



avicenne
MEDICAL

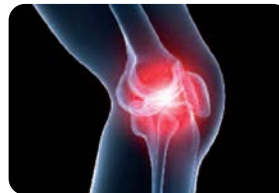
INFORMATION FOR GROWTH

www.avicenne.com

Strategic Market Research & Transaction Services for the Orthopaedic industry

Avicenne Medical company profile

July 2018










CONTACT

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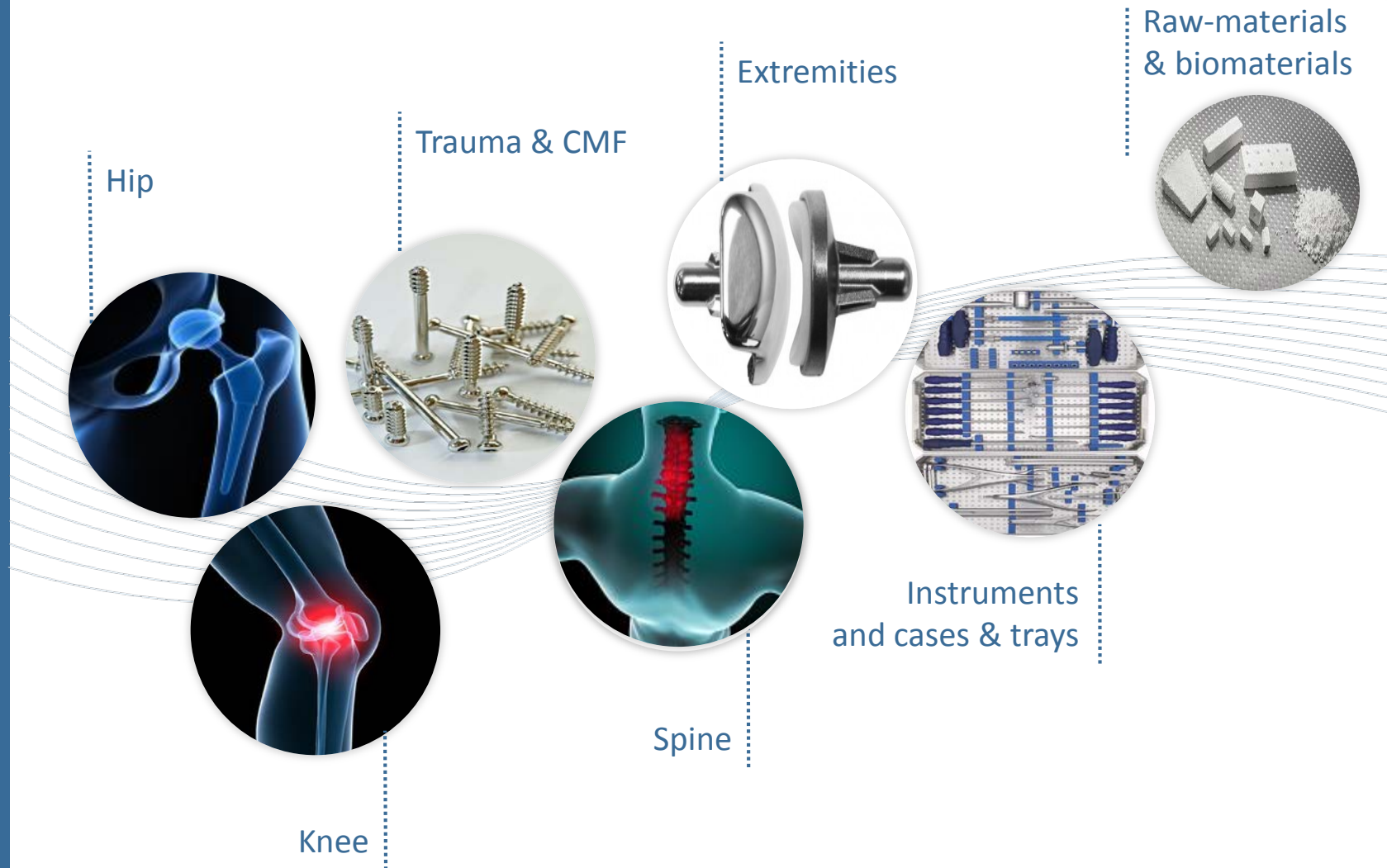
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Our scope

