

# ***PLM CAM CAE***

## ***Industry Insights***

### ***Dec 2023***

M&A | Growth Recaps | Capital Raisings

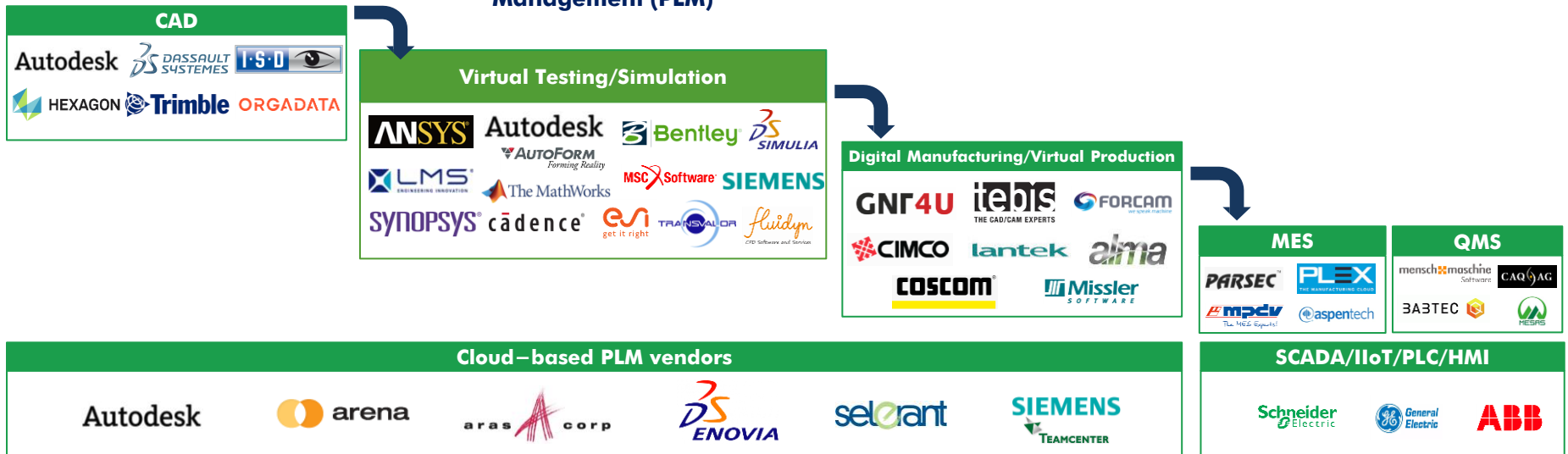
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# Manufacturing technology landscape

