



INFORMATION FOR GROWTH

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Strategic market research for the Orthopaedics industry

Avicenne Medical company profile

April 2017

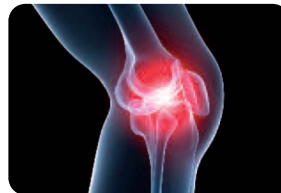









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Our story

AVICENNE has always been involved in the major deals & events in the Orthopaedics Industry



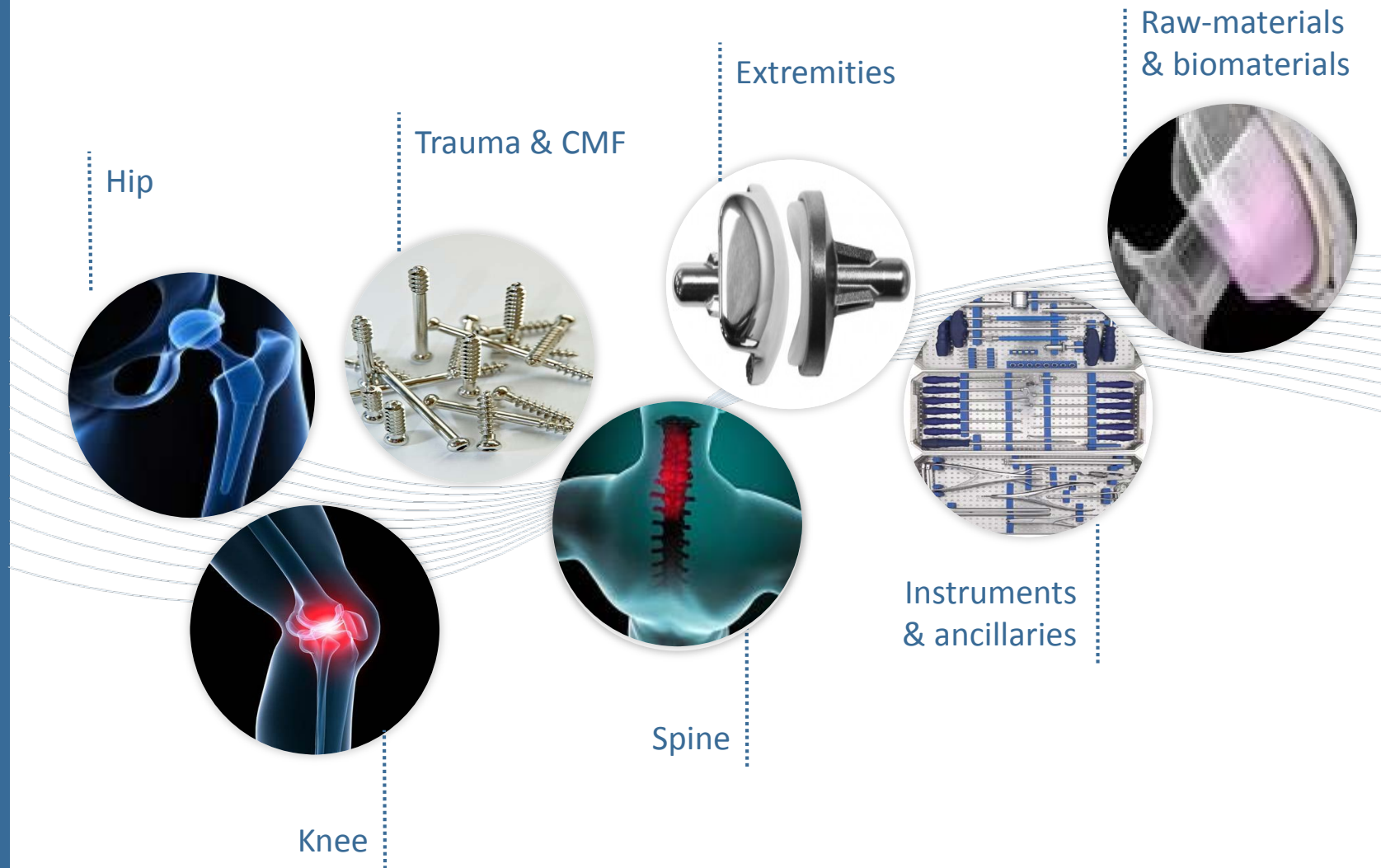
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Our activity

We are active in all the main orthopaedics segments



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Our activity

We are active in all the main contract manufacturing services







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Strategic & commercial Due Diligence: example of projects