Coverage of the 7 main orthopaedic segments

A US \$42 Bn Market



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Our scope

Coverage of the main contract manufacturing services

A US \$5.4 Bn Market



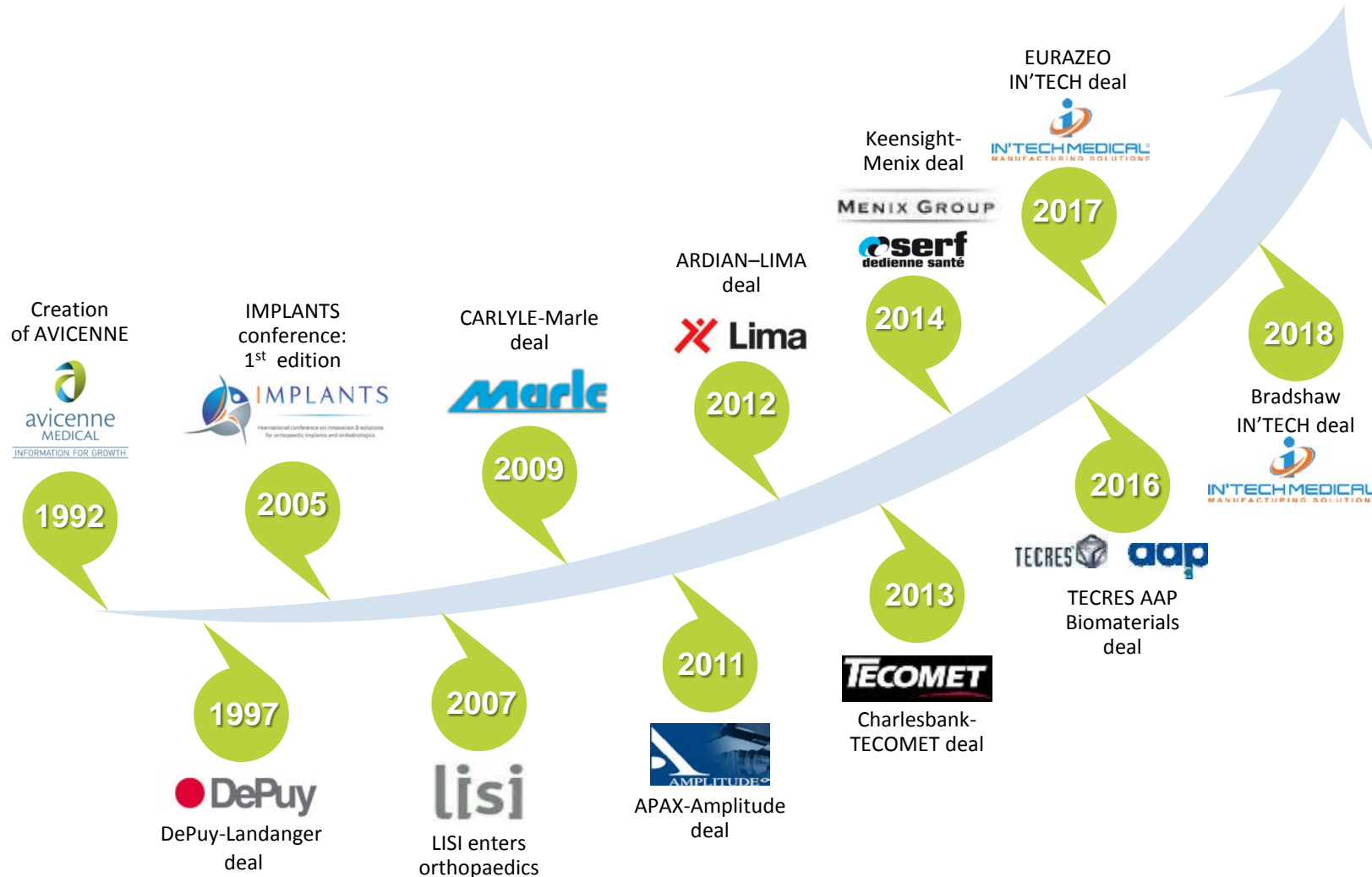
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Our story: Avicenne has been involved in most of the major deals & events within the Orthopaedic Industry

Strategic Due Diligence expertise with a long track record of successful acquisitions for our clients



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Our team

Foundation of the company 1992

Orthopaedics main activity

Headquarters Paris



Ali MADANI

26 years with Avicenne
Dauphine University: MBA Technology & Innovation, Master in Electrical & Electronics Engineering



Christophe PILLOT

24 years with Avicenne
Dauphine University: MBA Technology & Innovation



Stephane BLIEK

5 years with Avicenne
ESCP Europe, Master in Banking & Finance



Jean-Philippe SALVAT

22 years with Avicenne
Master in New materials & technology



Mike SANDERS

3 years with Avicenne
Delaware University: BS in Chemistry

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A diversified service offering