## Product software backbone



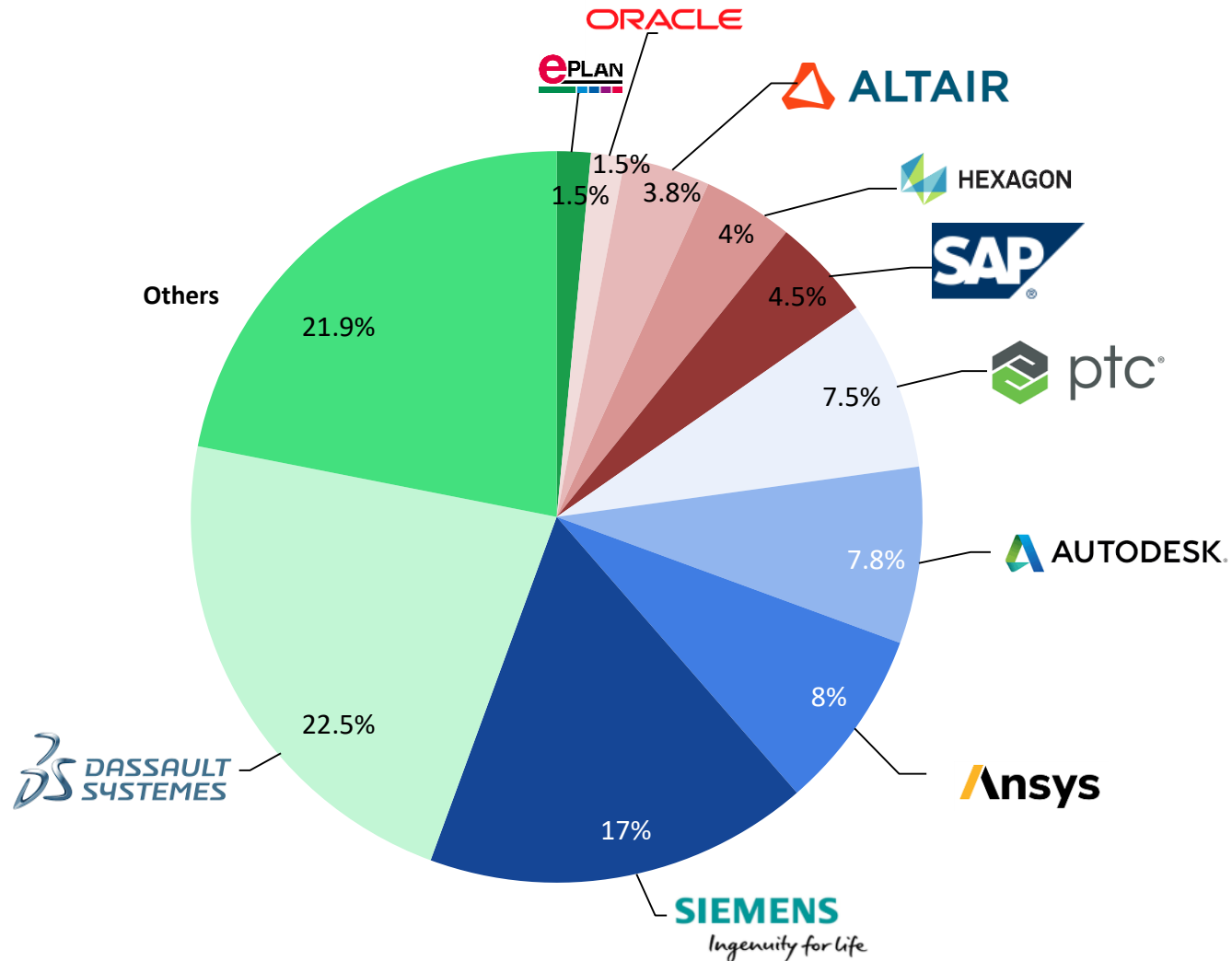
## Product Data Management (PDM) & Product Lifecycle Management (PLM)