Deal	Date	Area	Mission	Details
 Merger of n° 2 and n° 3 of the ortho. cement to build the independent worldwide leader	2016	WW	Strategic Due Diligence for the buyers (TECRES & Keensight Capital)	<ul style="list-style-type: none"> 🔗 Product portfolio assessment for AAP biomaterials & TECRES 🔗 Size and Forecast of the global orthopaedics cement market 🔗 In-house Manufacturing & outsourcing strategies of the orthopaedic companies 🔗 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 with the Industry
 > 100 MUS\$ revenues Contract manufacturing Implants & Instruments	2013	USA	Strategic advice to the shareholder (CharlesBank Capital)	<ul style="list-style-type: none"> 🔗 Size and Forecast of the global orthopaedic markets by country, by product, by competitor market share 🔗 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 and also the market share details of the top 20 contract manufacturing players 🔗 Risks and opportunities of relocation of the implants to BRIC countries 🔗 Selection and understanding of criteria for OEMs to choose their Contract Manufacturers 🔗 Understanding company differentiation & the keys to grow market share 🔗 Strategic & operational recommendations: Ways to maximize value
 > 100 M€ revenues OEM: Hip, knee, shoulder, trauma	2012	Europe	Strategic Due Diligence for the buyer (AXA PE, now Ardian)	<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 shares, 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 with competitors 🔗 Management case discussions & restatements by segment 🔗 Profitability assumptions and analyses 🔗 Report and arguments for the debt suppliers
 > 50 M€ revenues OEM: Hip, knee, extremities	2011	France	Strategic & Commercial Due Diligence for the buyer (APAX Partners)	<ul style="list-style-type: none"> 🔗 Product portfolio assessment 🔗 Company position in the main countries: France, Germany, Italy, Spain, Austria,... 🔗 Future strategic area target analysis: USA & Japan 🔗 Other countries target analysis: Brazil, Middle East, India 🔗 Distribution channel analysis: distribution by agents, company sales force, distributors 🔗 Company-surgeon relationships analysis 🔗 New product pipeline and Business Plan 🔗 Business Plan forecasts: current products 🔗 Business Plan forecasts: new opportunities and build-up scenario 🔗 Opportunities & risks of acquisition

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Strategic market research, diversification and finding targets for acquisition: example of projects

Project	Date	Area	Mission	Details
 Strategic advices to enter in orthopaedics	2011	WW	Strategic advices to diversify in orthopaedics. Goal: To 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 and opportunities in this field Contract manufacturer acquisition opportunities analysis in Europe and the USA Business Plan scenarios: presentation & restatements Road map for 5 years
Confidential Finding targets for acquisition	2016	WW	Finding appropriate targets for acquisition and 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 Open channels of communication with the targets
 Market shares tracking for 50 spine products	2007 to 2011	Europe	Strategic market research	<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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Examples of our customized client projects

Orthopaedics Due Diligence & strategic market researches

- 🕒 2016: Strategic due diligence for the merger Tecres and aap Biomaterials to build the independent worldwide leader in bone cement and biomaterials for orthopaedics and spine
- 🕒 2015: Strategic due diligence for Teknimed an orthobiologics supplier, for an European private equity buyer
- 🕒 2014: Strategic due diligence for Menix group acquired by Keensight Capital
- 🕒 2013: Strategic analysis for Charlesbank Capital concerning TECOMET deal
- 🕒 2012: Strategic & commercial due diligence for LIMA group in Italy for AXA Private Equity
- 🕒 2012: Commercial due diligence for In'tech Medical in France & USA for a Private Equity
- 🕒 2011: Strategic due diligence for leading orthopaedics company in France for Apax Partners
- 🕒 2009: Build-up strategy after acquisition of leading European implants supplier for Carlyle Group
- 🕒 2008: Diversification strategy building for an aerospace group to enter in the orthopaedics contract manufacturing market: target 100 M\$ in 5 years for LISI Group
- 🕒 2006: Strategy to growth market shares and build-up for the European leading Orthopaedics contract manufacturers: for ATS Stellite
- 🕒 2007, 2008, 2009, 2010, 2011: Worldwide Market shares tracking for the sub-segments of the Spine market (> 50 products tracking) for one of the Spine market leader.
- 🕒 Many other confidential surveys currently under NDA

Surgeon surveys

- 🕒 Surgeon's usage and preferences for certain orthopaedics product designs in Germany, Spain and UK
- 🕒 Surgeon survey in USA & Europe concerning the hip dual mobility cups usage and trends
- 🕒 Advantages & risks of launching a new knee system

Technology Watch

- 🕒 European Image guided Surgery Platforms & Modules
- 🕒 Orthopaedic patents watch focus on 4 segments: hip, knee, trauma & orthobiologics
- 🕒 Patient Specific Cutting Guides for knee joint replacements
- 🕒 Additive Manufacturing: The new challenge to manufacture orthopaedics implants and instruments

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Our team



- Foundation of the company** → **1992**
- Orthopaedics** → **main activity**
- Head Quarter** → **Paris**



Ali MADANI
Paris



Christophe PILLOT
Paris



Jean-Philippe SALVAT
Paris



Amir YASSARI
Germany

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Why partner with us?

Survey Methodology

- 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

- 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



- 20+ years of historical data on the Orthopaedics & Contract Manufacturing markets
- Companies & markets; continuous tracking
- Highly detailed segmentation

Implants

Hip

Knee

Spine

Extremities

Trauma

Contract Manufacturing

Implants Instruments Cases, trays Biologics

Worldwide coverage

Developed countries



Western Europe

BRICS countries



Other countries

Latin America, Middle East, Asia,...



