



# *aap* Implantate AG

Excellence in Innovation

Information Memorandum  
September 2023



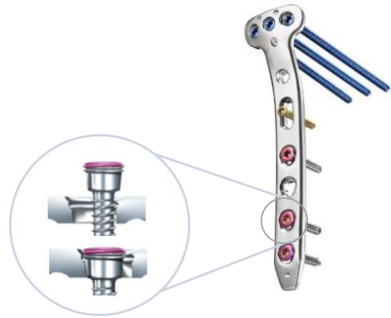
## Safe Harbor Statement

*Our publication may include predictions, estimates or other information that might be considered forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could cause actual results to differ materially. You are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation. Please keep in mind that we are not obligating ourselves to revise or publicly release the results of any revision to these forward-looking statements in light of new information or future events. Throughout today's discussion, we will attempt to present some important factors relating to our business that may affect our predictions.*

# Table of contents

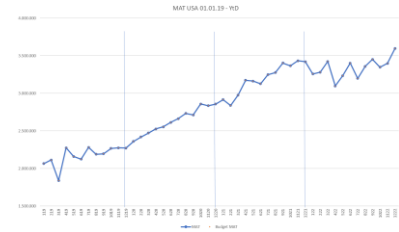
<b>1</b>	<b>Executive Summary</b>	<b>3</b>
<b>2</b>	<b>Trauma Business</b>	<b>12</b>
<b>3</b>	<b>Antibacterial Silver Coating Business</b>	<b>18</b>
<b>4</b>	<b>Resorbable Magnesium Implant Business</b>	<b>29</b>
<b>5</b>	<b>Financials</b>	<b>33</b>

# Investment highlights

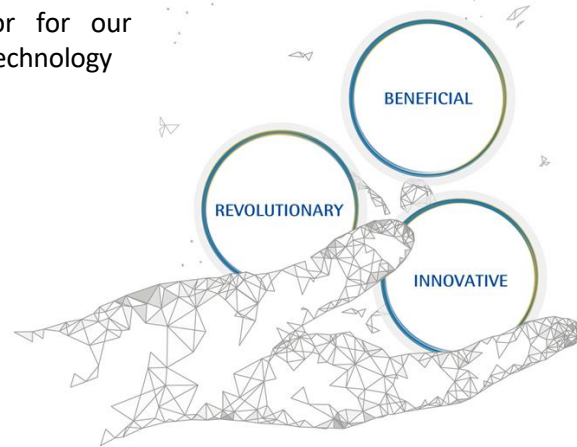


**Pure player in trauma** with its patented **LOQTEQ® Technology** (orthopaedic fixation), which will serve as the exclusive incubator for our antibacterial silver coating technology

**Expanding strongly in the US-market with its trauma portfolio since 2019** and poised for continued growth striving for profitable growth with significantly improved bottom-line



Management Team has built a **robust and agile Organization**, ready to take off in the trauma business and built the base for its game changing **antibacterial silver coating technology**



Front runner in **antibacterial silver coating technology** that dramatically reduces surgical site infections (SSI); tackling one of the growing issues in healthcare with >30% of all orthopaedic trauma cases leading to infections; *aap*'s solution being "at the bed of the patient"



Market-Data  
 > P/S: 0.7x  
 > PE: N.A.  
 > P/B: 0.8

**Exciting investment opportunity** in a highly innovative and **clearly undervalued** MedTech company with great value creation potential

# Innovative and game-changing product portfolio

**Unmet need:** Simplify operation techniques

**Our answer:** Comprehensive portfolio with patented unique screw-plate **locking technology** with great expansion potential and 10 years proven clinical track record

**Unmet need:** Reduce surgical site infections (SSI)

**Our answer:** Unique patented **Silver coating technology** (human clinical trial ongoing) **preventing bacterial colonization on trauma implants and actively destroying infections around the implant** with excellent biocompatibility, high stability and antibacterial efficacy results

Silver Coating  
LOGTEQ

**Unmet need:** Avoidance of second operation (explantation)

**Our answer:** Unique patented magnesium alloy and coating technology (in R&D phase) with a wide range of applications (e.g., extremity and facial surgery, sports medicine or pediatrics)

**Further development on hold – lacking financial resources**

➡ **Platform Technologies addressing unmet needs in trauma**

# Experienced management team continuing to drive forward transformation & profitable growth

## Rubino Di Girolamo CEO



*CEO since 2019*

- With *aap* as investor since 2004 and Board Member
- Long-standing experience in different top management positions e.g., at Metalor Dental Holding AG, Bellevue Group and Saurer Group
- Graduation (M.A.) in Economics at the university of applied science, Zürich (ZHAW)

## Agnieszka Mierzejewska COO



*COO since 2021*

- Since 2014 with *aap* in various leadership roles
- Working in different operational positions for medical device & patient care companies e.g., Vanguard AG,
- Active in various networks, with latest publication on need for antibacterial solution
- M.A. in Health Economics and Health Management at Fresenius Univ. Cologne

# Targets 2023

## Starting position 2023

- **Massive reduction of cost base since 2019 compared to 2022**  
Sales increased by ~4%
  - Up to -50 % manufacturing cost
  - -16 % Personnel (reduction overstaffing)
  - -25 % OPEX (reduction “Holding” cost)
- **Build-up sales** force in Germany by end 2022, US-Team enlarged, ready to perform in 2023
- Patent based R&D investments in
  - **LOQTEQ® > € 50m**
  - **Silver coating technology > € 15m**
  - **Magnesium technology > € 3m**
- **Trauma product registration** for markets CE, FDA, NMPA (China), SFDA and many more.  
**Investment value > € 2m**
- **Solid relation** with **notified body** DEKRA, passing all audits since end 2020 with good results, FDA 2022 passed with no remarks.
- MDR transition on track, **Investment value > € 2m**
- Meet increasing compliance regulations (on track), as e.g., ESG concept, Supply Chain Due Diligence Act, (Lieferkettensorgfaltspflichtengesetz)