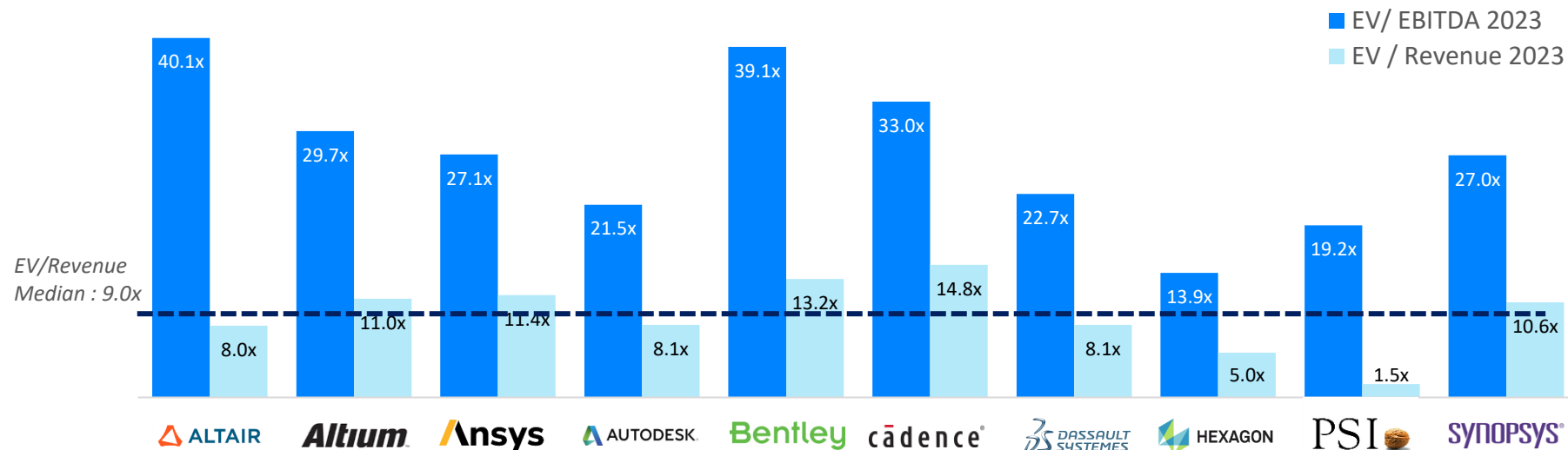
## Transactional enterprise backbone



# Manufacturing market share: substantially consolidated market with fragmented “challengers” along vertical segments






































# Engineering & Manufacturing technology (public company valuation)



Company Name	Market Cap USD M	EV USD M	EV/ Reveue		EV/EBITDA		EBITDA Margin		2022E-2024E CAGR	
			2023	2024	2023	2024	2023	2024	Revenue	EBITDA
Altair Engineering	4,959	4,961	8.0x	7.4x	40.1x	32.9x	20.0%	22.5%	8.3%	17.8%
Altium Ltd.	3,141	2,941	11.0x	9.4x	29.7x	24.7x	37.1%	38.2%	14.9%	16.7%
ANSYS	25,888	26,118	11.4x	10.3x	27.1x	23.4x	42.0%	44.1%	10.5%	11.5%
Autodesk	44,243	43,893	8.1x	7.3x	21.5x	18.7x	37.7%	38.8%	9.8%	12.8%
Bentley Systems	15,505	16,234	13.2x	11.9x	39.1x	33.7x	33.8%	35.4%	11.2%	14.6%
Cadence Design Systems	61,056	60,449	14.2x	13.3x	33.0x	28.8x	44.9%	46.2%	12.9%	15.7%
Dassault Systemes	53,824	52,808	8.1x	7.5x	22.7x	20.6x	35.8%	36.3%	7.9%	7.4%
Hexagon AB	25,441	29,422	5.0x	4.7x	13.9x	12.3x	35.9%	38.3%	6.5%	9.2%
PSI software	439	428	1.5x	1.3x	19.2x	8.9x	7.6%	14.8%	10.7%	14.9%
Synopsys	66,592	64,052	10.6x	9.6x	27.0x	25.8x	39.3%	37.2%	13.5%	16.7%

# Notable Transactions in Engineering/Simulation Software

Year	Target	Acquirer	Deal value (€m)	Segment
2023	 PIKETEC software engineering	 SYNOPSYS	200	Automotive
2023	 get it right	 KEYSIGHT	900	CFD, Simulation Diversified
2023	 ROCKY	 Ansys	-	CFD / DEM
2022	 DYNA MORE	 Ansys	114	Automotive
2022	 WIRTSCHAFTS Technologies	 AMETEK	-	Utilities, Renewable Energy
2022	 ZONA TECHNOLOGY	 SIEMENS <i>Ingenuity for life.</i>	-	Aerospace
2022	 concept engineering	 ALTAIR	25.5	Semiconductor, Electricals
2022	 CELFINET extending networks	 CYIENT	22.1	Telecom
2022	 chaos ENSCAPE	 TA ASSOCIATES	-	3D Visualization
2022	 powersim solutions	 ALTAIR	3.9	Power electronics & motor drive
2022	 GT Gamma Technologies	 TA ASSOCIATES  INSIGHT PARTNERS	-	Automotive
2022	 POWER LINE SYSTEMS	 Bentley	629	Utilities
2022	 CLAYTEX	 TECHNIA ADDNODE GROUP	-	Automotive, Aerospace
2021	 AUTOFORM Forming Reality	 THE CARLYLE GROUP GLOBAL ALTERNATIVE ASSET MANAGEMENT	-	Die-making & Sheet metal
2021	 Objective	 aptean	-	MES for F&B, Injection moulding, Plastic
2017	 MSC Software	 HEXAGON	-	Automotive, aerospace, electronics CAE
2016	 CD-adapco	 SIEMENS <i>Ingenuity for life.</i>	-	CFD

