

Robotics & Automation Market Developments in North America

Alex Shikany
Vice President
Membership & Business Intelligence
Association for Advancing Automation (A3)

5/31/2022



HISTORIC LEVELS



ADOPTION

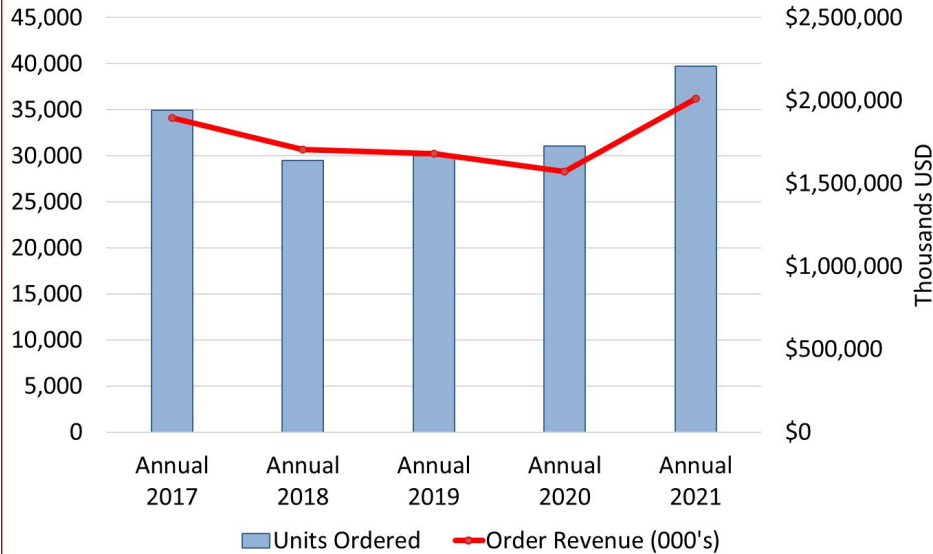
CONVERGENCE



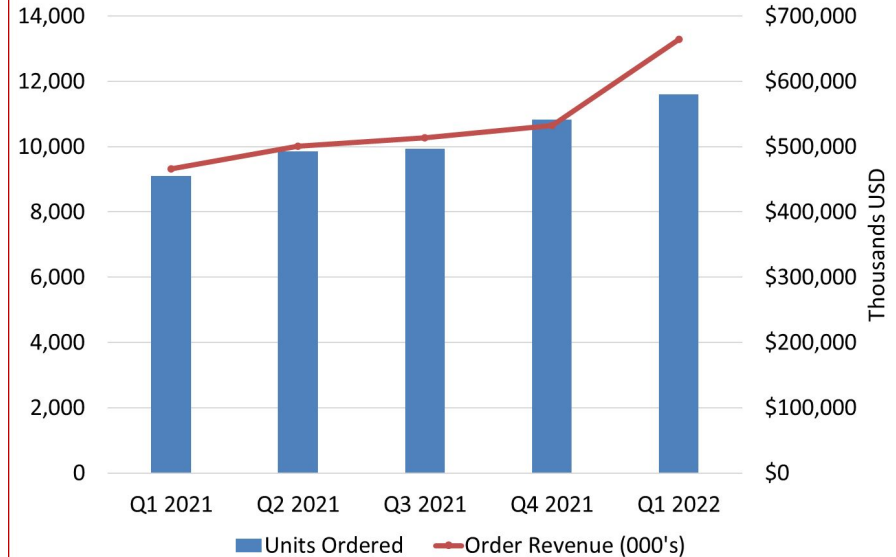
ASSOCIATION FOR
ADVANCING AUTOMATION

N.A. Robot Orders

Annual Order Summary (North America)

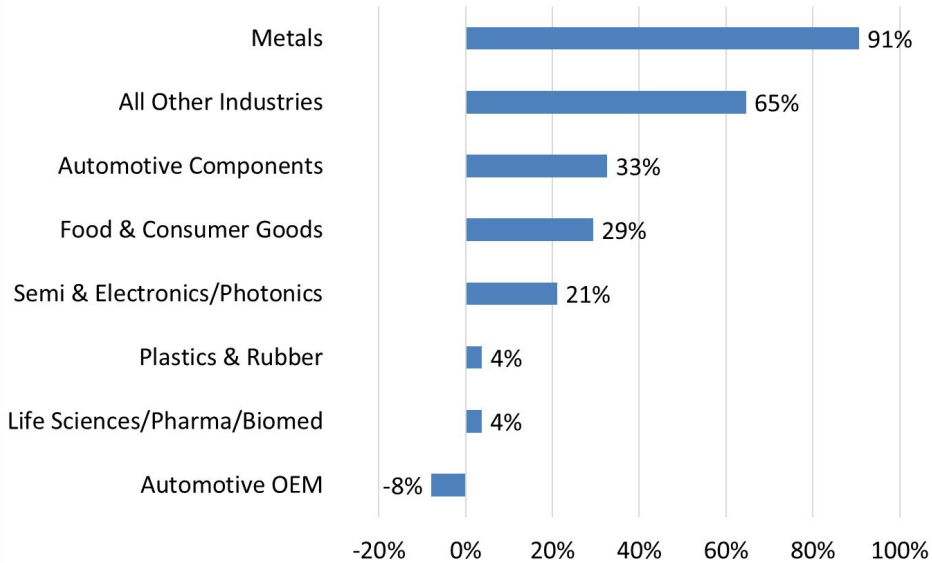


Quarterly Order Summary (North America)