Based on 25 years of experience in Orthopaedics

Transaction Services

Strategic Market Research

Vendor Due Diligence	Commercial Due Diligence	Management team assessment	Build up & Target research	Customized Strategic research	Key Opinion Leaders surveys
Sizing and market dynamics	Formal Due Diligence based upon:	Strengths & Weaknesses of management team	Screening & Identification of potential targets	Diversification	Key Opinion Leader's usage & preferences for orthopaedic products
Detailed market analysis and positioning of the company	interviewing industry experts & competitors	Identification of suitable candidates to strengthen Management capabilities	Target Assessment	Market entry	Survey for opportunities & risks of launching new products
Management interviews	Product portfolio assessment		Introduction & Initial discussions	Geographic expansion	
Company differentiation & keys to grow market share	Customer portfolio analysis			New Product assessment & launch	
Business Plan	Manufacturing organization assessment & site visits			Worldwide Market shares tracking for emerging products	Company reputation survey with surgeons
	Routes to create value				

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Avicenne's long track record of successful acquisitions for our clients



IN'TECH Medical

was acquired by

EURAZEO PME

Avicenne advised the Buyer

June 2017  



TECOMET

was sold by

Charles Bank

Avicenne advised the Vendor

April 2013 



AAP Biomaterials

was acquired by

Keensight Capital & TECRES

Avicenne advised the Buyers

May 2016  



Bradshaw

was acquired by

IN'TECH Medical

Avicenne advised the Buyer

June 2018 



LIMA

was acquired by

Ardian

Avicenne advised the Buyer

September 2012  



Amplitude

was acquired by

APAX

Avicenne advised the Buyer

April 2011  



MARLE

was acquired by

Carlyle

Avicenne advised the Buyer

April 2009  



MENIX GROUP

was acquired by

Keensight Capital

Avicenne advised the Buyer




April 2014  

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Strategic & Commercial Due Diligence (CDD) examples

Deal	Date	Area	Mission	Details
<p>IN'TECH</p> <p>Worldwide leader of the spine instruments, 66% of its sales generated in the US</p>	 2017	WW	<p>CDD for the buyer</p> <p>EURAZEO PME</p>	<ul style="list-style-type: none"> 🔗 Market sizing and dynamics of customized instruments 🔗 Instruments life cycle + demand drivers & limiters 🔗 Customer portfolio analysis 🔗 OEMs' manufacturing strategies & Contract manufacturing price pressure 🔗 OEMs' relationships with their suppliers - Criteria for choosing a CMO 🔗 Manufacturing organization analysis, Capex analysis, Regulatory & Quality department assessment 🔗 Routes to diversification, potential M&A targets & upsides 🔗 Technological & strategic risks, competitive risks and Business Plan analysis 🔗 Investment rationale, opportunities & risks
<p>TECRES AAP Biomaterials</p> <p>Merger of #2 and #3 in ortho. cement to build the worldwide leader</p>	 2016	WW	<p>CDD for the buyers</p> <p>TECRES & Keensight Capital</p>	<ul style="list-style-type: none"> 🔗 Product portfolio assessment for combined AAP biomaterials & TECRES 🔗 Size and forecasts in the global orthopaedics cement market 🔗 In-house vs outsourcing manufacturing strategies 🔗 Segmentation, sizing and dynamics of vertebroplasty cements & instruments 🔗 Understanding the competitive advantages of each company 🔗 Strategic & operational recommendations for the merger 🔗 Proposal for an appropriate communication strategy within the Industry
<p>TECOMET</p> <p>Creation of the worldwide leader in Orthopaedic Contract Manufacturing</p>	 2013	USA	<p>Advised the owner</p> <p>Charles Bank Capital</p>	<ul style="list-style-type: none"> 🔗 Size and Forecast of the global orthopaedic markets by country, product, with competitors' market shares 🔗 Reimbursement procedures, trends and impact on the target business 🔗 Outsourcing strategies and trends of orthopaedic companies 🔗 Segmentation, sizing and dynamics of contract manufacturing by capabilities + the market share details of the top 20 contract manufacturers 🔗 Risks and opportunities of relocating implant manufacturing to BRIC countries 🔗 Ratings the criteria for OEMs to choose their Contract Manufacturers 🔗 Understanding company differentiation & keys to grow market share 🔗 Strategic & operational recommendations: ways to maximize value

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Strategic & Commercial Due Diligence (CDD) examples