## Active Strategic consolidators



## Growth Private Equity sponsors

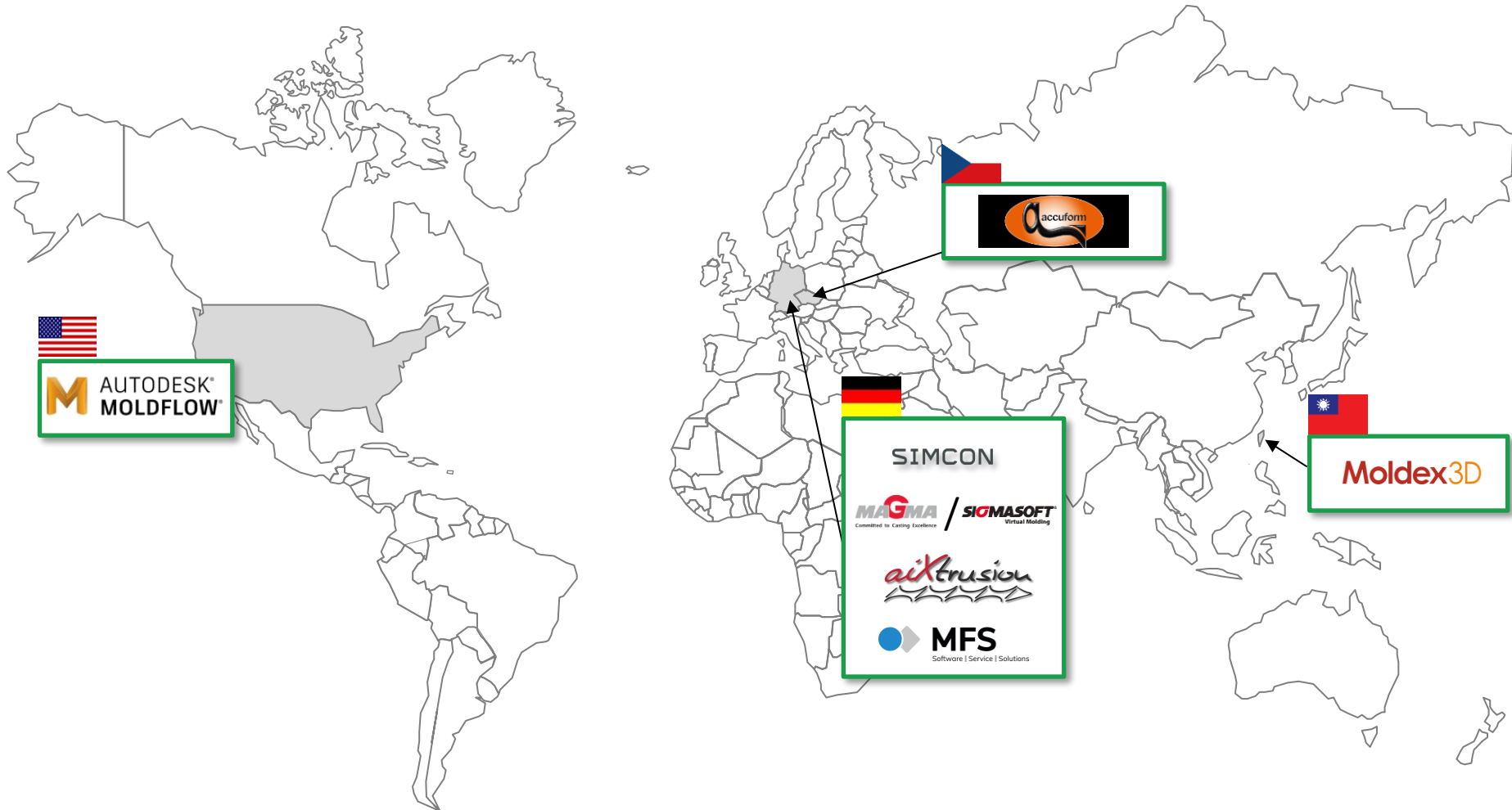


# Casting software vendors

By geography



# Plastic molding/simulation a niche market with few specialists





# CAD, CAM, CAE/Simulation, PLM, MES, M&A in DACH



Date	Seller	Country	Buyer/Investor	Deal Type	Cross Border	Seller Description
25-05-2023	signion GmbH	Germany	Elvaston	Private Equity	-	signion GmbH develops and operates asset management and Life Cycle costing software for the utility industry
04-03-2023	Arctictern Solutions GmbH	Germany	ACSIA TECHNOLOGIES (P) LTD	Strategic	International	Arctictern Solutions GmbH develops and offers automotive industry software
23-02-2023	Infocore Group	Germany	Nagarro	Strategic	International	Developer of product lifecycle management and manufacturing operation management solutions for automotive, aerospace, energy, consumer goods and high-tech electronics industries
27-01-2023	Compass Software GmbH	Germany	SEMA	Strategic	-	Compass Software GmbH develops and operates CAD/CAM/CNC software for staircase, timber, and window construction
03-01-2023	DYNAMore	Germany	Ansys	Strategic	-	The company offers tools to model and solve the problems with FEM calculation program, thereby enabling the simulation and investigation of highly non-linear physical processes on the computers
05-04-2023	Auxalia	Germany	Sophora	Strategic	International	A construction technology company that provides Autodesk-based software for the digitization of project workflows
01-01-2023	CADPLAN	Germany	LEA	Private Equity	-	CAD-PLAN was founded in 1989 with the objective of providing a specially tailored CAD system for designers and planners in the fields of metal construction and facade technology
01-01-2023	Cobus Concept	Germany	CADPLAN	Strategic	-	COBUS ConCept is a German company that offers software solutions for planning and construction. Their software includes CAD/CAM interfaces, sales, and route planning
06-10-2023	Hausmann Wymen	Germany	SEMA	Strategic	-	ERP for electrical, plumbing, heating, air conditioning, ventilation, and PV systems sectors, as well as the trade sector
23-08-2023	PikeTec GmbH	Germany	Synopsys	Strategic	International	PikeTec specializes in testing and verifying embedded software development projects for control units and regulation systems through consulting and development of specialized tools for testing and verification that improve the efficiency of the development process