Leads to

Main target  
2023

## Revised targets 2023

- **Restructuring Program**  
Implementing cost measures to save € 1m - € 2m p.a. to adapt to short-term achievable sales target level of € 12m - € 15m.
- **Human Silver Study**
  - Re-Start human study with new approved and released protocol successful and as planned
  - End of August 39 patients included in the last 3 ½ months
  - Target to achieve 150 patients by year-end
  - Continue with successful compassionate use cases in Germany
  - BMBF confirmed extension financial support of the personnel cost till 2025 with additional € 0.4m
- **Sales**
  - Growth target USA: 10% - 15 %
  - Growth target EMEA: 0% - 5%
  - Growth target LATAM: 10% - 15%
- **MDR-Path**
  - MDR readiness achieved, waiting for time schedule notified body (since 2022)

# Restructuring 2023

## Starting position 2023

- Restructuring 2020 aimed to sustain growth up to € 20m. Starting to become profitable with sales of € 15m.
- The first target line € 15m sales was planned to achieve in 2022
  - The worst economic situation since 2020 prevented the chance to achieve this goal
  - The recovery in 2021 with becoming profitable collapsed in 2022 with the perfect storm be it in the stock/financial sector, be it in the international business sector, be it in Germany
  - Consequently, the target was missed by far and led to liquidity shortage to be covered.

Leads to

Restructuring  
conclusion  
2023

## Conclusions 2023

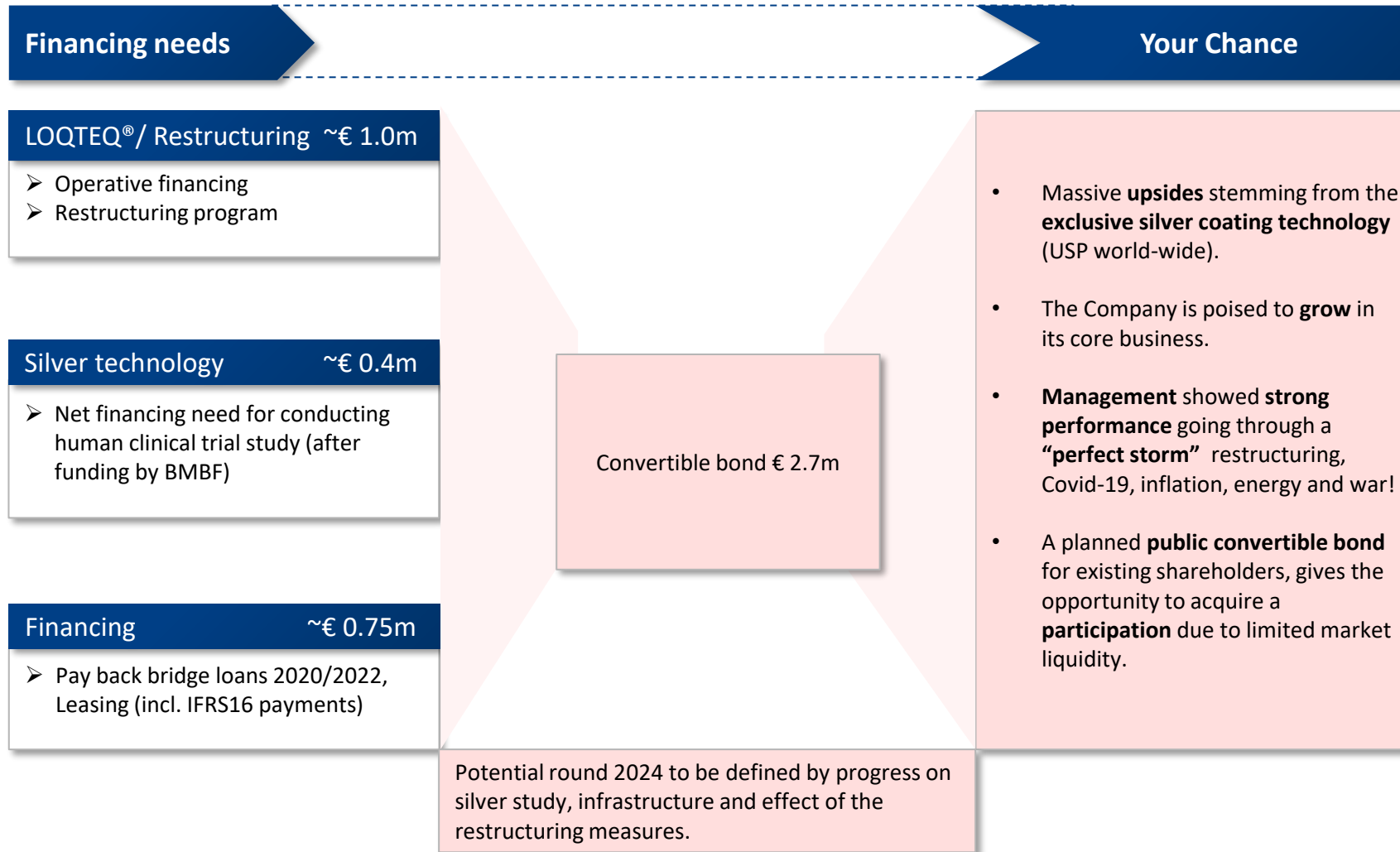
Markets not producing planned growth. Growth areas are almost neutralized by declining areas.

- International: shows great opportunities but increasing regulatory hurdles slow down the boarding of new customers or extending the portfolios in existing markets
- USA: large growth potential could not yet be fully exploited
- Germany: hovering around the 2020 level, starting to grow in small steps
- Group: regular sales of € 2.6m - € 3.5m per Q, with an average close to € 3m per Q

**Conclusion:** Markets not delivering the anticipated growth and hence missing operative profitability/cash flow → cost structure needs to be adjusted to the yet sustainable turnover of € 12m with an upper range of € 15m.



# Cash needs and your investment opportunity



# Targets 2024 - 2031

## Targets 2024 - 2026

### Base for doing business

- New trauma products released (MDR, FDA already released and new ones in progress)
- Site moved from Lorenzweg 5, Berlin to a new site
- IT overhaul to new standard (cloud) and ERP upgrade

### Silver coating technology

- Silver MDR registration received for *aap* trauma products
- Silver coating production line active
- Silver registration in China through *aap* China and USA/FDA in process
- Partnering with 3<sup>rd</sup> parties with *aap* Silver unit (MCTeQ GmbH)

### Trauma Line

- Sales level achieved € 20m
- Production unit highly automatized
- Trauma silver portfolio in its build-up phase

Leads to

**Business Base  
2027-2031**

## Targets 2027 - 2031

### Sales including trauma silver portfolio

- Increase sales by 2031 > € 50m with much higher potential if it's proven to be the new gold standard in trauma.