Deal	Date	Area	Mission	Details
<p>LIMA</p> <p>Hip, knee, shoulder, trauma</p>  <p>2012 Europe</p>  			<p>CDD for the buyer</p> <p>Ardian</p>	<ul style="list-style-type: none"> 🔗 Product portfolio assessment 🔗 Competitive advantages of the company in Italy, Germany, Spain, Portugal, USA, Australia, South Korea and Japan in terms of products, market share, image, etc. 🔗 Analysis of the company distribution channels 🔗 Manufacturing organization assessment 🔗 New products, Business Plan and forecasts 🔗 Analysis of the company's management capabilities to sustain growth 🔗 Support in finding the new company CEO 🔗 R&D projects pipeline up to 2018 🔗 Working Capital benchmarking 🔗 Management case discussions & restatements by segment 🔗 Profitability assumptions and analysis 🔗 Report and Q&A for debt suppliers
<p>AMPLITUDE</p> <p>Top Challenger with strong export capabilities</p>  <p>2011 France</p>  			<p>CDD for the buyer</p> <p>APAX Partners</p>	<ul style="list-style-type: none"> 🔗 Product portfolio assessment 🔗 Positioning on existing markets : France, Germany, Italy, Spain, Austria,.. 🔗 Geographic expansion opportunity analysis: USA & Japan 🔗 Other countries upside analysis: Brazil, Middle East, India 🔗 Distribution channel capabilities & risks : external agents vs company sales force 🔗 Company-surgeon relationships analysis 🔗 New products pipeline assessment 🔗 Business Plan forecasts: current products, new opportunities and build-up scenarios 🔗 Opportunities & risks of acquisition

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Examples of customized client projects

Strategic market research

- 🔗 Building a diversification strategy for an aerospace group entering the orthopaedics contract manufacturing market: target 100 M\$ in 5 years
- 🔗 Strategy to growth market share and build-up for the leading European Orthopaedics contract manufacturers
- 🔗 Worldwide Market shares tracking for the sub-segments of the Spine market (> 50 products tracking) for one of the Spine market leaders
- 🔗 Routes to growth for a European coating supplier
- 🔗 Identifying growth opportunities for a bone substitute market leader
- 🔗 Research on Navigation, Robotics & positioning device worldwide market for hip & knee
- 🔗 Study of the raw material needs for OEMs and CMOs in orthopaedics for a leading raw material distributor
- 🔗 Dual mobility cups growth and penetration in Europe, USA, and Japan for a Major orthopaedic company
- 🔗 Advice on partner identification and technology transfer to a Middle East orthopaedic OEM
- 🔗 Geographic expansion opportunities on the cases & trays segment for a leading European company
- 🔗 Many other confidential surveys currently under NDA

Key Opinion Leader surveys

- 🔗 Key Opinion Leaders' usage and preferences for certain orthopaedic product designs in Germany, Spain and UK
- 🔗 Surgeon survey in USA & Europe concerning the hip dual mobility cups usage and trends
- 🔗 Opportunities & risks of launching a new knee system for a European challenger
- 🔗 Cutting device European market analysis for power tools for a leading worldwide supplier of cutting tools

Competitive & Technology monitoring

- 🔗 Value of patient specific cutting guides for knee joint replacements
- 🔗 Additive Manufacturing: the new challenge to manufacture orthopaedics implants and instruments
- 🔗 Is Robotics a game changer for orthopaedics ?
- 🔗 Worldwide Orthopaedic patents watch focused on hip, knee, trauma & orthobiologics for several companies

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Examples of Strategic market research, diversification, market share tracking and acquisition target assessment

Deal	Date	Area	Mission	Details
LISI Group Strategic advice for entering orthopaedics	2011	  	Strategic advice for diversifying in orthopaedics. Goal: reach 100 M US\$ in revenues in 5 years	<ul style="list-style-type: none"> 🔗 Analysis of orthopaedics contract manufacturing by segment: Forging, casting, machining, coating, etc.. 🔗 Drivers and limiters for each segment and focus on several opportunities 🔗 Analysis of the dental implants market worldwide 🔗 Acquisition opportunities analysis in Europe and the USA 🔗 Business Plan scenarios: analysis & restatements 🔗 Road map for next 5 years
Confidential Identification acquisition targets	2016	 	Find & assess appropriate targets for acquisition, strategic analysis of risks and opportunities	<ul style="list-style-type: none"> 🔗 Selection of 15 to 30 acquisition targets with defined criteria: <ul style="list-style-type: none"> 🔗 Serving the Orthopaedics OEMs in various areas 🔗 Capabilities in innovation with strong R&D and quality departments 🔗 Prototype, metrology, testing, machining, cleanroom class III, packaging, competencies 🔗 Financial perimeter: 10 M US\$ - 100 MUS\$ revenues, level of profitability, etc. 🔗 Analysis of the risks, complications and obstacles 🔗 Final selection of the appropriate targets 🔗 Opening channels of communication with the targets
Medtronic Market shares tracking for 50 spine products	Over a 4 year period	 	Market share tracking for 50 emerging products launched by competitors	<ul style="list-style-type: none"> 🔗 Quarterly market shares tracking in 14 European countries for different spine products 🔗 Perimeter: Stabilization, Dynamics, Orthobiologics & Vertebroplasty with 13 sub-segments in detail 🔗 Tracking of devices sold by unit & value 🔗 Product portfolio assessment of the players 🔗 Forecasts and trends to identify the future high growth products