# CAD, CAM, CAE/Simulation, PLM, MES, M&A in DACH




Date	Seller	Country	Buyer/Investor	Deal Type	Cross Border	Seller Description
29-08-2022	Inmation Software	Germany	Aspen Technology	Strategic	International	Developer and provider of an industrial information management system designed to create a uniform real-time data infrastructure
09-06-2022	Concept Engineering	Germany	Altair Engineering	Strategic	International	Developer of electronic system visualization software intended to help engineers debug complex semiconductor designs
29-04-2022	Intland Software	Germany	PTC	Strategic	International	Developer of application lifecycle management platform and software tools designed to simplify complex product and software engineering at scale
12-04-2022	SEMA GmbH	Germany	VIA Equity A/S; Bregal	Private Equity	-	SEMA GmbH, a software company, develops timber construction software. It offers CAD programming solution for timber and stairs construction, joining, prefabricated houses, and carpenter works
01-01-2022	Dietrich's	Germany	Elvaston	Private Equity	-	CAD CAM Software for wood construction
01-01-2022	Enscape	Germany	Chaos	Strategic	-	Enscape is a commercial real-time rendering and virtual reality plugin. It is mainly used in the architecture, engineering, and construction fields
17-11-2021	AutoForm Engineering GmbH	Switzerland	The Carlyle Group Inc	Private Equity	International	AutoForm Engineering GmbH develops software solutions for the die-making and sheet metal forming simulations
17-11-2021	PROCAD GmbH & Co.KG	Germany	Revalize, Inc.	Strategic	International	PROCAD GmbH & Co.KG designs and develops product and document lifecycle management software
16-11-2021	SpecPage AG	Switzerland	Revalize, Inc.	Strategic	International	SpecPage AG offers product lifecycle management, product data management, and laboratory management software solutions for food and beverage, flavor and fragrance, cosmetic and household goods, paints, plastics, and chemical industries
03-08-2021	Spearhead AG	Switzerland	DEKRA e.V.	Strategic	International	Spearhead AG develops, owns, and operates a platform that offers digital accident, damage, and lifecycle analysis for motor vehicles