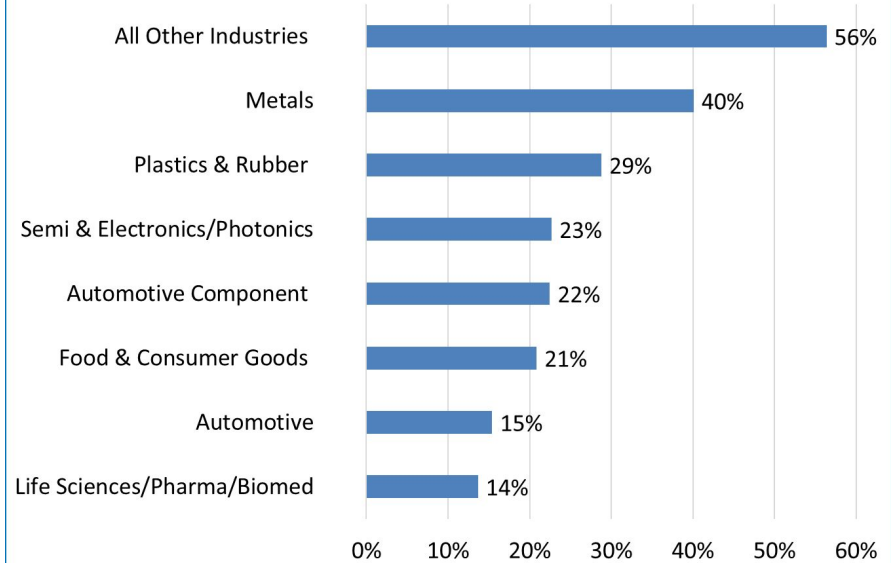


N.A. Robot Orders - Industries

Annual 2021 Order Growth (Units, YoY)

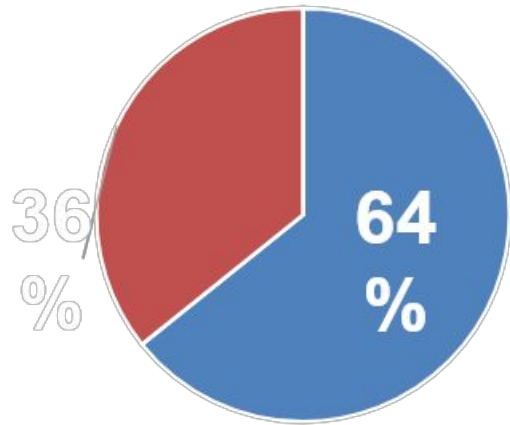


1Q 2022 Robot Order Growth (Units, NA, YoY)