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Our methodology

The Strategic Due Diligence Framework

Executive Summary

- 🔍 Describe major findings of Due Diligence– focus on “Red Flag issues”
- 🔍 Provide overview of findings of other components
- 🔍 Description of scope of analysis, what has been investigated, and focus areas of Due Diligence
- 🔍 Includes info on the sources used and interviews conducted

6 areas of assessment covered

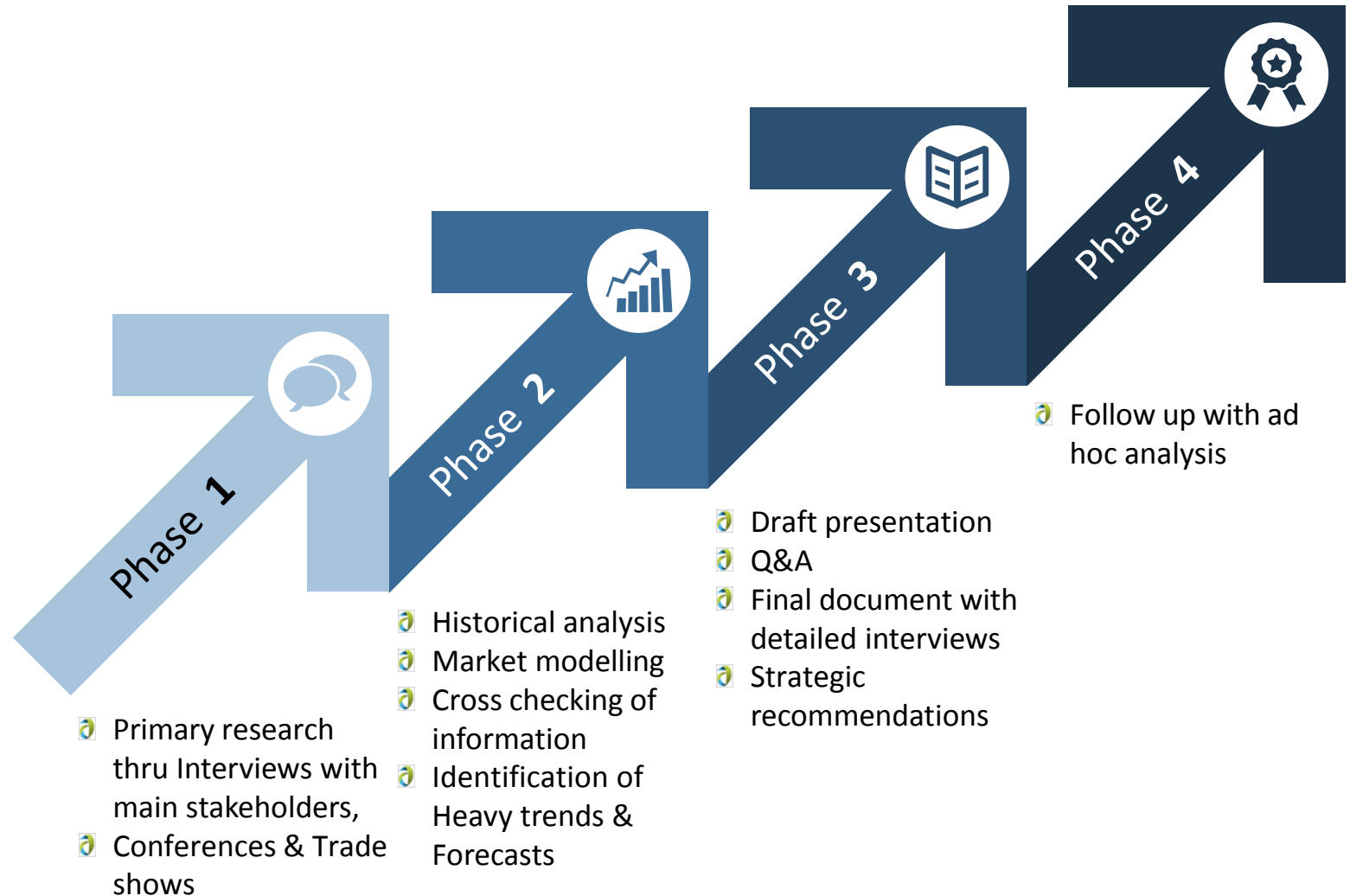
Market Analysis	Competitive Environment	Analysis of Business Model	Analysis of Investment Case	Upside Opportunities	Exit Options
<ul style="list-style-type: none"> 🔍 Market analysis to form a perspective on the risks and opportunities of the acquisition 🔍 Definition of the immediate and broader market and assessment of its attractiveness 	<ul style="list-style-type: none"> 🔍 Understand and assess the competitive landscape to determine the relative strength of the target company, its Unique Selling Points and sustainability 🔍 Assessment of Product portfolio and pricing strategy, customer satisfaction, Regulatory issues & likelihood to overcome competitive threats 	<ul style="list-style-type: none"> 🔍 Perspective on attractiveness and robustness of the business model 🔍 Analysis of past and projected performance as well as capabilities of target company 	<ul style="list-style-type: none"> 🔍 Perspective on management’s assumptions and further improvement potentials 🔍 Assessment of management’s base case, and identification and assessment of reasonable further improvements as well as downside risks 	<ul style="list-style-type: none"> 🔍 Perspective on value creation potential beyond investment case assumptions – “investment case at time of exit” 🔍 Identify and quantify further value creation levers that could be achieved during holding period 	<ul style="list-style-type: none"> 🔍 Perspective on exit opportunities after holding period 🔍 Assessment of industry consolidation opportunities and evaluation of potential strategic and financial buyers