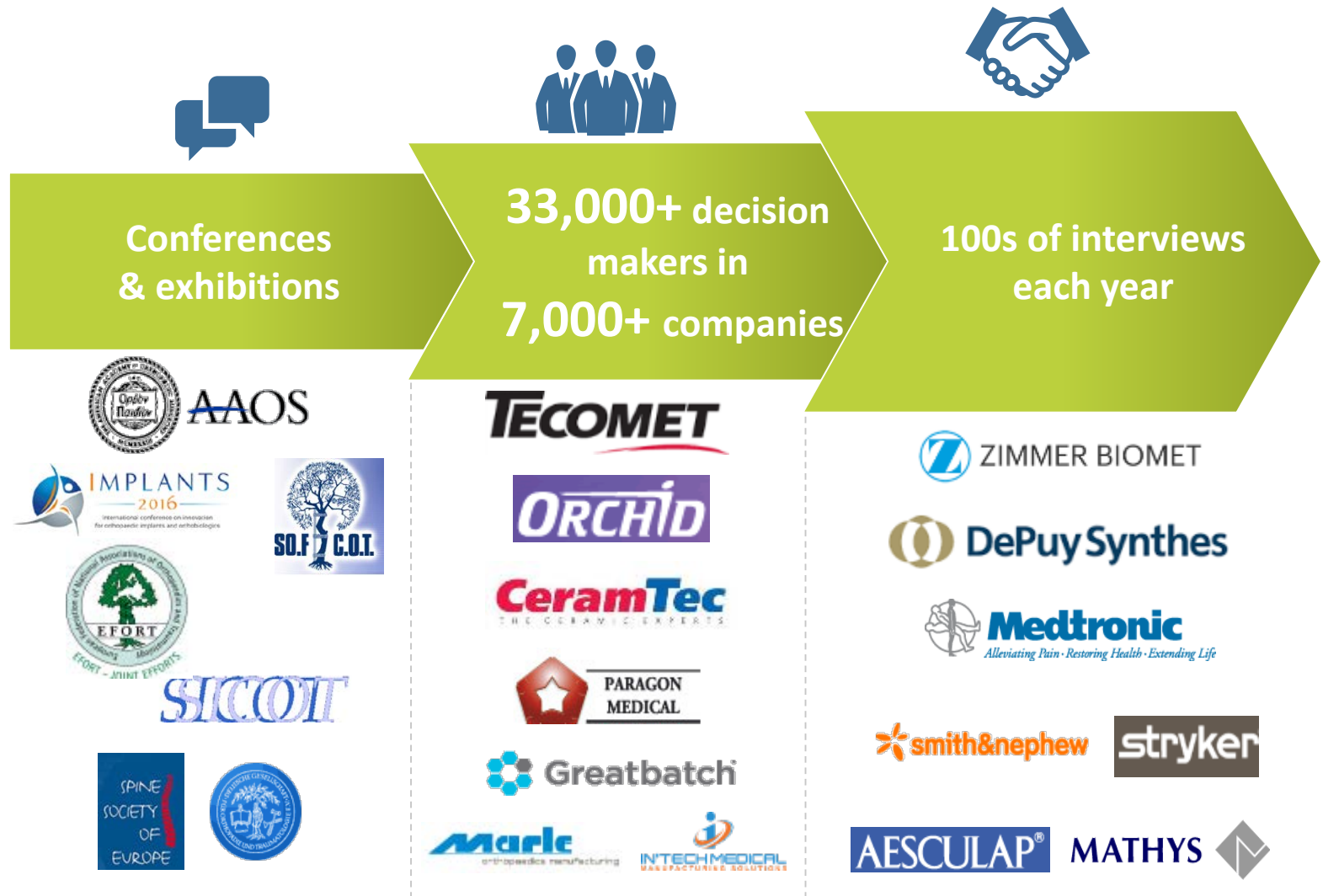
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Our methodology