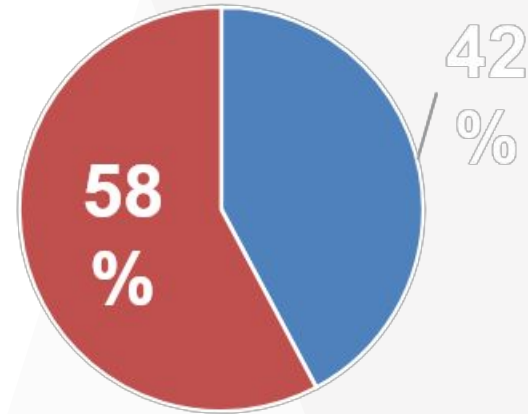
Historical Shift in Robot Adoption

2011



■ Auto ■ Non-Auto

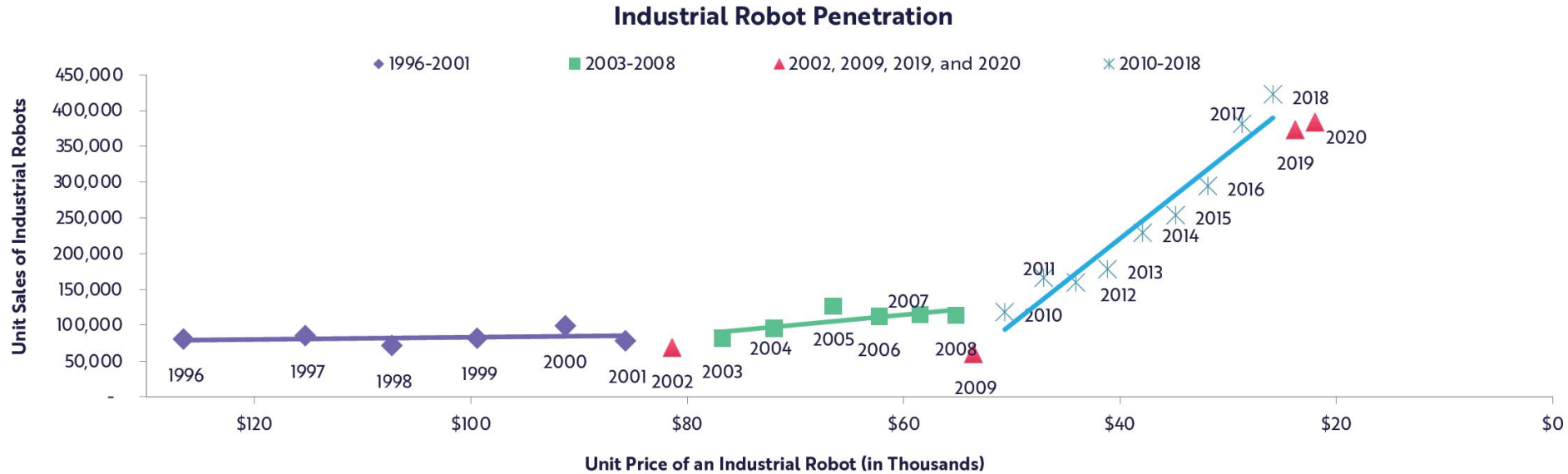
2021



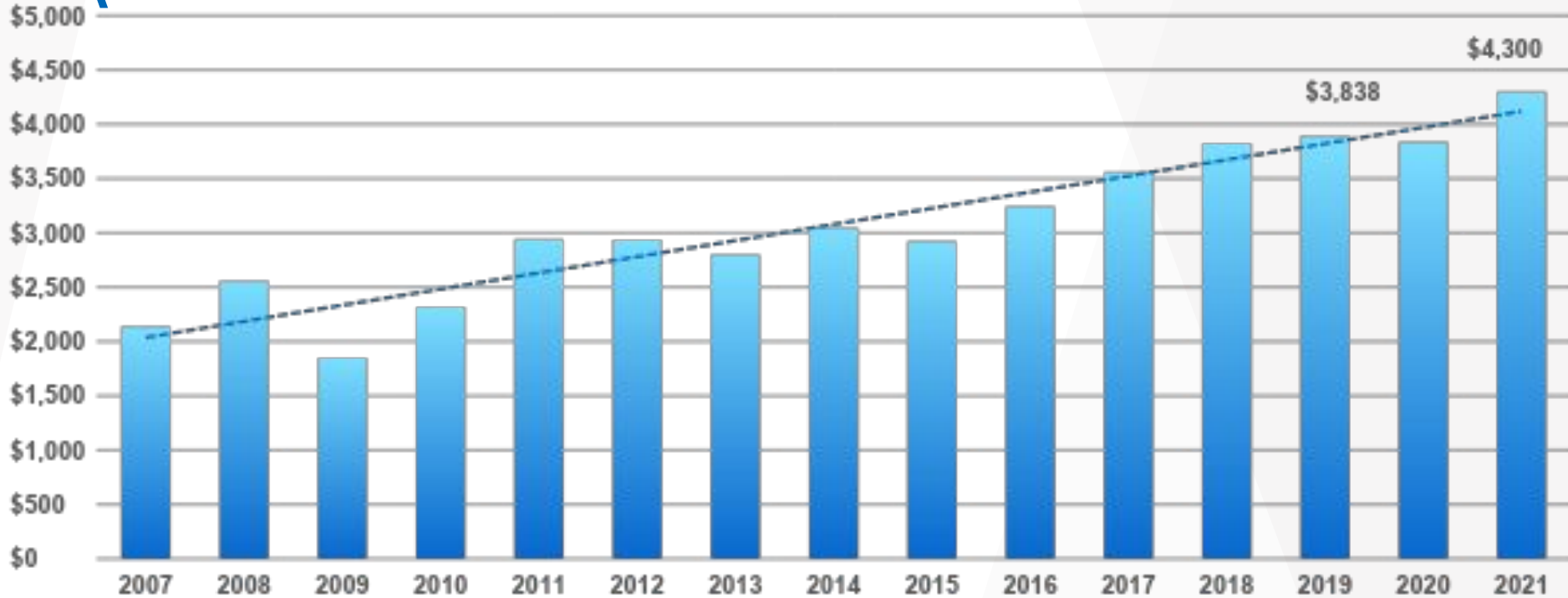
■ Auto ■ Non-Auto

Non-Auto Includes:
Food & Consumer Goods
Plastics & Rubber
Life Sciences
Electronics
Metals
All Other Industries