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Our methodology



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Leveraging 25 years of high level contacts and market tracking & modelling



Full value chain coverage

- Entire supply chain & all players: OEMs, Contract Manufacturers
- All product types: implants, instruments, cases & trays, biologics, cements, ceramics
- All manufacturing services: forging, casting, machining, coating, packaging, sterilization

Primary research

- OEM & Contract Manufacturer direct interviews with decision makers thanks to strong links with CEOs, R&D, Marketing, Sales...
- Cross-checking of information thanks to our tried & tested operating models

Operating Models & Cross-checking of information



Secondary research

- 25+ years of historical data on the Orthopaedics & Contract Manufacturing markets
- Companies & markets; continuous tracking and detailed market and financial modelling
- Highly detailed segmentation

A 360° view of Orthopaedics

Worldwide coverage

Developed countries



Western Europe

BRICS countries



Other countries

Latin America, Middle East, Asia, ..

Implants

Hip

Knee

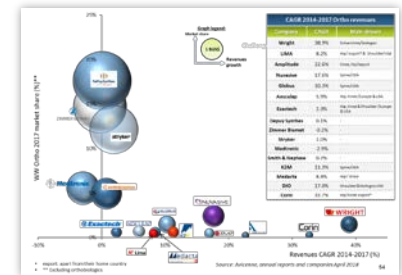
Spine

Extremities

Trauma

Contract Manufacturing

Implants Instruments Cases trays Biologics



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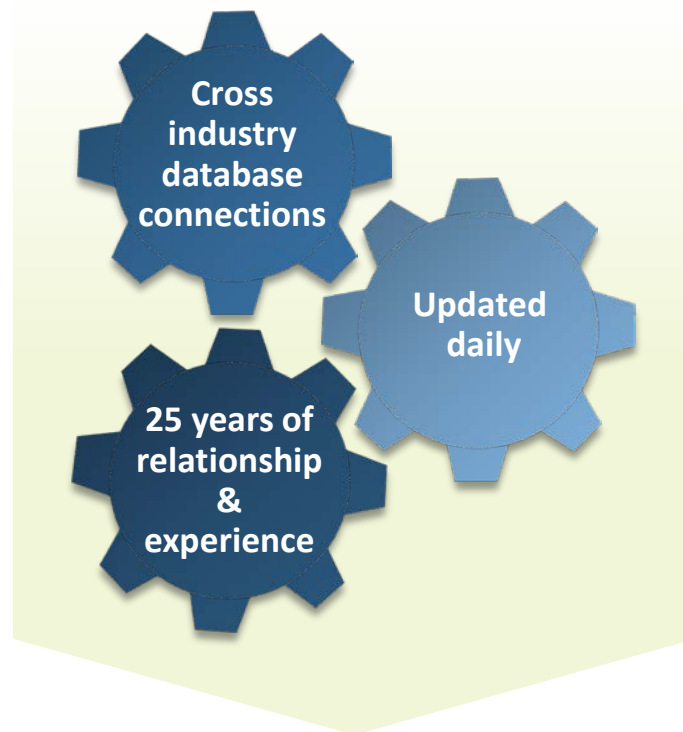
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Our methodology