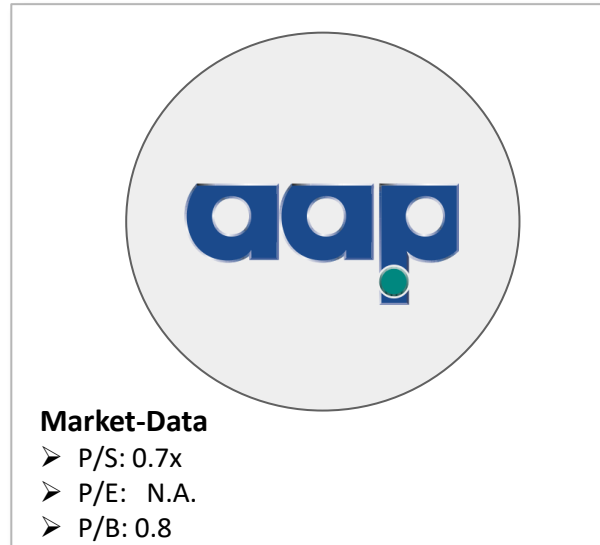
### Silver coating unit

- Achieve China/Asia registration for the trauma silver line
- Achieve FDA registration for the trauma silver line
- Achieve 3<sup>rd</sup> parties' registrations and production of the products as a service; can start earlier if 3<sup>rd</sup> parties are seeing the results of the trauma human study and the compassionate use results.

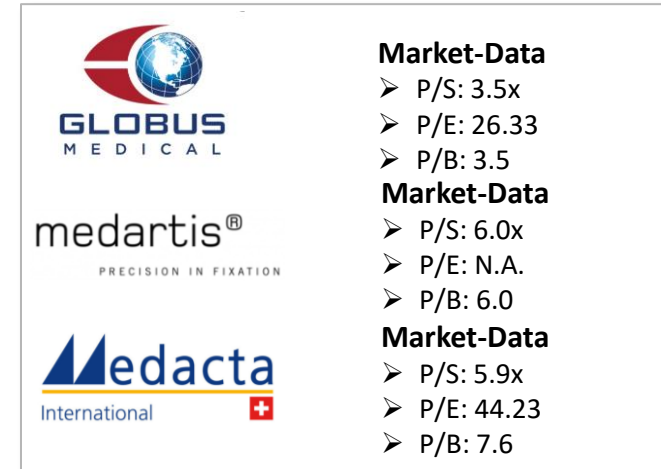
### Alternatives

- Partnering or selling non-trauma silver licence to 3<sup>rd</sup> parties
- M & A with larger industry corporations and become a dedicated product silver line

# aap stock clearly undervalued in peer group comparison



Huge Upside Potential



## S-DAX: Small Cap Healthcare shares since fall 2021 under pressure in a “perfect storm”\*

1. **Phase September 2021:** Upcoming inflation fears, first “tapering” steps US FED leads to growth fear and brings small caps under selling pressure
2. **Phase February 2022:** start of war in Ukraine leads to “risk-off” actions and sell off of small cap company shares
3. **Phase April 2022:** accelerating interest hike dynamic by central banks brings the valuations further under pressure
4. **Phase August 2022:** aap had to release an ad-hoc to lower its outlook 2022 on sales
5. **Phase Q2 2023:** due to the above price erosion and the very small free float and therefore very low liquidity in aap share, a capital cut was discussed to bring the share price above the mandatory € 1 minimum price for any capital transaction

# Table of contents

<b>1</b>	<b>Executive Summary</b>	<b>3</b>
<b>2</b>	<b>Trauma Business</b>	<b>12</b>
<b>3</b>	<b>Antibacterial Silver Coating Business</b>	<b>18</b>
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<b>5</b>	<b>Financials</b>	<b>33</b>

# What clinics typically want when purchasing implants

## Quality and functionality

- Quality has different dimension (e.g., strength, surface structure, bio-compatibility, no cold welding when tightening screws etc.) but while it is still an absolute must, it's fair to say that many suppliers do fulfil the basic quality criteria today.
  - Functionality is therefore an increasingly relevant criterion – e.g., the number of screws to fix a plate or the way to tighten it and thereby simultaneously fulfill compression and fixation influences quality and in time of the surgical intervention which impacts the economics of the clinic.
- ⇒ **aap excellently positioned given its high-quality plate and screw systems.**

## Portfolio

- Given that screws and plates of different suppliers do not fit together a clinic typically purchases one or very few systems from vendors in order to minimize complexity and the time needed to train surgery teams to use the systems.
  - Range of portfolio is therefore a key decision criterion which favours large incumbents covering all components. Still, there remain specialists with niche portfolios (e.g., Paragon 28 for foot and ankle joint)
- ⇒ **aap covering 90% of major trauma indications but still has certain gaps in the portfolio which are being addressed.**

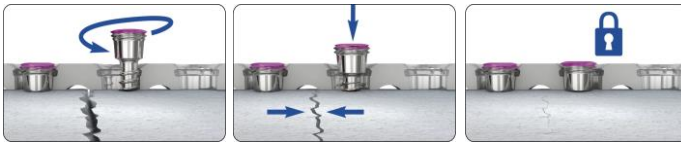
## Consignment stock

- Industry standard is to provide fully equipped trays with implants to clinics / hospitals in consignment. The customer only pays used implants as trays are replenished.
  - Provision of consignment stock is a significant burden impacting working capital and thereby favouring financially strong companies.
- ⇒ **one of the reasons why aap is seeking further capitalization.**