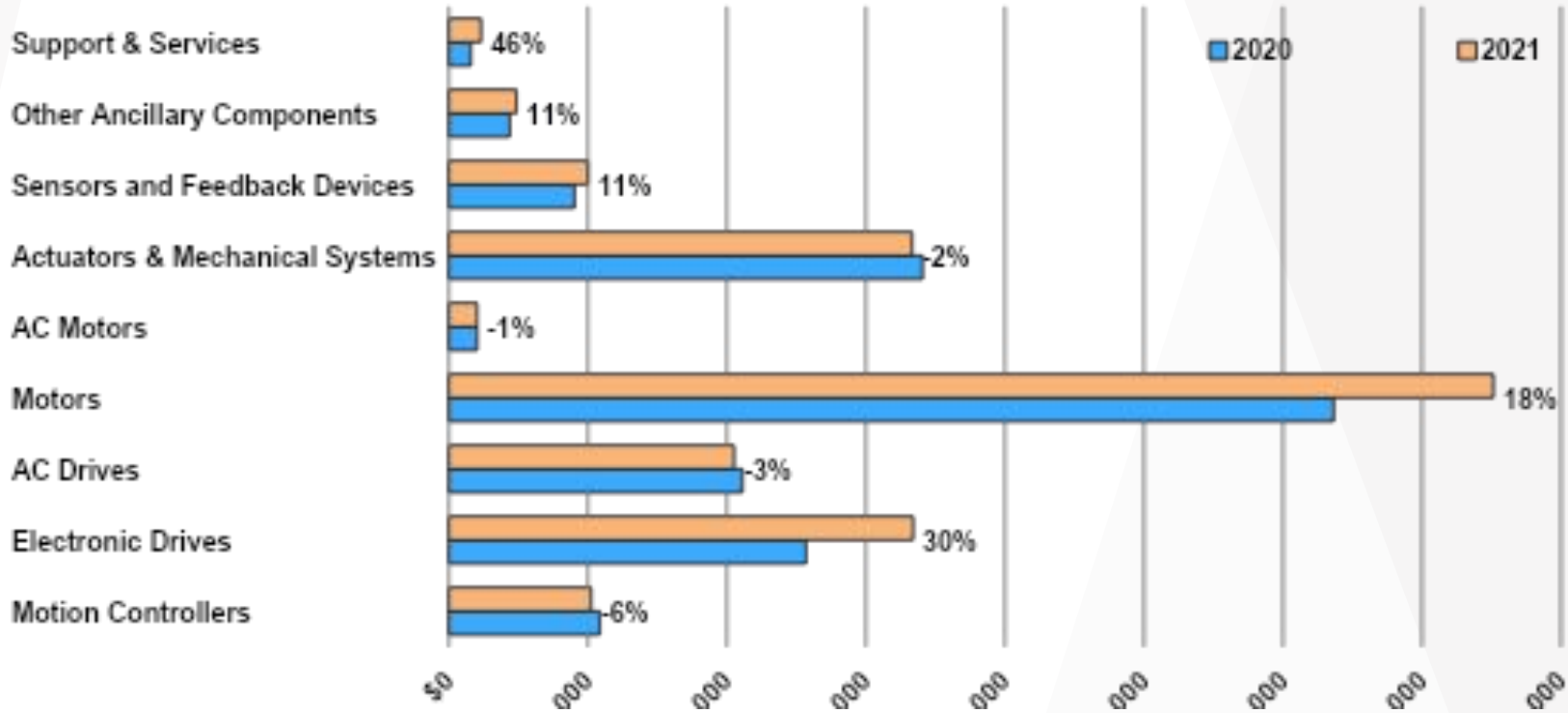
Industrial Robot Penetration



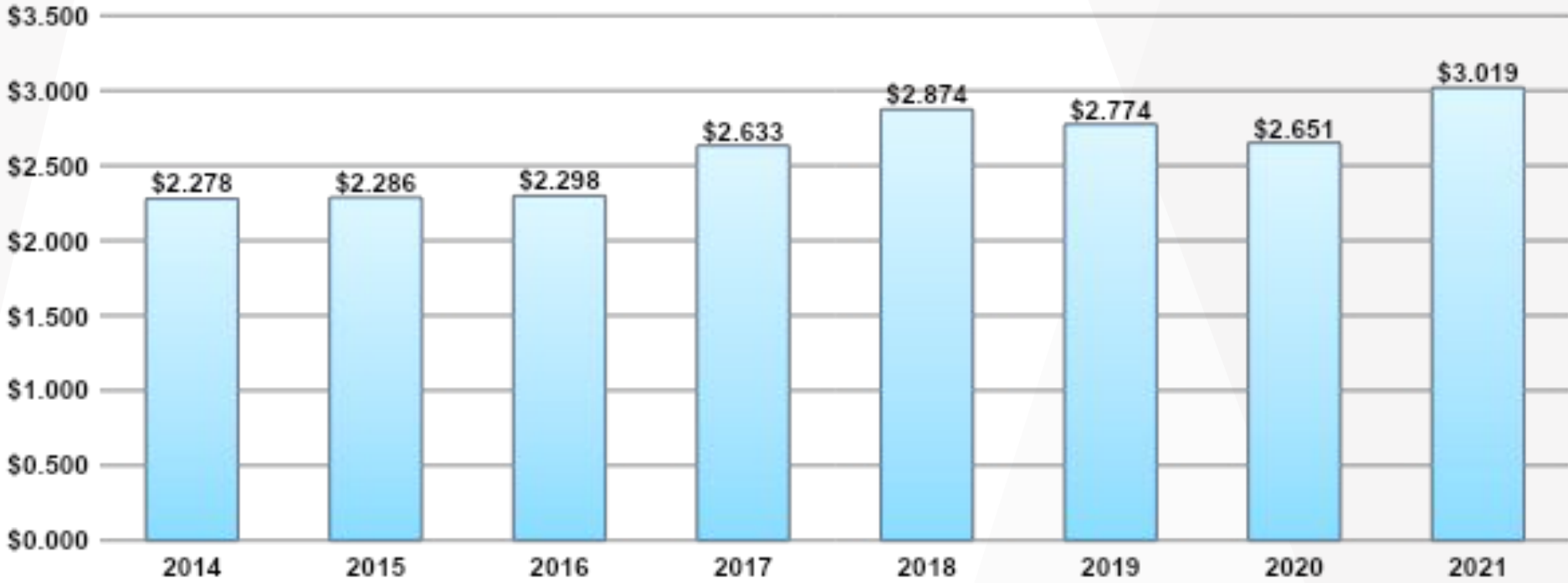
Motion Control Market Growth



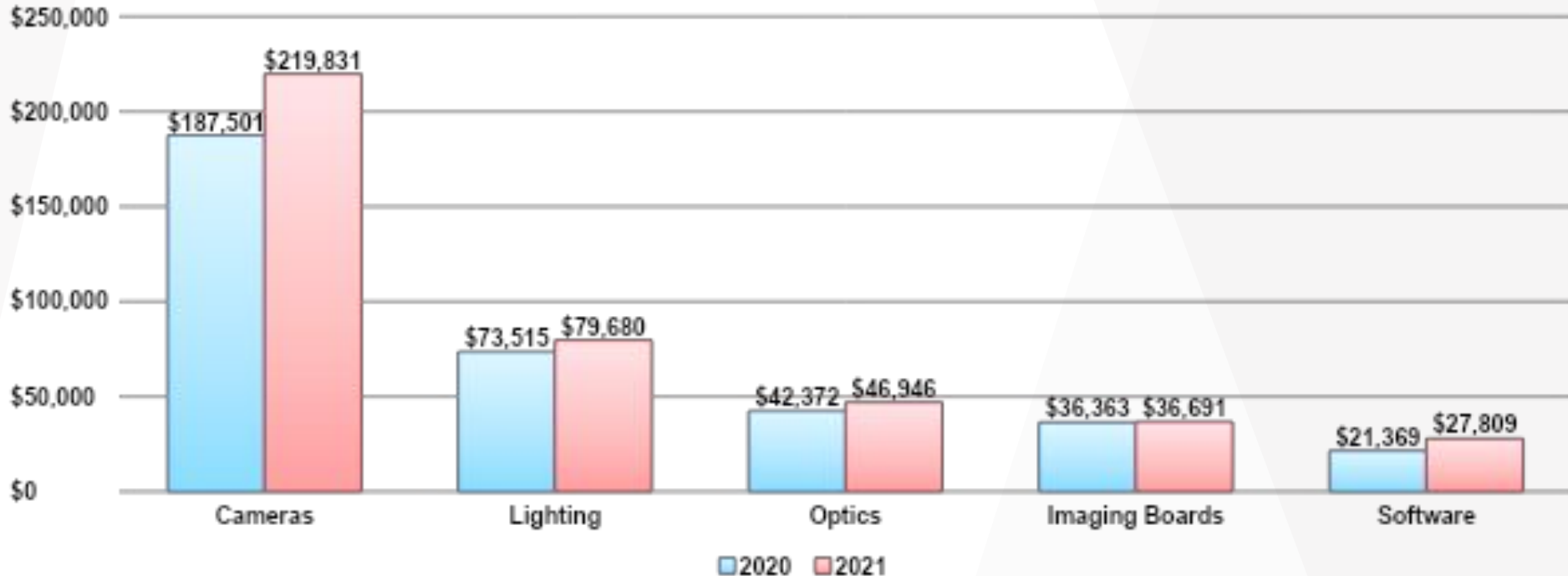
Motion Control Market Growth



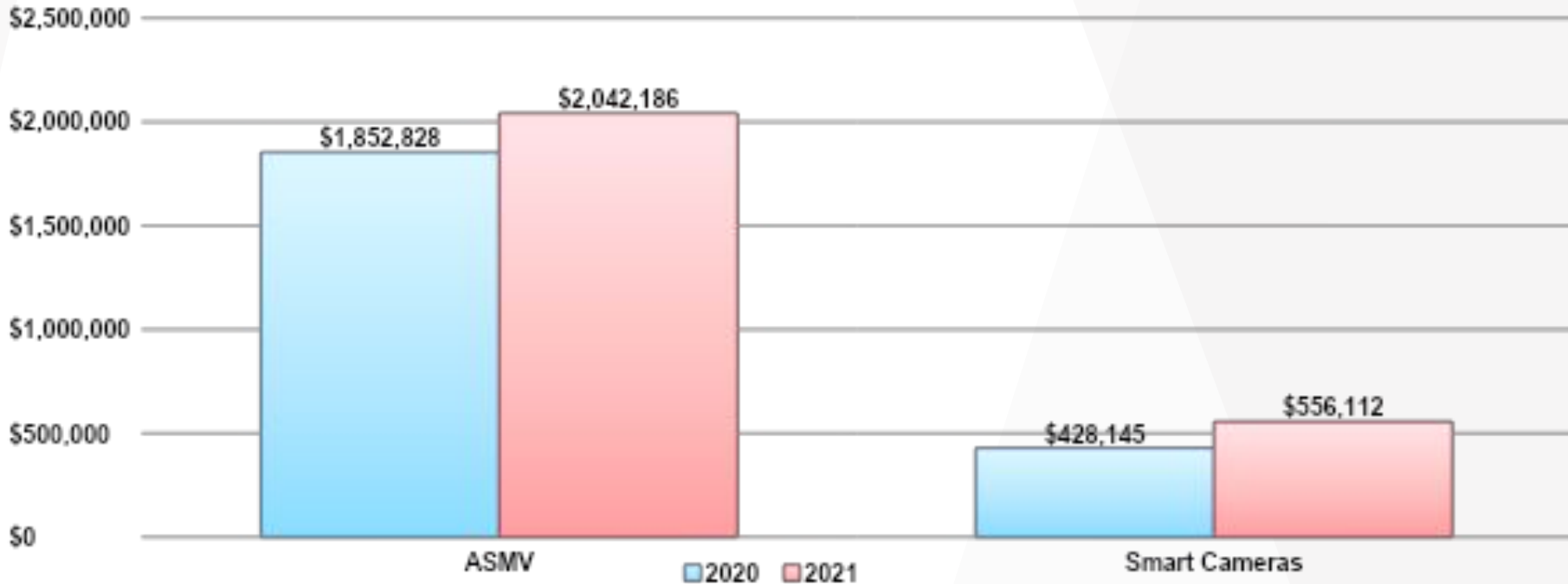
Machine Vision Market (N.A.)



Machine Vision Components (N.A.)



Machine Vision Systems (N.A.)



NA Machine Vision Market Sentiment

Markets	4th Quarter 2021		
	(Oct - Dec 31)		
	UP	DOWN	FLAT
MACHINE VISION COMPONENTS			
Cameras	23%	10%	67%
Lighting	66%	14%	20%
Optics	38%	2%	59%
Imaging Boards	56%	33%	12%
Software	87%	4%	9%
Total Machine Vision Components	39%	11%	50%
MACHINE VISION SYSTEMS			
ASMV Systems	29%	8%	63%
Smart Cameras	31%	17%	52%
Total Machine Vision Systems	29%	10%	60%
OTHER MV (Includes Integrator, Distributor and Sales not Identifiable by Market)			
Total Other Machine Vision Sales	41%	7%	52%
TOTAL MACHINE VISION FINANCIAL TRANSACTIONS			
Total Components + Total MV Systems + Other MV	31%	10%	59%

- **Manufacturers' expectations for directionality of sales over the next six months (two quarters).**
- **As of February 1, 2022**

**AUTOMATION
INNOVATION**

**APPLICATIONS ARE
RAPIDLY EXPANDING**

New Industries are Adopting Robots

WAREHOUSING



AGRICULTURE



CONSTRUCTION



Why So Many New Applications?