A dense contact network built over 25 years

Our contact network



33,000+
qualified contacts

Our Orthopaedics database: 33,000+ qualified contacts



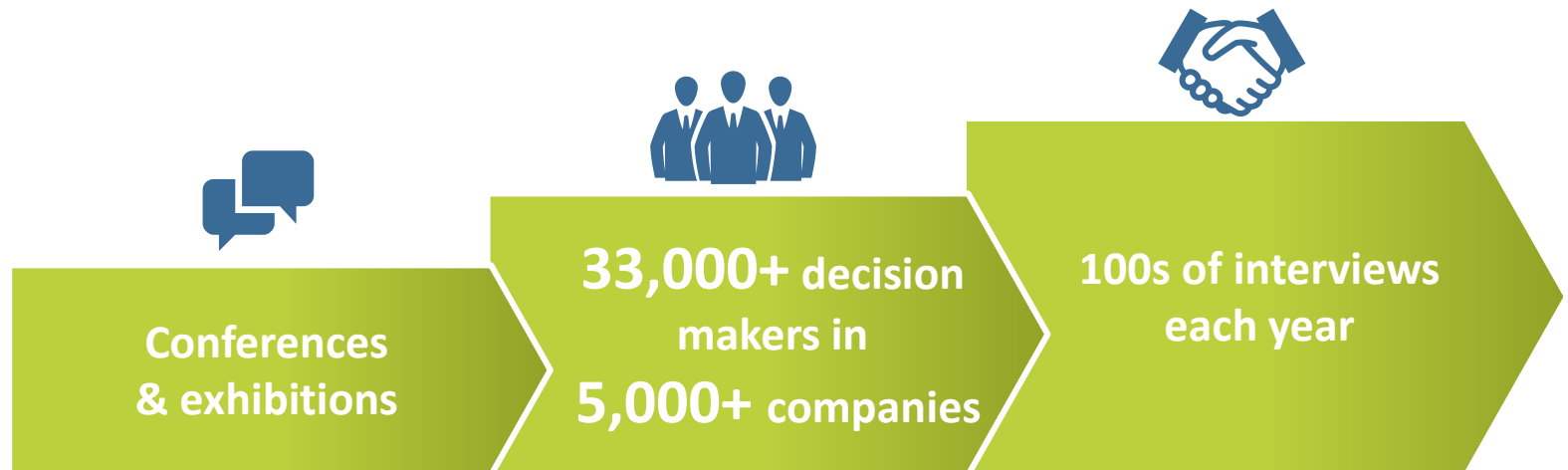
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Our methodology

Direct interviews with companies



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Implants conference

The international meeting on innovations & solutions for orthopaedic implants & orthobiologics chaired by Avicenne, attracts 150+ decision makers. It is both a place to take the pulse of the industry and a key networking event.

Founded and chaired
by AVICENNE since **2005**

<http://www.implants-event.com>



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Our customers

Aesculap-B Braun, Amplitude, Aston Medical, Bioland, Biomet, Biomicon, Ceraver, Cousin-Biotech, Dediemme, Depuy Synthes, Eurospine, Evolutis, FH, FX Solutions, Geistlich, Help Ortho, Implanet, Implant Industries, Integra Life Sciences, Kisco International, Lepine, Lima, Mathys, Medtronic, MBA, Medacta, Nexis, OST, Orthosoft, Ossacur, Osteotech, Plus Ortho, Progenor, SEM, Seremm, Scient'x, Smith & Nephew, SME, SMI, Stryker Corp, Stryker Limerick, Stryker Spine, Spineway, SGM-Codim, Stanmore Implants, Stryker, Surgical Devices Pty, Symbios, Tornier, Transtructure, Transysteme, Zimmer Biomet, Wright Tornier, X'Nov...

Apax Partners, Altor Equity Partners, Alpha Associés Conseil, Ardian, Argos Soditic, Banque Lazard, BIP Investment Partners, Capzantine, Carlyle Group, Charlesbank Capital, Clayton Dubilier & Rice, CM-CIC Investissement, EKKIO Capital, Eurazeo PME, European Capital, Goldman Sachs, Keensight Capital, LBO France, PAI Partners, Permira, Piper Jaffray, Pragma Capital (now Sparring Capital), Rothschild Five Arrows, Simuval, Tikehau, Warburg Pincus, Zurmont Madison...