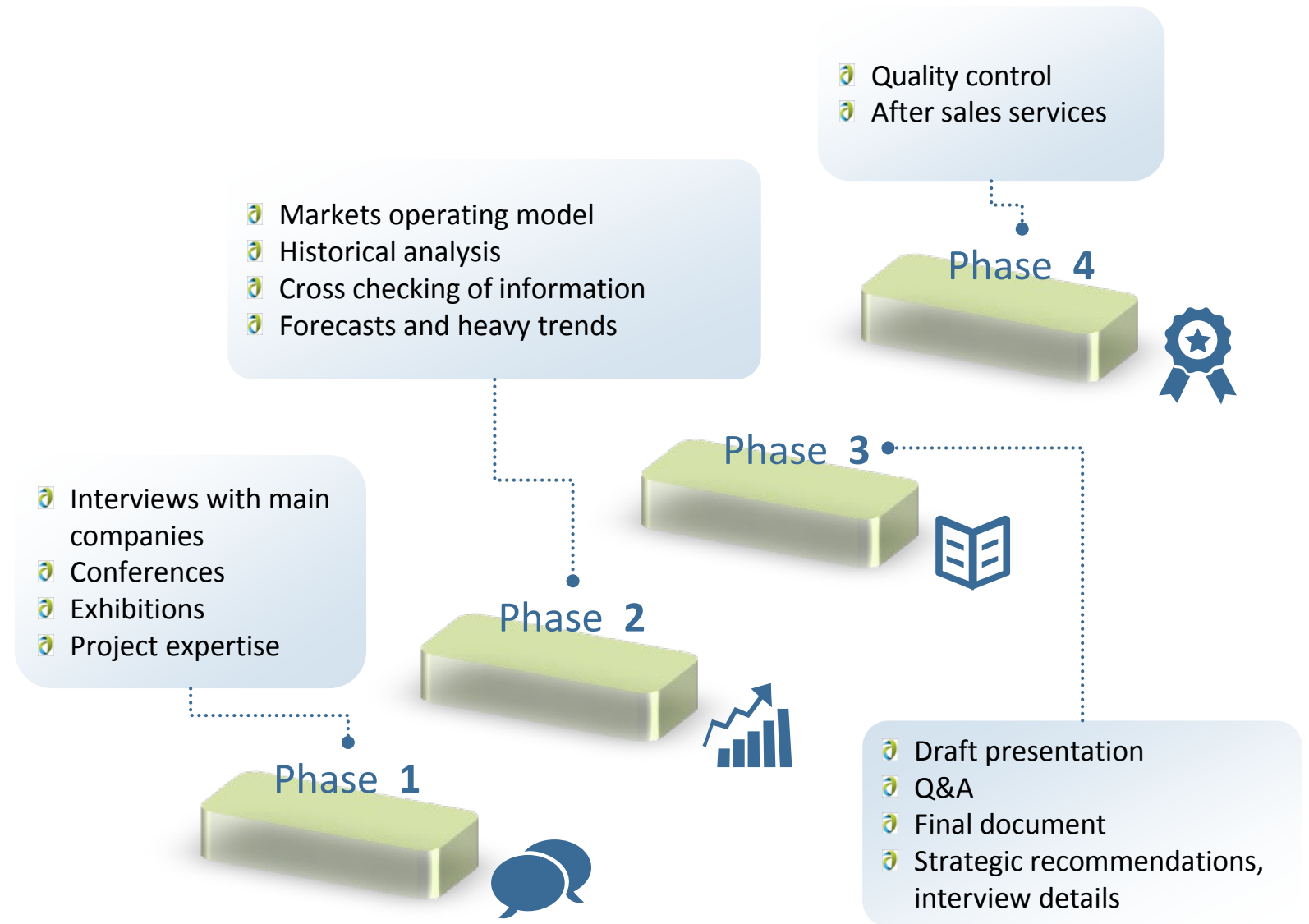
Direct interviews with companies



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Our methodology



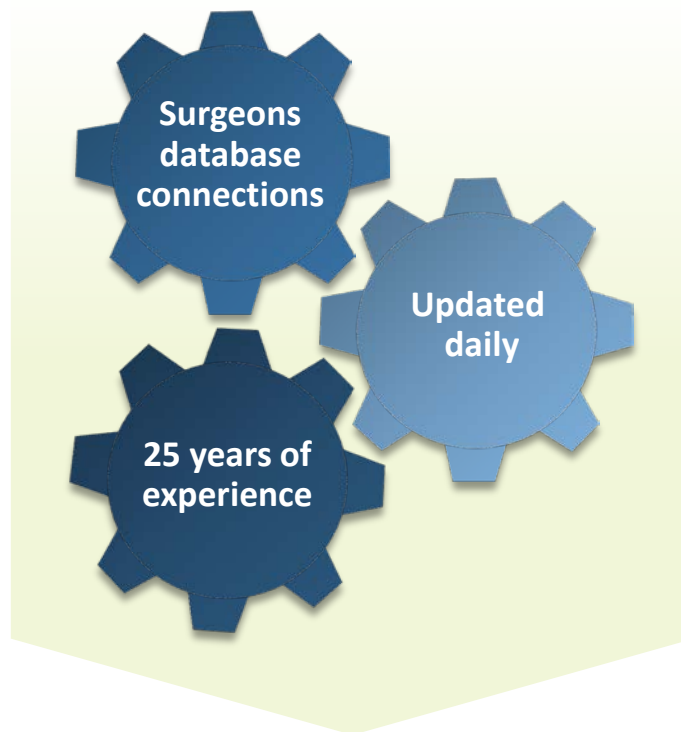
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Our methodology

Our contact network



33,000+
qualified contacts

Our Orthopaedics database: 33,000+ qualified contacts



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Our contacts at different levels



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Our customers

Aesculap-B Braun, Amplitude, Aston Medical, Bioland, Biomet, Biomicon, Ceraver, Cousin-Biotech, Dedienne, 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, Symbios, Tornier, Transtructure, Transysteme, Zimmer Biomet, Wright Tornier, X'Nov...

Apax Partners, Altor Equity Partners, AXA PE now Ardian, Argos Soditic, Banque Lazard, BIP Investment Partners, Carlyle Group, Charlesbank Capital, Clayton Dubilier & Rice, Eurazeo, European Capital, Goldman Sachs, Keensight Capital, LBO France, Permira, Piper Jaffray, Pragma Capital, Rothschild Five Arrows, Simuval, Tikehau, Warburg Pincus, Zurmont Madison...