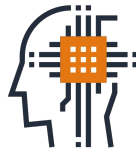
EV's & Mobility



Embedded Vision



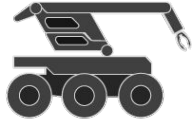
Manipulation



AI/ML



Why So Many New Applications?



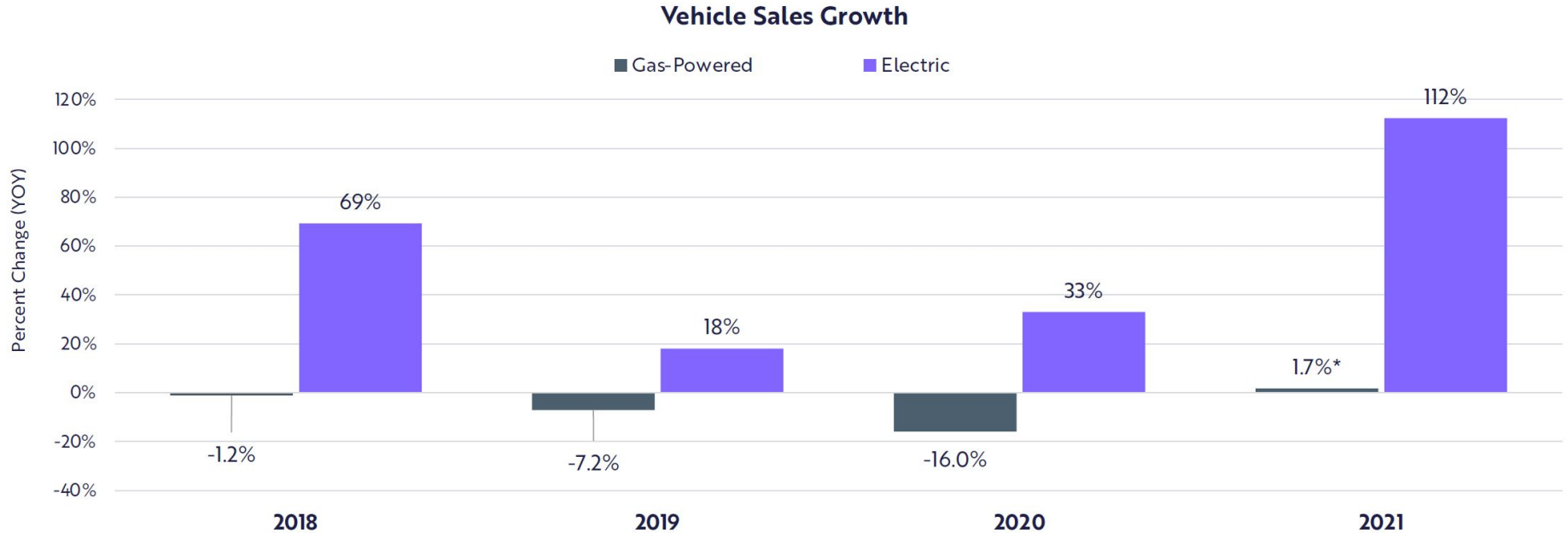
EV's & Mobility



AI / ML



EV Market Is Growing Quickly



Sources: ARK Investment Management LLC, Data from: "EV Data Center." EV, <https://www.ev-volumes.com/datacenter/>, Automotive Industry Outlook. <https://www.cargroup.org/wp-content/uploads/2019/02/Wall.pdf>

GM

GM announces \$7 billion in Michigan EV, battery investment



Kalea Hall

The Detroit News

Published 11:00 a.m. ET Jan. 25, 2022 | Updated 8:34 p.m. ET Jan. 25, 2022

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General Motors Co. confirmed Tuesday it will invest nearly \$7 billion for electric vehicle and battery production at four Michigan sites, creating 4,000 new jobs and retaining 1,000.

The Detroit automaker is announcing the single largest investment in its history in Lansing alongside Michigan Gov. Gretchen Whitmer after the state's Michigan Strategic Fund Board approved \$824.1 million in incentives for the projects Tuesday morning.