Autocam Medical, Addup Solutions, Avalign, Ceramtec, Cetim, EOS, Eurocoating, Finetubes, Foriginal, Geoffroy, Integer-Greatbatch, HWG, In'tech Medical, Inomed Technology, Invibio, Ionbond, Jabil Medical, Jenoptik, Heptal, Komet, LISI Medical, Manoir Industries, Marle, Metal Craft & Riverside, Nowak, Nypro, Oerlikon, One Ortho, Paragon Medical, Nypro, PolymerExpert, Projection Plasma System, Sandvik, Stainless, Somepic, Symmetry Medical, Tecomet, TE Connectivity, Terolab Surface Medical, Vaccucast, VSMPO Tirus, Wichard, Willemijn Macodel, Zollern,...



Arthur D. Little, AT Kearney, Bain & Company, Boston Consulting Group, KPMG Strategy, LEK Consulting, McKinsey & Company, OC&C Strategy, Oliver Wyman, Roland Berger...

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Benefits of collaborating with AVICENNE



Strategic & operational consultancy in the Orthopaedics industry since 1992 and strong links with the main decision makers

**Guaranteed Confidentiality & Strong Ethical Standards:
a Key Value**

Worldwide coverage of the whole industry value chain:

- 🕒 OEM, Contract Manufacturers but also Surgeons, research laboratories, experts
- 🕒 Areas:
 - 🕒 Europe: France, Germany, UK, Italy, Spain, Switzerland, Belgium, Austria, The Netherlands, Portugal, Nordic countries, Eastern Europe
 - 🕒 North America : USA, Canada
 - 🕒 Asia Pacific: Japan, Australia, South Korea
 - 🕒 Emerging markets : Brazil , Russia, India, China, Latin America, Middle East, Africa

Clear Methodology, Results and Recommendations

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AVICENNE's off the shelf market reports

"Worldwide orthopaedic Contract Manufacturing market report 2017-2021 & Top 200 supplier profiles" July 2018 7th edition

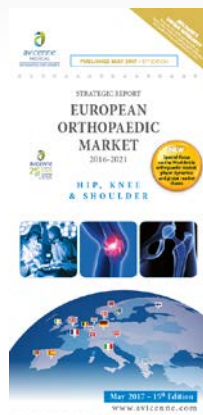
- 🕒 First published in 2014
- 🕒 OEMs strategy for outsourcing & home-made
- 🕒 Detailed markets & sizing for:
 - 🕒 Forging: hip stem, hip cup, femoral knee...
 - 🕒 Casting: femoral knee, tibial knee, hip cup...
 - 🕒 Hip, knee, spine & trauma and instruments machining & finishing
 - 🕒 Cases & trays: hip, knee, spine, trauma
 - 🕒 Coating: stem, cup, femoral, tibial
 - 🕒 Ceramics: hip heads, hip liner
 - 🕒 Cleaning & packaging...
 - 🕒 Special focus on Raw Materials for orthopaedics: Stainless Steel, Cr-Co & Titanium needs for OEMs and Contract Manufacturers
- 🕒 Top 200 Contract manufacturers detailed profiles



Available
immediately

"European Orthopaedics Market 2016-2021" May 2017 15th edition

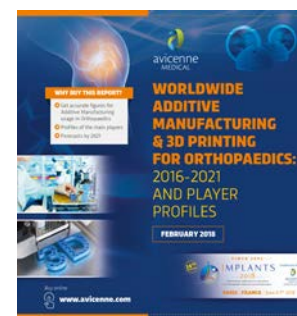
- 🕒 First published in 1993
- 🕒 Yearly up-date
- 🕒 Hip, knee, shoulder
- 🕒 Based on 100+ interviews
- 🕒 810 pages & 1550+ graphs & exhibits detail the European Market in Germany, France, Italy, Spain, UK, and other countries
- 🕒 Special focus on the worldwide orthopaedic market, player dynamics and global market shares



Available
immediately

"Worldwide Additive Manufacturing for orthopaedics 2016-2021 & player profiles" February 2018 1st edition

- 🕒 First published in 2018
- 🕒 Yearly up-date,
- 🕒 Market for Additive Manufacturing for orthopaedics
- 🕒 Based on 50+ interviews of :
 - 🕒 Additive Manufacturing machine suppliers
 - 🕒 Dedicated companies in Additive Manufacturing (Specialist)
 - 🕒 OEMs heavily invested in Additive Manufacturing or using it extensively
 - 🕒 Contract manufacturers offering Additive Manufacturing service



Available
immediately

"Orthopaedics patent watch" Yearly edition

- 🕒 Focus on 4 segments: hip, knee, trauma and orthobiologics
- 🕒 Report published each 2 months
- 🕒 More than 50 patents presented by number registration and with technical diagrams
- 🕒 On demand:
 - 🕒 Identifying the new products & R&D trends,
 - 🕒 Monitoring your competitor's strategic development choices.



Upon request

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