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

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

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Benefits to collaborate with AVICENNE



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

Guaranteed Confidentiality - a Key Value

Worldwide coverage of the whole chain:

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

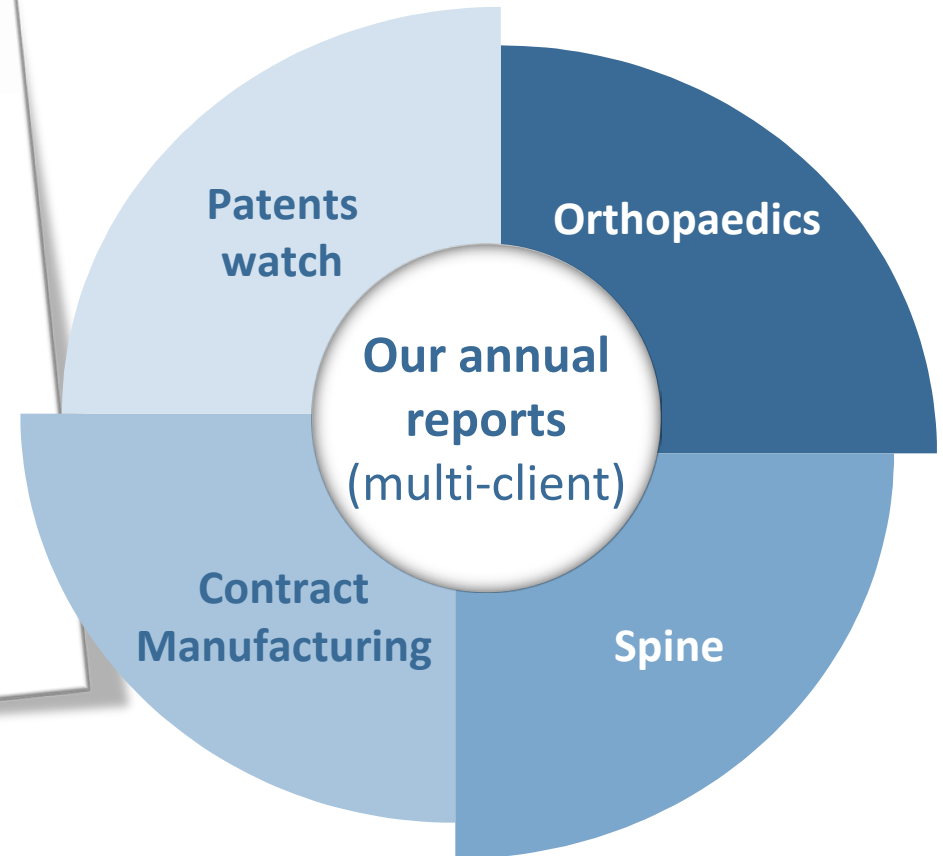
Clear Methodology, clear results and clear recommendations

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Appendices



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AVICENNE off the shelf market reports

“Worldwide orthopaedic Contract Manufacturing market report 2015-2020 & Top 200 supplier profiles” October 2016 4th edition

- 🔍 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...
 - 🔍 Additive Manufacturing for orthopaedics products : trends, developments and players.
- 🔍 Top 200 Contract manufacturers detailed profiles



Available immediately

“European Orthopaedics Market 2016-2021” May 2017 15th edition

- 🔍 First publication 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 May 2017

“Trends, Developments & Dynamics of the European Spine Market” September 2011 6th edition

- 🔍 First publication in 2000,
- 🔍 Yearly up-date,
- 🔍 Universal Fusion Systems, cages, Disc prosthesis...
- 🔍 70+ interviews of spine companies, distributors & surgeons,
- 🔍 400 pages & 300+ graphs detailing the European market in Germany, France, Italy, Spain, UK, Belgium, Switzerland and in other countries.



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 scheme & diagrams,
- 🔍 One shot:
 - 🔍 To identify the new products & R&D trends,
 - 🔍 To follow your competitor's strategic development choices.



Available immediately

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Implants conference



The international meeting on innovations & solutions for orthopaedic implants & orthobiologics
June 8th, 2017 Paris – 13rd edition