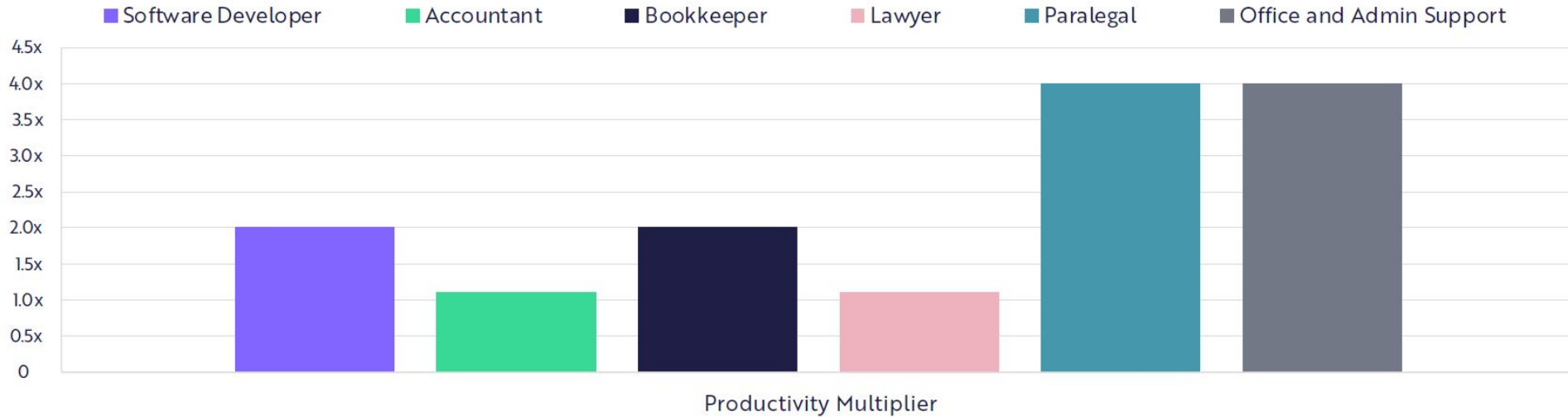
Source: Detroit News

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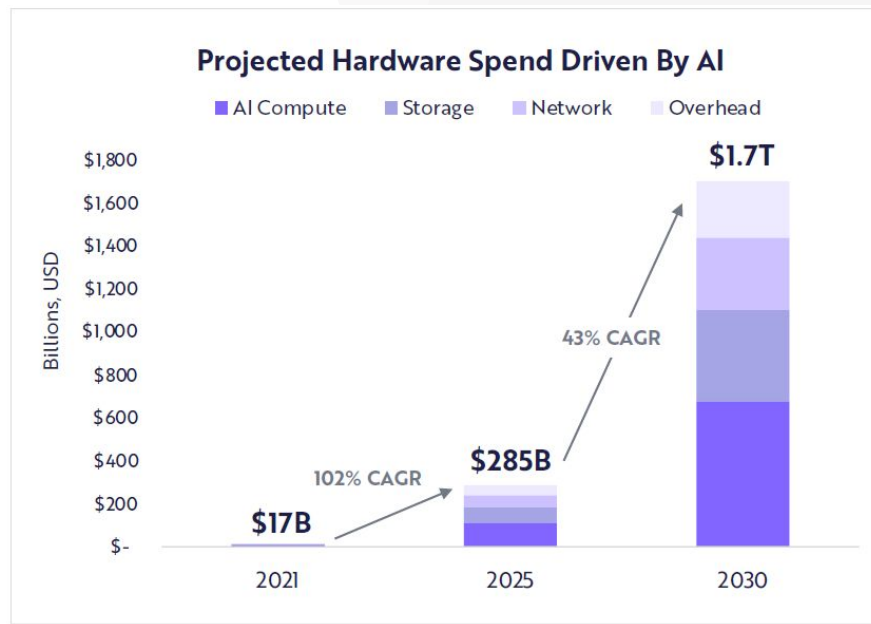
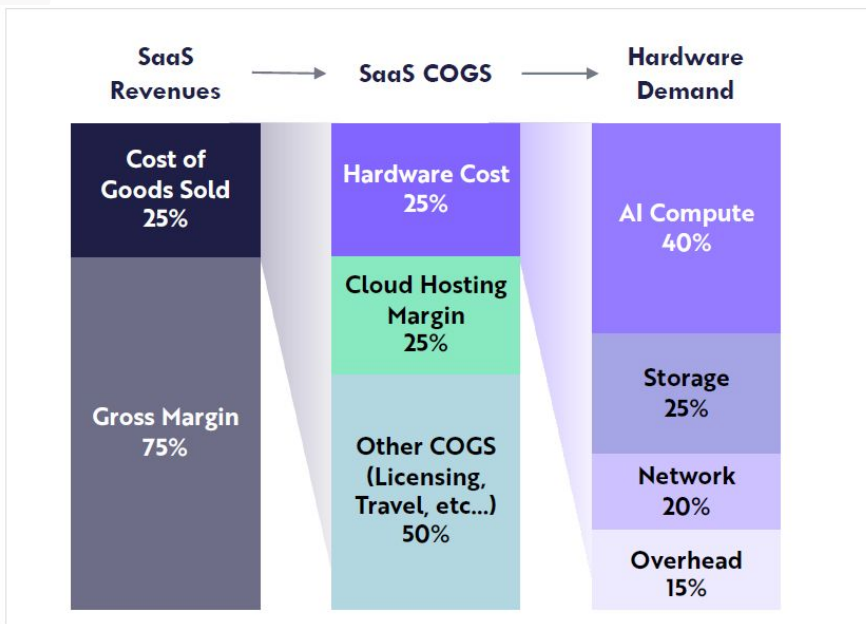
AI Will Impact More than Just Machines

Output of AI-Assisted Knowledge Workers 2021 to 2030



Sources: ARK Investment Management LLC, 2021 based on data sourced from the US Bureau of Labor Statistics. "Occupational Employment and Wage Statistics." www.bls.gov/oes/current/oes_stru.htm, and McKinsey Global Institute. "A Future That Works: Automation, Employment, and Productivity." [mckinsey.com/~/media/mckinsey/featured%20insights/digital%20disruption/harnessing%20automation%20for%20a%20future%20that%20works/mgi-a-future-that-works_full-report.pdf](https://www.mckinsey.com/~/media/mckinsey/featured%20insights/digital%20disruption/harnessing%20automation%20for%20a%20future%20that%20works/mgi-a-future-that-works_full-report.pdf)