# CAD, CAM, CAE/Simulation, PLM, MES, M&A in DACH



Date	Seller	Country	Buyer/Investor	Deal Type	Cross Border	Seller Description
20-07-2021	Method Park	Germany	UL Solutions	Strategic	International	The company offers software focusing on the safety-critical aspects of the automotive, medical and aerospace industries
26-05-2021	keytech Software GmbH	Germany	PROCAD GmbH & Co.KG	Strategic	-	keytech Software GmbH offers product lifecycle management software to automotive, aerospace, engineering, electronic, healthcare, and industrial sectors
21-05-2021	Germaneers	Germany	VIA Optronics	Strategic	-	Provider of hi-tech engineering services focusing on automotive system integration and user interfaces
11-08-2022	Industrial Analytics IA GmbH	Germany	Infineon Technologies AG	Strategic	-	Industrial Analytics IA GmbH develops software for turbo and heavy machinery monitoring and analysis
09-03-2022	TTTech Auto	Austria	Aptiv, Audi	Strategic	International	Developer of a safety software platform for real-time control applications designed to make highly automated and fully self-driving cars a reality
01-02-2022	Prime4services	Germany	NNIT	Strategic	International	The company provides management execution system (MES), serialization (track and trace), overall equipment effectiveness, laboratory information management system, quality management e-compliance
01-01-2022	PeakAvenue (Iqs and Plato)	Germany	Main Capital	Private Equity	International	PeakAvenue is a software company that provides a cloud-based platform for quality management processes
12-01-2021	camLine GmbH	Germany	Elisa Oyj	Strategic	International	camLine GmbH provides IT solutions for manufacturing and shop floor automation
12-01-2021	FACTON GmbH	Germany	Shoplogix Inc.	Strategic	International	FACTON GmbH develops a product costing software that analyzes, calculates, simulates, and optimizes product costing aspects in automotive, aerospace, machinery and plant/mechanical engineering, and high-technology and electronic industries
01-01-2021	Auvesy	Germany	Hg Capital	Private Equity	International	AUVESY is a provider of version control software for smart production machinery and other industrial Internet of Things ("IoT") devices






# International M&A

Date	Buyer	Target	Comments	Country
Jun 2023	 HEXAGON	 Additive CADS	<ul style="list-style-type: none"> <li>➤ Hexagon (OM:HEXA B) completed the acquisition of CADS Additive GmbH, a provider of software for metal additive manufacturing</li> <li>➤ Acquisition will see CADS Additive further integrate its specialized computer-aided design (CAD) tools into Hexagon's software portfolio.</li> </ul>	
May 2023	 cadence	 pulsic	<ul style="list-style-type: none"> <li>➤ Cadence Design Systems, Inc. (NasdaqGS:CDNS) completed the acquisition of Pulsic Limited, a provider of analog, custom design, memory layout and routing software solutions (FTEs ~30)</li> <li>➤ The addition of Pulsic further strengthens Cadence's Virtuoso Studio commitment to using AI to facilitate their customers automation and innovation</li> </ul>	
May 2023	 SYNOPSYS	 SILICON FRONTLINE	<ul style="list-style-type: none"> <li>➤ Synopsys, Inc. (NasdaqGS:SNPS) completed the acquisition of Silicon Frontline Technology, a provider of an electrical layout verification software solution.</li> <li>➤ Acquisition enables Synopsys to address critical performance and reliability challenges in the IC design process and offer end-to-end solutions for electrical layout verification needs.</li> </ul>	
Feb 2023	 QAD	 Redzone <small>Empower the Production, Grow the Bottomline</small>	<ul style="list-style-type: none"> <li>➤ Thoma Bravo-owned QAD, agreed to acquire Redzone (Verifract LLC), a developer of connected workforce software for manufacturing companies for about \$ 1bn.</li> <li>➤ Acquisition helps QAD to expand its footprint across different sectors within the manufacturing industry.</li> </ul>	
Feb 2023	 Bentley	 EasyPower <small>Power made easy</small>	<ul style="list-style-type: none"> <li>➤ Bentley Systems, Incorporated (Nasdaq: BSY) completed the acquisition of EasyPower, a leading developer of design and analysis software tools, for electrical engineering (FTEs: ~44).</li> <li>➤ Acquisition extends integrated and iterative power systems design and analysis for infrastructure digital twins of every type and broadens its comprehensiveness in infrastructure engineering.</li> </ul>	
Jan 2023	 SEMA SOFTWARE	 Compass Software	<ul style="list-style-type: none"> <li>➤ SEMA GmbH completed the acquisition of Compass Software GmbH, a leading provider of CAD/CAM/CNC software for stair, wood and window construction (FTEs: 35).</li> <li>➤ Transaction brings SEMA GmbH a step closer to its strategic goal of bundling innovative strength to offer a unique platform for industrialized timber construction</li> </ul>	