Founded and chair
by AVICENNE since 2005

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

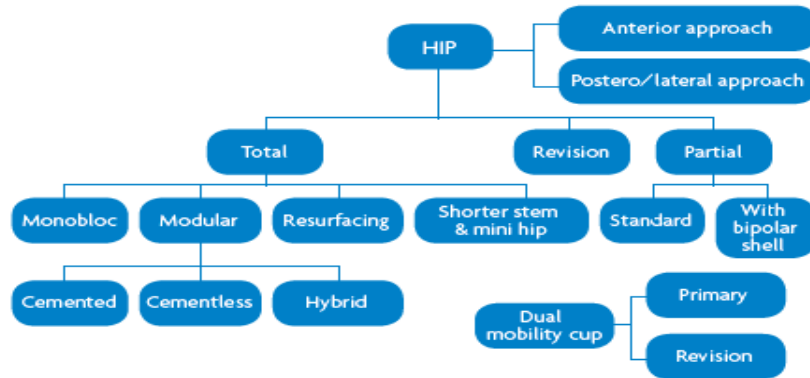


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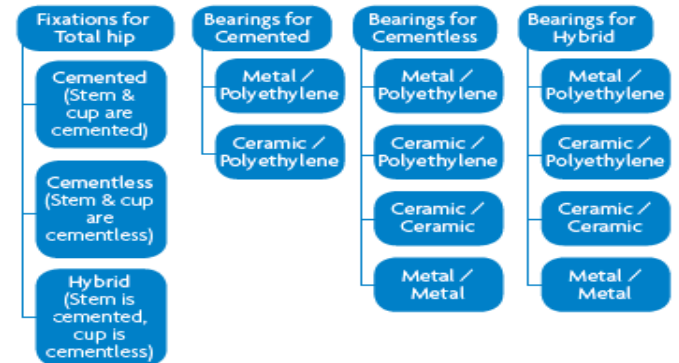
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Hip, knee, shoulder detailed segmentation

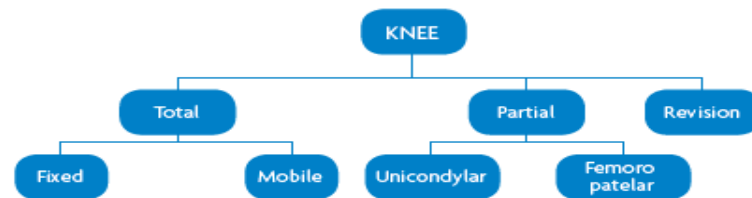
HIP GENERAL SEGMENTATION



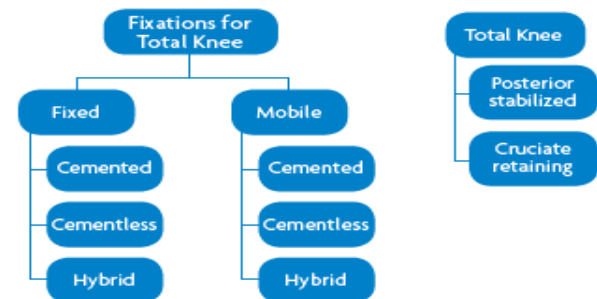
HIP SEGMENTATION BY FIXATIONS & BEARINGS