AI Software Should Boost Demand For AI Hardware

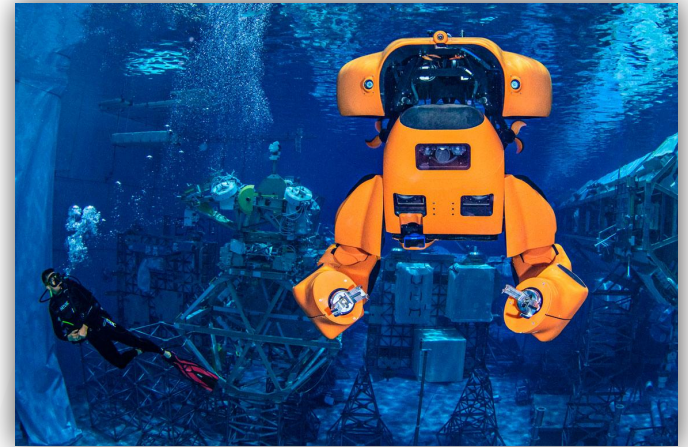
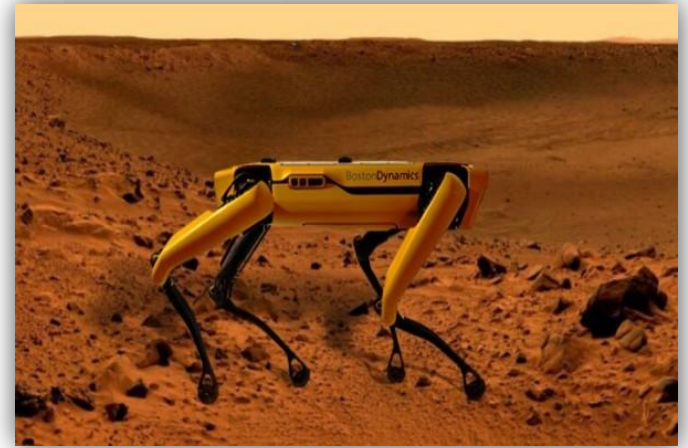
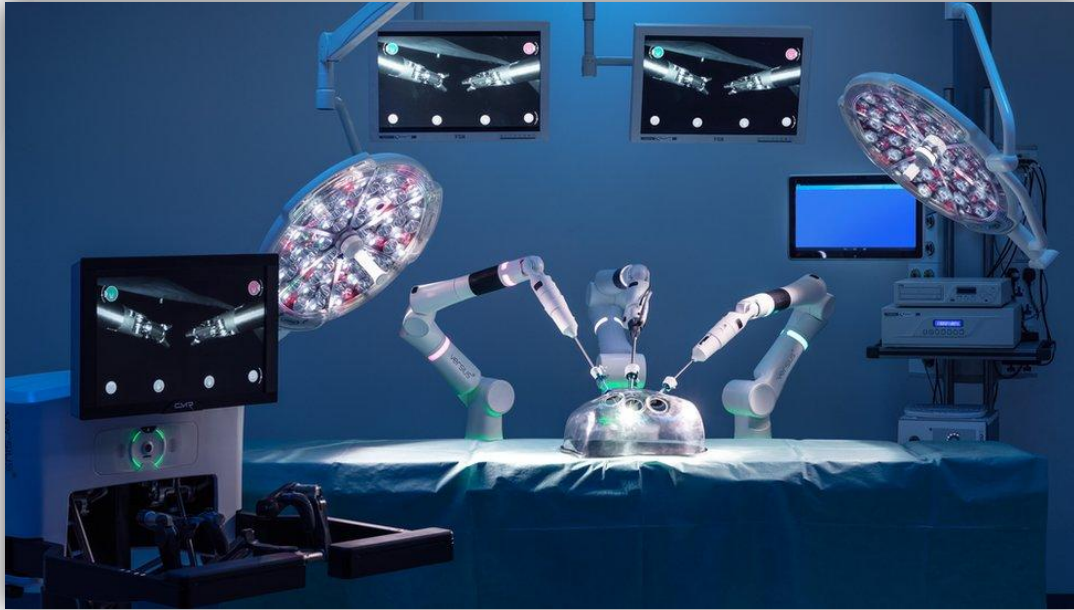


Sources: ARK Investment Management LLC, 2021 based on data sourced from a16z. "The Cost of Cloud..." <https://a16z.com/2021/05/27/cost-of-cloud-paradox-market-cap-cloud-lifecycle-scale-growth-repatriation-optimization/>, Gartner, <https://www.gartner.com/en/newsroom/press-releases/2021-10-20-gartner-forecasts-worldwide-it-spending-to-exceed-4-trillion-in-2022>, and IDC. <https://www.idc.com/getdoc.jsp?containerId=prUS47961621>, <https://www.idc.com/getdoc.jsp?containerId=prUS47528921>, <https://www.idc.com/getdoc.jsp?containerId=prUS47525621>, <https://www.idc.com/getdoc.jsp?containerId=prUS47525621>

SUMMARY AND CONCLUSION

**THE FUTURE
IS BRIGHT**

We are Just Beginning...





AUTOMATE

DETROIT

June 6-9, 2022

[AUTOMATESHOW.COM](https://www.automateshow.com)

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**ASSOCIATION FOR
ADVANCING AUTOMATION**

TRANSFORMATIONAL TECHNOLOGIES BUILDING A BETTER WORLD



ROBOTICS



VISION & IMAGING



**MOTION CONTROL
& MOTORS**



**ARTIFICIAL
INTELLIGENCE**

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\ Thank You!



Alex Shikany
Vice President
Membership & Business Intelligence
Association for Advancing Automation (A3)
900 Victors Way STE 140
Ann Arbor, MI, USA

Phone: +1 (734) 929-3274

Email: ashikany@automate.org

Twitter: @AlexShikany

LinkedIn: <https://www.linkedin.com/in/alexshikany/>