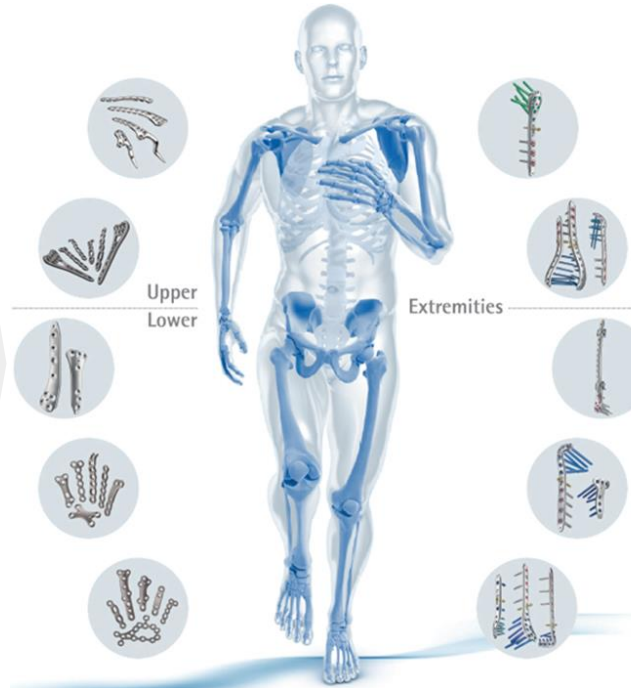
# aap`s answer: Differentiated and broad aap LOQTEQ® trauma portfolio

## Technology

### One Hole One Screw One Step

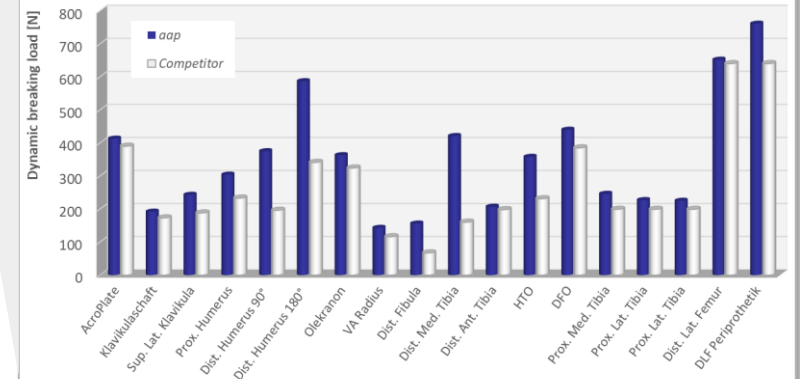


- ✓ **Fracture compression and angular stability in one surgical step**
- ✓ **High stability** through the combination of two fixation principles
  - Cone connection
  - Circumferential thread
- ✓ **Easy explantation** - no cold welding\*
- ✓ **Anatomical design** with optimized fit and predetermined screw angles for improved fracture fixation
- ✓ **Locking & compression in ONE step**



## Key Achievements

- ✓ **Unique technology** with comprehensive patent protection
- ✓ Portfolio covers **today > 90%** of major trauma indications
- ✓ **4 patent families** that place strong demands on the design and fixation technology of the LOQTEQ® system
- ✓ **Superior biomechanical properties\*\*** compared to the market benchmark



**Comprehensive Portfolio**  
Covering most common fracture patterns

**Platform Technology**  
LOQTEQ® Technology for broad range of applications

**Adressing Trauma Challenges**  
Solutions for elective and periprosthetic fractures

**Added Value**  
Through IP-protected technologies adressing unmet needs

\*Please refer to biomechanical study „Locking design affects the jamming of screws in locking plates“, Injury, Int. J. Care Injured 49S1 (2018) S61–S65.

\*\*Biomechanical tests with the Institute of Biomechanics of the BG Clinic Murnau.

# LOQTEQ® technology has tangible benefits for patients and surgeons...



„For me, efficient and successful treatment of the patient is paramount. Thanks to the **LOQTEQ® Osteotomy System**, I have the possibility to treat my patients with a shorter and at the same time more stable HTO plate to prevent possible soft tissue irritation and thus enable earlier mobilization.“

Prof. Wolf Petersen, M.D., Chief of Orthopedics and Trauma Surgery at Martin Luther Hospital, Berlin, Germany



„The **LOQTEQ® Osteotomy System** allows optimal care and adaptation to the increasing indication for corrective osteotomy while providing a clear set of instruments. In particular, the option for angular stable fracture compression makes osteotomy easier for me and can shorten the operating time.“

Prof. Dr. med. Sven Scheffler, specialist in orthopedics and trauma surgery, partner of the Sporthopaedicum clinic, Berlin, Germany

## Dominik Pelivan

Midfielder at FC Energie Cottbus\*

\*Central defender at FC Chemnitz (season 21/22)

"It was important for me to be able to return to competitive sports as soon as possible. Already 7 weeks after the surgery I was able to do sports without crutches again, after about 13 weeks I could participate in soccer team training. I did not notice the plate. I was absolutely free of complaints, so that nothing stood in the way of the first point game on 05.02.2023."



„The **LOQTEQ® Femur PP System** offers us trauma surgeons the possibility to treat our patients with periprosthetic fractures of the femur safely and stably, despite the presence of a prosthesis. Thanks to the additional hinges, which can be variably adjusted up to 45 degrees, with angle-stable screws that can be used polyaxially, we achieve the desired results in these complex osteosynthesis procedures.“