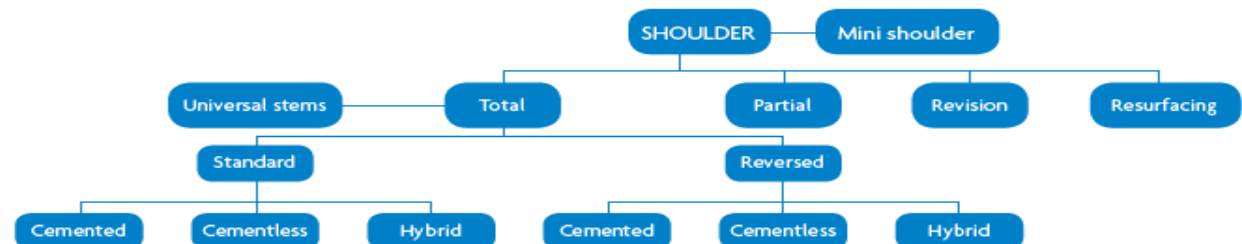
KNEE GENERAL SEGMENTATION



KNEE SEGMENTATION BY FIXATIONS & BEARINGS



SHOULDER GENERAL SEGMENTATION

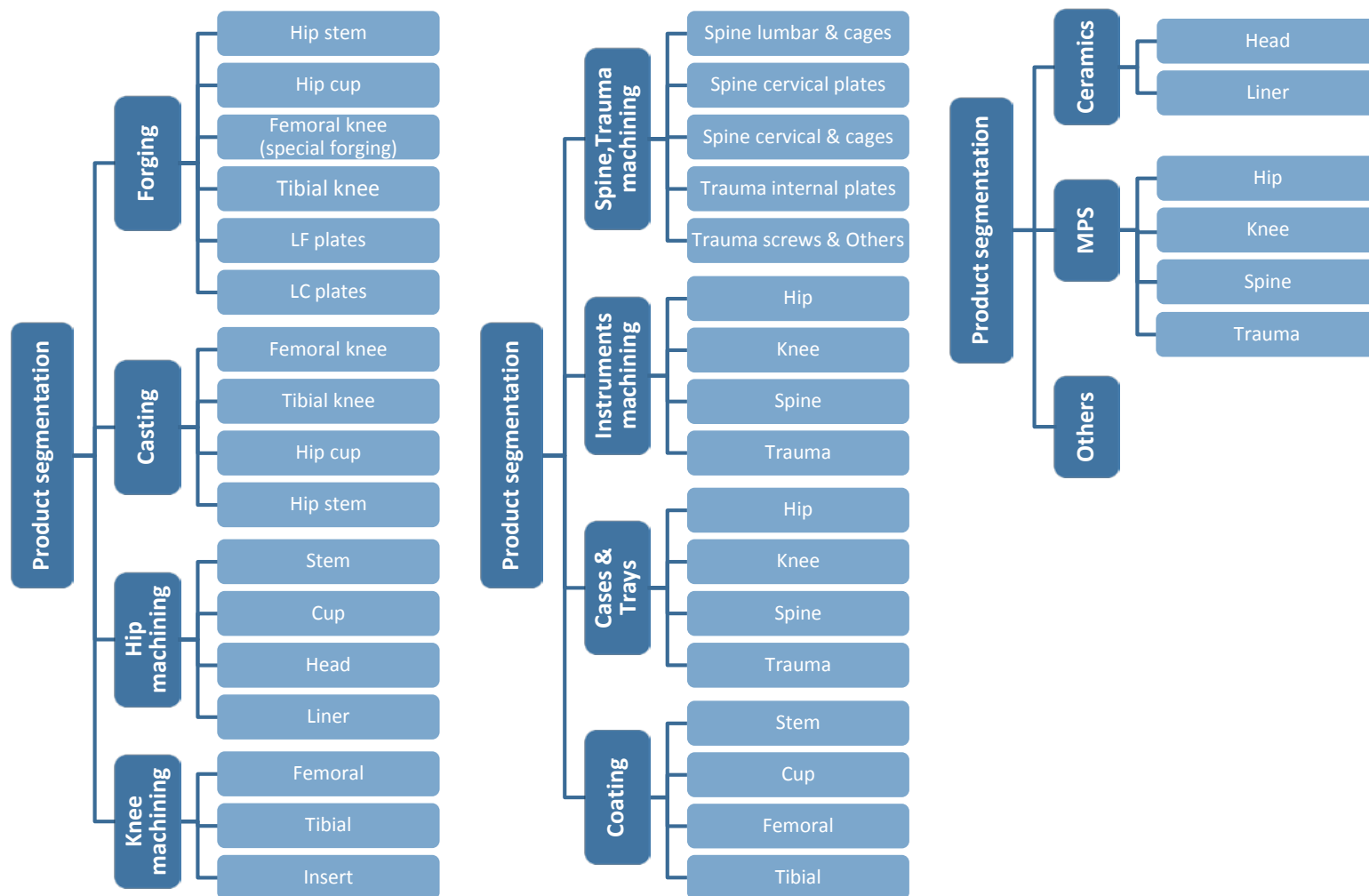


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Contract manufacturing product segmentation: 11 segments & 40 sub-segments



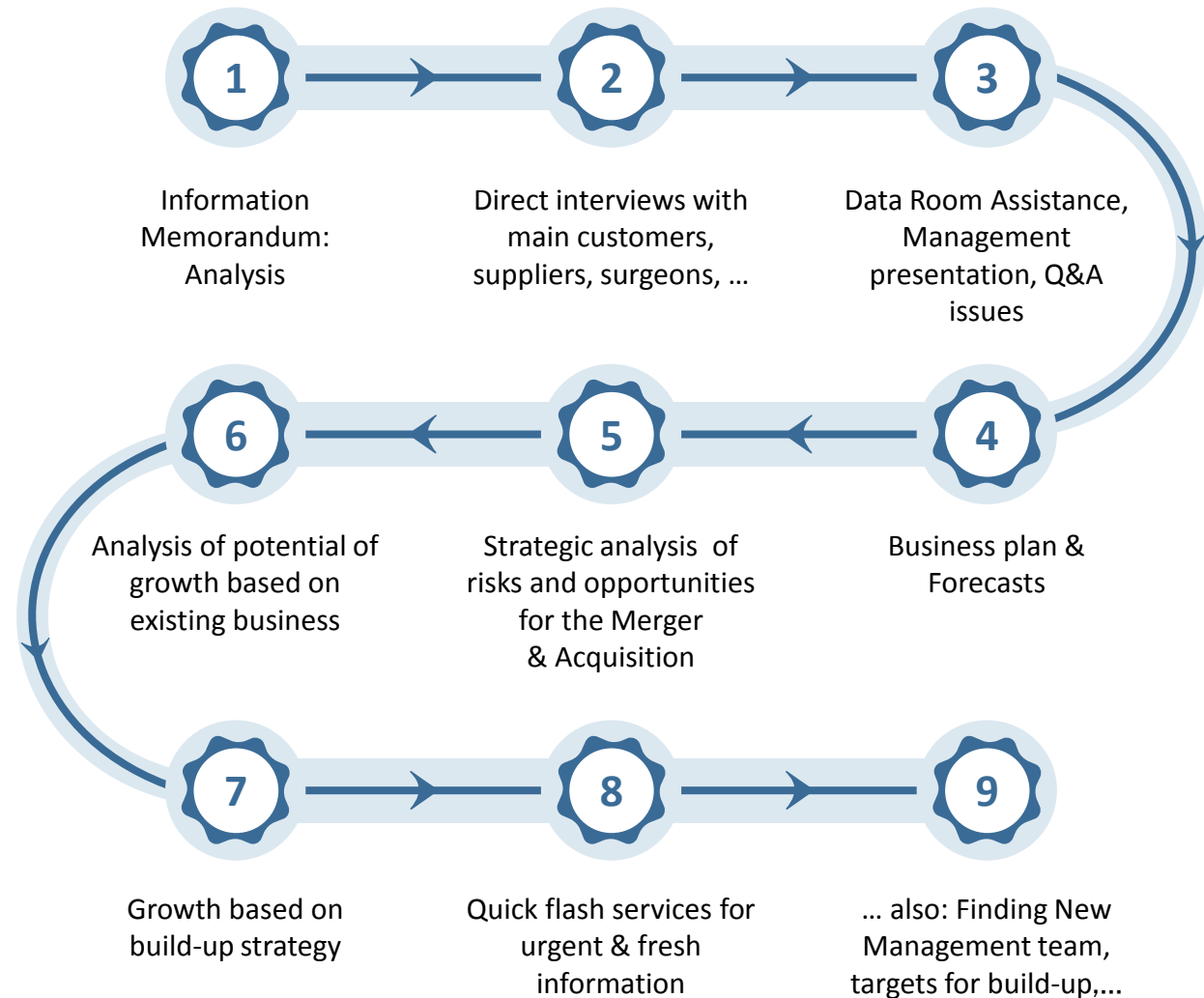
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Source: Avicenne 2016