# International M&A

Date	Buyer	Target	Comments	Country
Jan 2023			<ul style="list-style-type: none"> <li>➤ Nhood acquired a majority stake in Stereograph, a software startup for the creation and operation of digital twins to enhance the value of real estate assets.</li> <li>➤ Nhood reinforces its strategic plan to reinvent property management through digital innovation and agility and expands its client portfolio alongside Stereograph.</li> </ul>	
Jan 2023			<ul style="list-style-type: none"> <li>➤ ANSYS, Inc. (NasdaqGS:ANSS) completed the acquisition of Rocky DEM, a developer of engineering software dedicated to modeling discrete mechanics problems.</li> <li>➤ Deeper integration with the Ansys ecosystem further extends particle mechanics to applications that involve Ansys' structural and fluid analysis tools.</li> </ul>	
Dec 2022			<ul style="list-style-type: none"> <li>➤ ANSYS, Inc. (NasdaqGS:ANSS) closed the acquisition of the DYNAmore business, developing simulation solutions for the automotive industry from DYNAmore Holding GmbH (EV: \$ 126m).</li> <li>➤ With the acquisition, Ansys adds DYNAmore's go-to-market and development expertise to its existing sales, engineering, research and development teams.</li> </ul>	
Oct 2022			<ul style="list-style-type: none"> <li>➤ Stratasys Ltd. (NASDAQ: SSYS) closed the acquisition of Riven, a provider of cloud-based software to inspect, diagnose, and automatically correct deviations between CAD files and printed parts.</li> <li>➤ Acquisition streamlines Stratasys' quality assurance for production-scale additive manufacturing.</li> </ul>	
Oct 2022			<ul style="list-style-type: none"> <li>➤ Aspen Technology, Inc. (NASDAQ:AZPN), completed the acquisition of inmation Software GmbH, a market leader in industrial real-time information management (EV: \$ 80.8m).</li> <li>➤ AspenTech strengthens ability to help customers realize maximum business value from industrial data with acquisition.</li> </ul>	
Sept 2022			<ul style="list-style-type: none"> <li>➤ Dassault Systèmes SE (ENXTPA:DSY) completed the acquisition of Diota, a software developer for 3D, AR, computer vision, AI, and deep learning to optimize manufacturing operations.</li> <li>➤ Acquisition expands the portfolio for digital modelling and associated processes for engineering, assembly, test, and maintenance of manufactured products</li> </ul>	