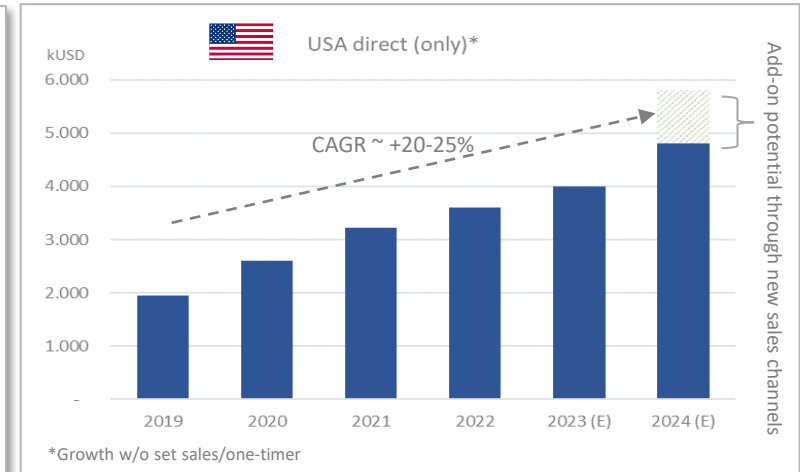
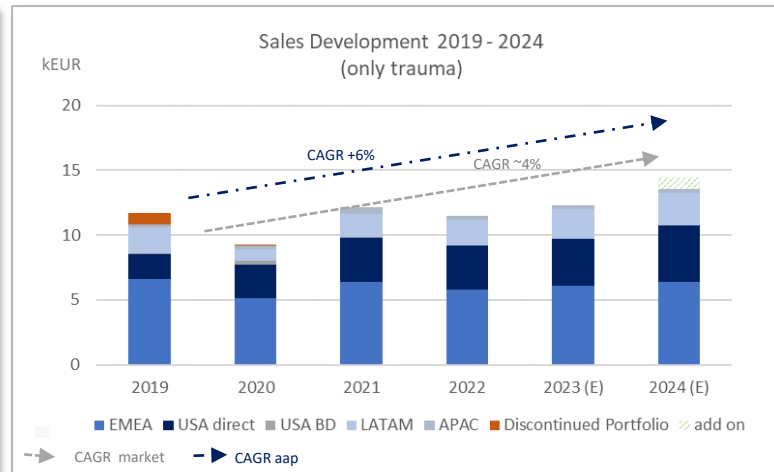
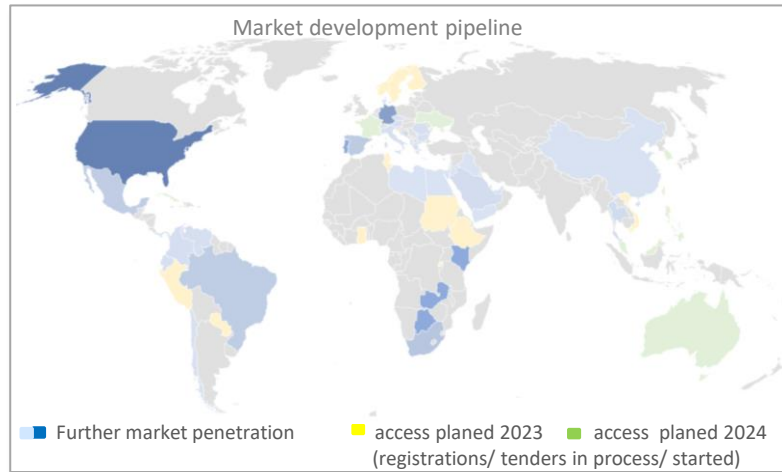
Prof. Dr. med. Sven Märdian, Senior Consultant, Section Head Trauma Surgery and Musculoskeletal Tumor Surgery, Berlin, Germany

„The **LOQTEQ® Femur PP System** is beneficial for the treatment of periprosthetic fractures. In particular, it increases flexibility in bicortical screw placement, thanks to the polyaxiality of the lateral hinges and the superior stability of the plate.“



PD Dr. med. Clemens Kösters, Chief Physician at Maria-Josef-Hospital Greven, Specialist in Orthopedics, Specialist in Special Trauma Surgery and European Specialist in Traumatology (Fellow European Board of Surgery/FEBS Traumatology)

# aap revenue development 2018 – 2024 (E)



- ✓ **Growth overall ~+6% above projected market CAGR** of global trauma upper and lower extremities at ~4%\*\*
- ✓ **Direct US Business:** to grow from 16% to 35% revenue share from 2018 – 2024(E), ongoing expansion of sales agent network and higher priced case value setting base for driving profitable growth; per HY1/2023 at 31% revenue share
- ✓ **Europe:** with stronger market penetration to sustain solid sales (Germany, Spain/Portugal) and expand in further European markets (e.g., France); strengthen presence as German manufacturer
- ✓ **Rest of the World:** despite challenging micro- and macro economics resilient distributor base and initiation of product and regional expansion; profiting from aap`s understanding of comprehensive support on all levels and high-quality products

### Strong customer retention

- 77% of customers stay with aap ≥ 5 years (Direct sales to clinics through contract base to purchasing organizations/ clinic groups)
- 56% of customers stay with aap Inc ≥ 3 years (growing legacy sales agent base combined with constant expansion)
- 53% of customers stay with aap ≥ 5 years (resilient distributor base, in some regions large organizations using aap to complete trauma product range)

### International and national registrations

- aap`s product portfolio approved in core and emerging markets**
- ✓ CE MDD approval certificate valid with transitional period until 2028; MDR transition in progress
  - ✓ Full aap portfolio US FDA (510 (k) clearance with growing pipeline in progress (new product registrations ongoing)
  - ✓ NMPA (China), ANVISA (Brazil), SFDA (Saudi Arabia) and many other registrations assigned

### Strong training and service platform

- ✓ Increased training and sales platform in various forms to facilitate distributor and end user support; increasing attractiveness as manufacturer
- ✓ Broadened portfolio of products enabling winning of new customers (growth potential for ex/EU customers to gain new business and accelerate)
- ✓ Core competencies from R&D, PM and Sales in-house to ensure professional high level of servicing

\*Impact COVID-19 on business operations due to lock-down periods. \*\*Global Trauma Fixation Device Market Insights, Forecast to 2025, page 15.



# Road to success in trauma business

## Key Drivers:

## Goals:

**Operational leverage**



- ✓ **Continuous improvement of gross margin** through operational efficiency programs and economies of scale
- ✓ Targets **sustainable sales growth and profitable operative EBITDA in 2024**

**Strong focus** on developing and managing **sales channels**



- ✓ **Accelerating top-line growth** with LOQTEQ® > €20m by 2027
- ✓ Further **intl. registration coverage and distribution** with focus on growing markets (e.g., US, SEA)
- ✓ **Strong emphasis** on training and market penetration

**Changed management and performance culture**



- ✓ **Efficient and competent** organizational excellence
- ✓ Culture of performance and quality

**Continuous product & portfolio development**



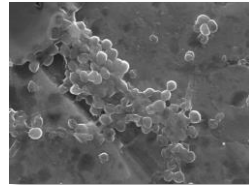
- ✓ **Expansion of IP-protected** platform technology LOQTEQ® to **complete full trauma range**
- ✓ Launch **LOQTEQ® antibacterial product line** with **unique portfolio position** in trauma

# Table of contents

<b>1</b>	<b>Executive Summary</b>	<b>3</b>
<b>2</b>	<b>Trauma Business</b>	<b>12</b>
<b>3</b>	<b>Antibacterial Silver Coating Business</b>	<b>18</b>
<b>4</b>	<b>Resorbable Magnesium Implant Business</b>	<b>29</b>
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# “Game-Changer” for medical device industry