Services M & A

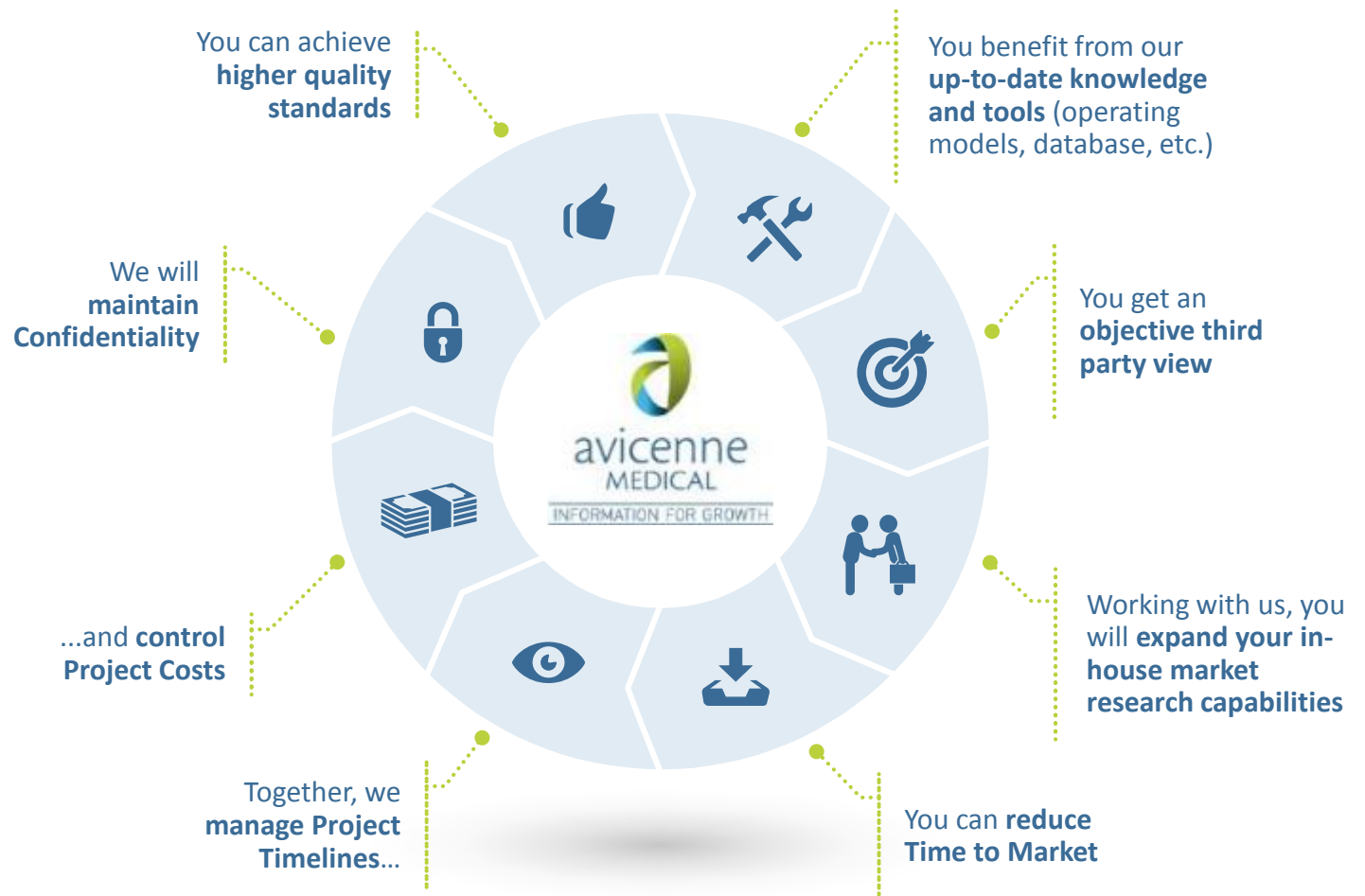


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Reasons to outsource your market research to Avicenne with its 20+ years' experience and expertise



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