# International M&A

Date	Buyer	Target	Comments	Country
Sep 2022			<ul style="list-style-type: none"> <li>➤ Schneider Electric completed the acquisition of the missing 40.86% of the shares of AVEVA, to now hold 100% of the company (EV: £ 10.4bn, EV/Revenue: 8.3x, EV/EBITDA: 78.7x).</li> <li>➤ The addition of AVEVA's SAAS offering to the portfolio enables Schneider Electric to provide a holistic approach to digital transformations across all customer's operations</li> </ul>	
Aug 2022			<ul style="list-style-type: none"> <li>➤ Infineon completed the acquisition of Industrial Analytics, a German company with expertise in predictive analytics of industrial machinery and equipment using artificial intelligence.</li> <li>➤ The acquisition strengthens Infineon's offering in AI-powered analysis of machinery and industrial equipment.</li> </ul>	
Jul 2022			<ul style="list-style-type: none"> <li>➤ Cadence Design Systems, Inc. (NasdaqGS:CDNS) completed the acquisition of Future Facilities Limited, a software developer for physics-based 3D digital twins (EV: \$ 103m).</li> <li>➤ Broadens the multiphysics system analysis and computational fluid dynamics (CFD) portfolio of Cadence.</li> </ul>	
Jul 2022			<ul style="list-style-type: none"> <li>➤ Aspen Technology, Inc. (NasdaqGS:AZPN) entered into an agreement to acquire Micromine Pty Ltd., a leader in design and operational software solutions for the mining industry (EV: \$623m).</li> <li>➤ Acquisition expands software portfolio to include end-to-end mining software suite or exploration, modeling, design, scheduling and operations of mines.</li> </ul>	
Jun 2022			<ul style="list-style-type: none"> <li>➤ CloudNC, a developer of a software to design tooling paths for numerically controlled (NC) machine tools raised a \$ 45m Series B funding with Autodesk and Lockheed Martin as investors.</li> <li>➤ In total, Cloud NC raised \$ -78m and the proceeds will be used to develop a SaaS offering, roll out integrations with CAD/CAM packages and expand its manufacturing facility in the UK.</li> </ul>	
Jun 2022			<ul style="list-style-type: none"> <li>➤ Siemens completed the acquisition of Brightly, a leading provider of cloud-based asset and maintenance management software for an implied EV of \$ 1.9 bn.</li> <li>➤ The acquisition puts Siemens in an ideal position to serve the fast-growing software market for buildings and existing infrastructure</li> </ul>	

# International M&A

Date	Buyer	Target	Comments	Country
Jun 2022			<ul style="list-style-type: none"> <li>➤ Altair Engineering Inc. (NasdaqGS:ALTR) completed the acquisition of Concept Engineering GmbH, a provider of visualization software for manufacturing and electronic systems (EV: \$ 25.5m).</li> <li>➤ Acquisition expands the electronic system design technology and extends fast visual representations of complex system models and debug capabilities for electronic systems.</li> </ul>	
Jun 2022			<ul style="list-style-type: none"> <li>➤ Altair Engineering Inc. (NasdaqGS:ALTR) completed the acquisition of Gen3D, a developer of design software solutions for additive manufacturing.</li> <li>➤ The technology will be integrated into Altair Inspire, a family of software products that enables simulation-driven design throughout the entire product development lifecycle</li> </ul>	
May 2022			<ul style="list-style-type: none"> <li>➤ Emerson (NYSE:EMR) finalized to acquire 55% stake of AspenTech, a worldwide provider of asset management software solutions (EV: \$ 11bn, EV/Revenue 15.1x, EV/EBITDA: 28.2x).</li> <li>➤ The combination of Emerson's industrial software businesses with AspenTech created an industrial software leader traded under the ticker "NasdaqGS:AZPN" in May 2022.</li> </ul>	
May 2022			<ul style="list-style-type: none"> <li>➤ CT Ingenieros A.A.I. S.L. completed the acquisition of Infodream, a specialist in Manufacturing Execution System (MES) software development for Industry 4.0 (FTEs: 30).</li> <li>➤ Acquisition adds to CT's digital transformation solutions, a full MES suite, offering modules such as statistical process monitoring or operator guidance in the manufacturing industry.</li> </ul>	
Apr 2022			<ul style="list-style-type: none"> <li>➤ PTC Inc. (NasdaqGS:PTC) completed the acquisition of Intland Software GmbH, a developer of an application lifecycle management (ALM) platform for process management (EV: \$ 275m).</li> <li>➤ Expected to significantly broaden and deepen PTC's ALM footprint across safety-critical and regulated industries</li> </ul>	
Feb 2022			<ul style="list-style-type: none"> <li>➤ Autodesk, Inc. (NasdaqGS:ADSK) completed the acquisition of Prodsmart, an optimization software maker enabling companies to track and analyze the manufacturing process in real-time.</li> <li>➤ Acquisition is part of Autodesk's strategy to bolster smart manufacturing in the wake of unprecedented supply chain disruptions and volatile demand</li> </ul>	

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