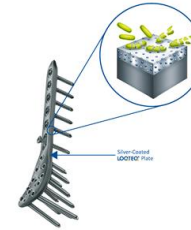
## Unmet Need



Biofilm formed on an TiAl6V4 implant surface

- **Healthcare-associated infections (HAI)** are one of the major challenges in medicine
- **3.2 million people** are estimated to receive an infection diagnosis **every year in Europe**, of whom approximately **37,000 become fatal\***
- leads to **16 million extra-days** of hospital stay, and an **annual cost** of approximately **€ 7 billion** across Europe\*\*
- In **orthopedic trauma**, it has been estimated that up to 30 % of cases may result in infection\*\*\*

## Our Response



**Antibacterial Silver Coating (fusion) by aap**

- ✓ **Pioneer** in the development of an **antibacterial silver coating** technology for trauma implants
- ✓ Platform technology with **wide potential applications** (cardiology, orthopedics, etc.)
- ✓ Stable coating (fusion) with **high antibacterial efficacy and biocompatibility**
- ✓ **Cost-effective** coating technology
- ✓ **Conducting** worldwide first clinical study of its kind
- ✓ **Strong and comprehensive patent** portfolio
- ✓ **Enormous market potential**

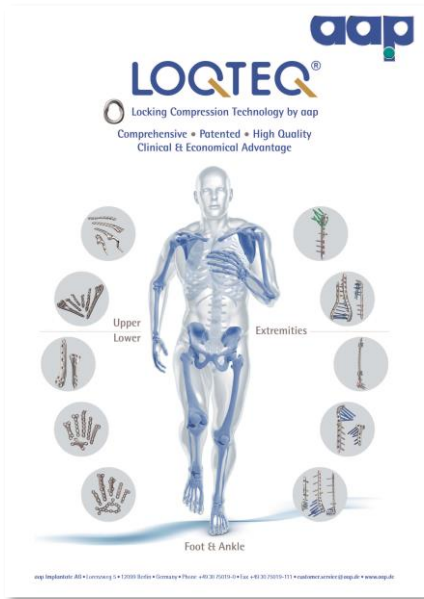
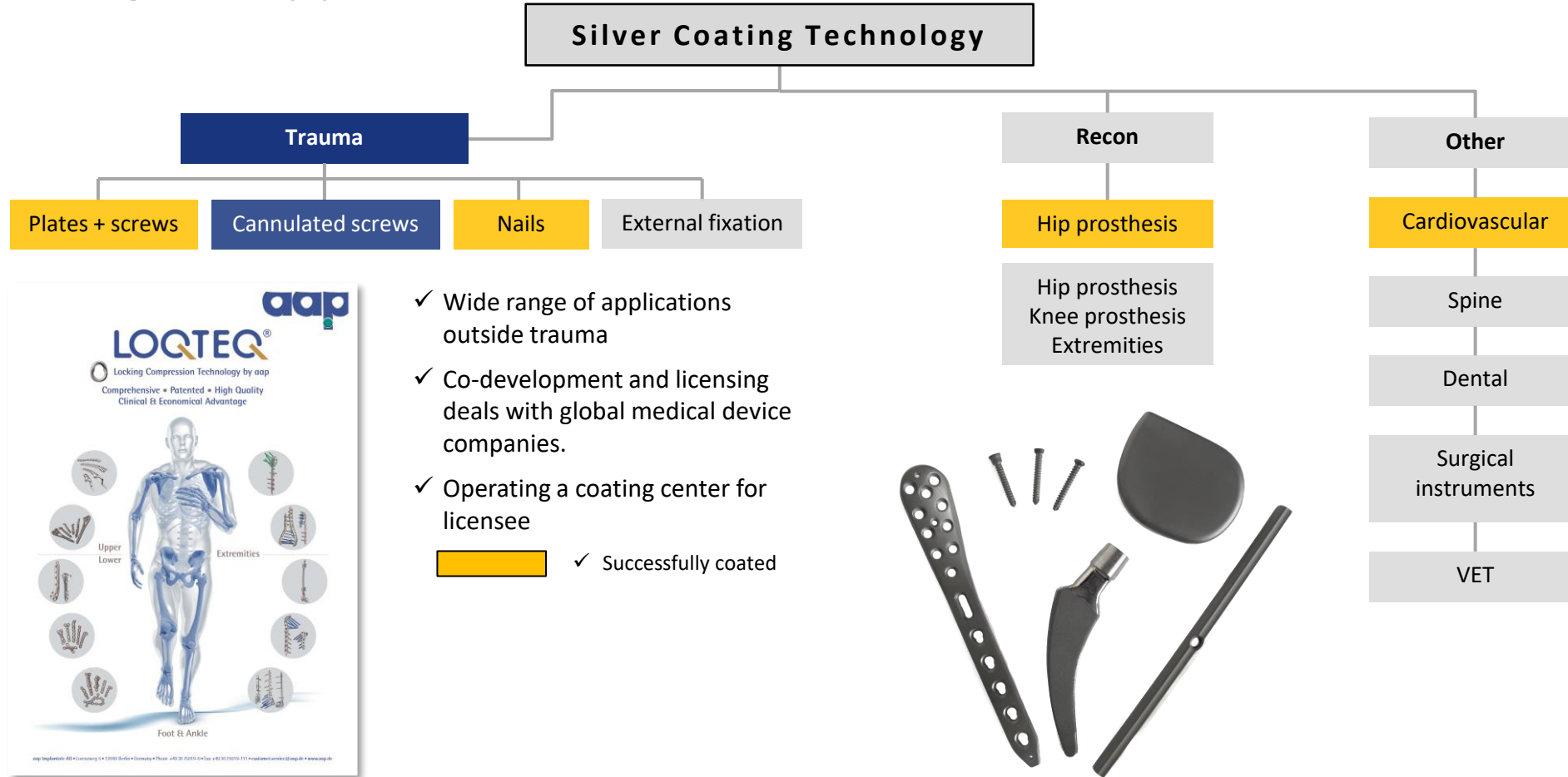
\*European Centre for Disease Prevention and Control, Economic evaluations of interventions to prevent healthcare-associated infections – Literature review. Stockholm: ECDC, 2017.

\*\*World Health Organization, Report on the Burden of Endemic Health Care-Associated Infection Worldwide - Clean Care is Safer Care. WHO 2011.

