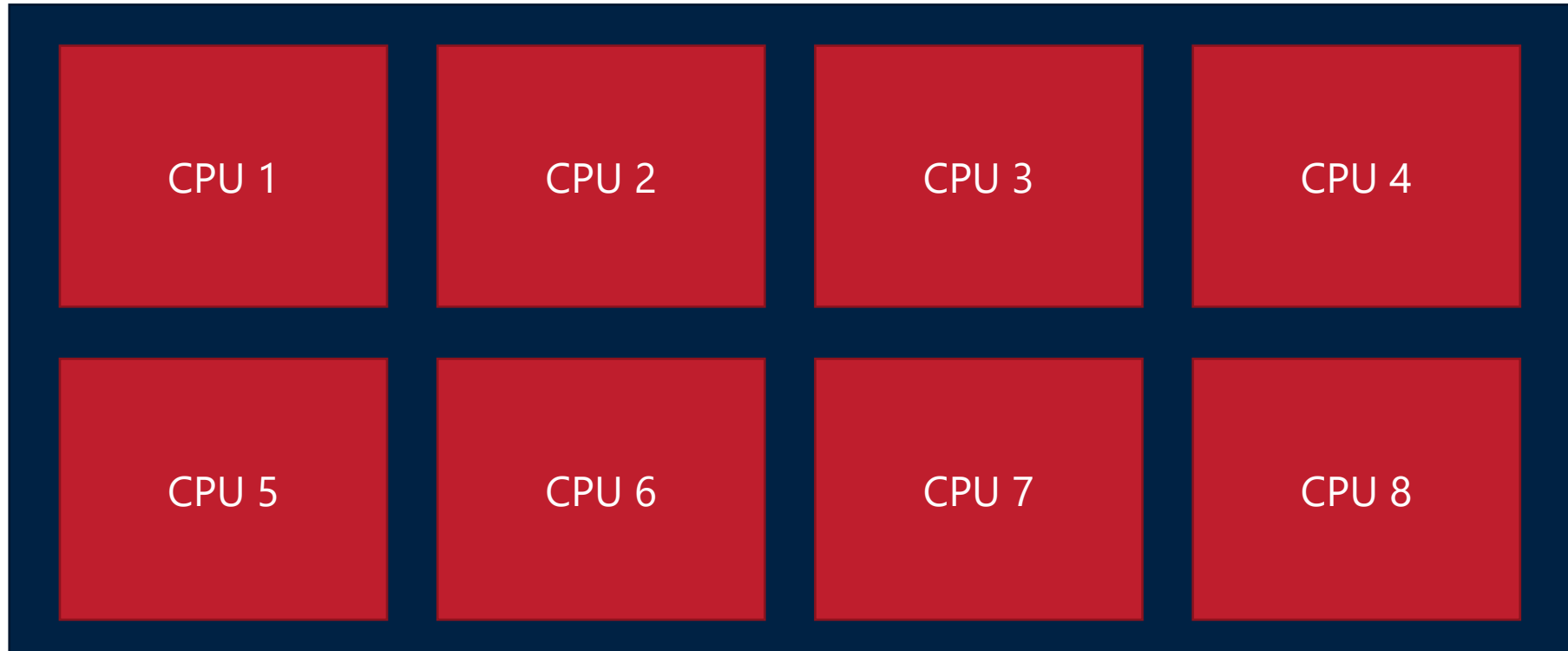
# Microcontroller Future

Where is the industry going?

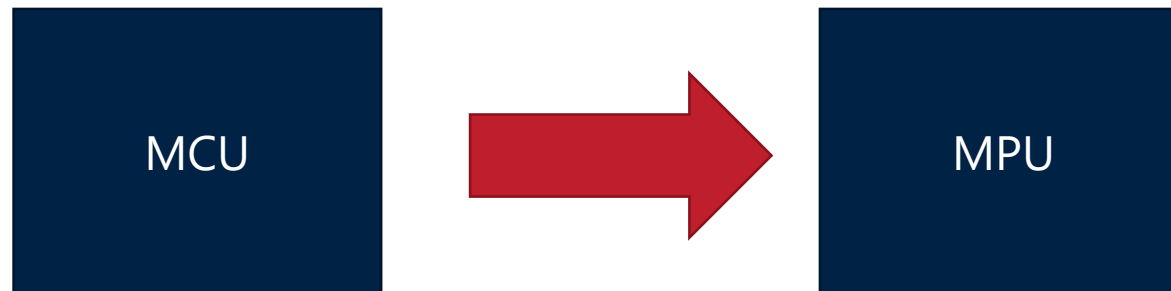
# Multicore Microcontrollers



# Cores Everywhere!



# Too Powerful and Generalized?





What is your experience with multicore microcontrollers?

- Have not used one
- Dev board experimentation
- Launched or am launching a product with one
- DIY Project

# What Microcontroller is right for you?



# 4 Going Further

# Thank you for attending

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- [www.beningo.com](http://www.beningo.com)
  - Blog, White Papers, Courses
  - Embedded Bytes Newsletter
    - <http://bit.ly/1BAHYXm>
  - Embedded Software Design
    - <https://bit.ly/3PZCtNO>



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- Blog > CEC – How to Select the Right Microcontroller for an Application





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