\*\*\*Schwarz et al., 2018 International Consensus Meeting on Musculoskeletal Infection: Research Priorities from the General Assembly Questions.

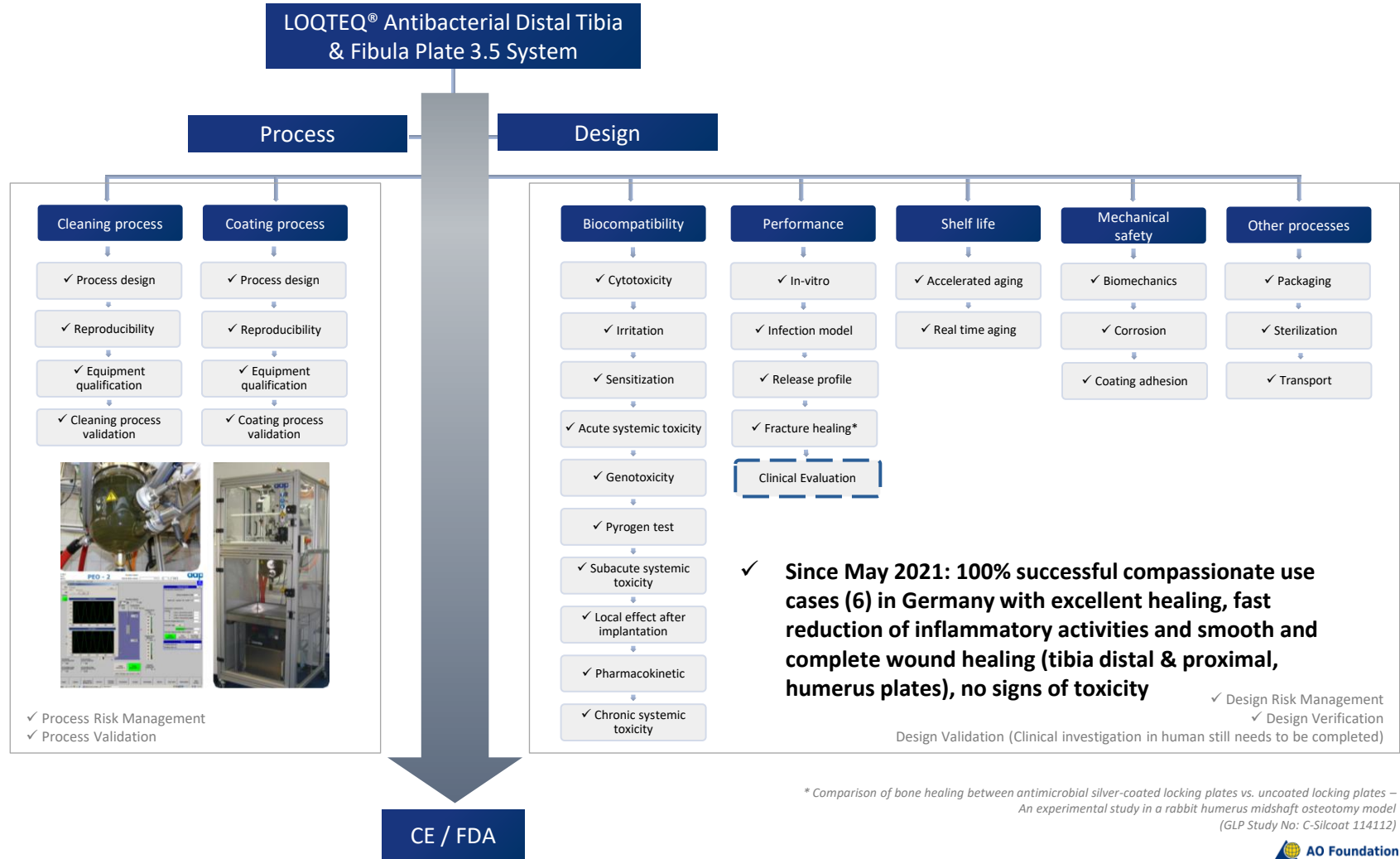
Journal of Orthopaedic Research 37(5): 997-1006, 2019.

# Wide range of applications



**Potential to reduce infection rates in a wide variety of applications and the overall amount of antibiotics required for treatment!**

# LOQTEQ® path to registration



\* Comparison of bone healing between antimicrobial silver-coated locking plates vs. uncoated locking plates – An experimental study in a rabbit humerus midshaft osteotomy model (GLP Study No: C-Silcoat 114112)



# LOQTEQ<sup>®</sup> antibacterial Market study – Human Clinical Trial

## Clinical Need

- In general, **surgical treatment** of fractures in orthopedic trauma patients is at risk for implant-associated infections
- The silver-coated plate is designed to **prevent bacterial colonization** on the implant surface and to **kill resistant bacteria** with high efficacy
- Product used in Human Clinical Trial focused on lower extremity – due to high incidence in infections



## Study Objectives

- To show the **safety** of the **LOQTEQ<sup>®</sup> antibacterial silver-coated system** is non-inferior in comparison with the uncoated LOQTEQ<sup>®</sup> system
- To show the **clinical benefit** of the LOQTEQ<sup>®</sup> antibacterial silver-coated system in comparison with the uncoated LOQTEQ<sup>®</sup> system
- To recruit 292 patients in ~1,5 years followed by 12 months follow-up
- To **support** regulatory **approval** processes in **Europe, USA and Asia**

SPONSORED BY THE



The German Federal Ministry of Education and Research (BMBF) is acknowledged for funding this research as part of the program "Transferring medical solutions into patient care - Proving clinical evidence without delay" (funding codes: 13GW0313A, 13GW0313B, 13GW0449A and 13GW0449B).

# LOQTEQ<sup>®</sup> Market study – Human Clinical Trial

## Updated Study Design

Randomized, controlled, subject-blinded, multi-center study of LOQTEQ<sup>®</sup> antibacterial locking plates in subjects with fractures of the distal fibula (AO type 4F3 injuries)

- Primary Objective: To show the safety of the LOQTEQ<sup>®</sup> antibacterial silver-coated system is non-inferior in comparison with the uncoated LOQTEQ<sup>®</sup> system.
- Secondary Objective is to show the clinical benefit of the LOQTEQ<sup>®</sup> antibacterial silver-coated system in comparison with the uncoated LOQTEQ system.
- 292 subjects with either Investigational (coated) device or Comparator (uncoated) device
- 12-month Follow-Up period
- Clinical trial period: Restart with new design Q2/2023 until 2025



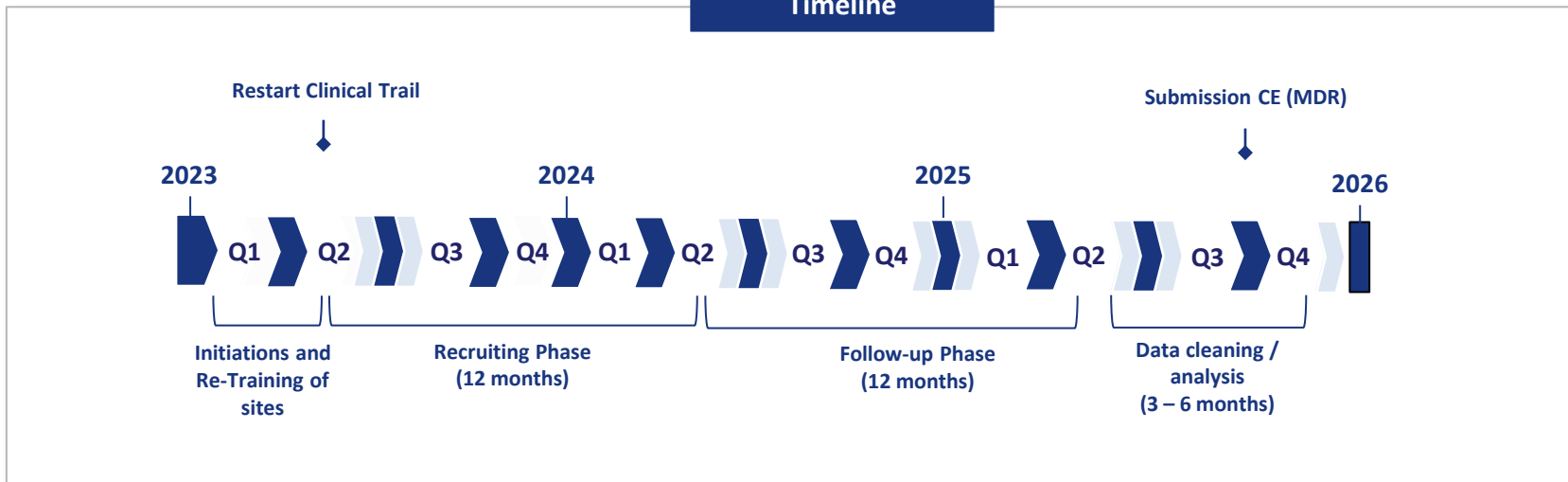
Distal Fibula Plate

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## Timeline



# LOQTEQ<sup>®</sup> Market study – Human Clinical Trial

antibacterial

## Timeline and costs of clinical study

### Timeline

	Number of subjects	Number of centers	Inclusion rate per centers	Restart of recruitment	End of recruitment	End of study
<b>Fibula indication</b>	292	12	2 per month	Q2/23	Q2/24	Q2/25

### Actual status

31.08.2023	Number of subjects	Number of centers	Inclusion rate per centers	1st. patient	End of recruitment	End of study
<b>Fibula indication</b>	39	10 (active) (15 planned)	2,6 per month with avg. 4 centers (excl. ramp-up)	16.05.2023	Q4/24	Q4/25

### Planned Costs

Funding for the period of:	Costs (to be prefinanced on a quarterly basis)	Funding (following Quarter flow back)	<i>aap's costs net*</i>
<b>Q3/2023 – Q4/2025</b>	3.600.000 €	1.800.000 €	1.800.000 €

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Federal Ministry  
of Education  
and Research

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\*not including the silver R&D team activities and not covered personnel cost



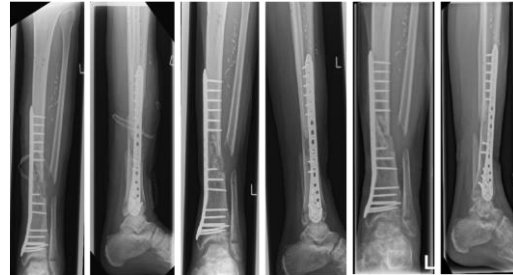
# LOQTEQ<sup>®</sup> antibacterial Compassionate use case - "Game changing technology" in action

## Case extract Trauma Center Hamburg, Germany

- Ukrainian young soldier, severely injured during combat in Ukraine in May 2022
- Admission to German hospital (06/2022) with wound healing disorder after shrapnel injury with external fixator in place
- Microbiological evidence of 4-MRGN *Pseudomonas aeruginosa* (antibiotic resistance), etc.
- Supply (09/2022): Angular stable plate osteosynthesis using silver-coated LOQTEQ<sup>®</sup> tibial plate as part of individual healing trial\*
- Result: X-rays 6 weeks and 8 months postoperatively show incipient and progressive bony consolidation. Overall irritation-free skin soft tissue and scar conditions.



Ausgeprägter Weichteildefekt im Bereich des linken Unterschenkels bei anliegendem Fix. externe sowie radiologischer Befund der Unterschenkelfraktur mit ossären Defekten von Tibia und Fibula



Röntgenbilder (anterior-posterior (Ap) sowie lateral (lat.)) unmittelbar nach offener Repositionierung mit winkelstabiler Plattenosteosynthese sowie 6 Wochen und 8 Monate postoperativ zeigen beginnende und voranschreitende knöcherne Konsolidierung.



LOQTEQ antibakterielle Tibiaplatte 3.5 der Firma aap in OP-Vorbereitung sowie intraoperativ in situ



Hautweichteile am linken Unterschenkel intraoperativ, im Sep. 2022 sowie im Verlauf 4 Monate postoperativ

## Surgeons' feedback



„I can only confirm the colleague [Prof.] Alt: I also saw an excellent healing process during my operation and could no longer detect any infection activity after ten days,“ [...] „If the results are confirmed in the upcoming human clinical study, I see a good chance that such a technology has the potential to become the market standard.“

Dr. med. Rene Burchard, head physician at the Clinic for Orthopedics & Trauma Surgery at the Dill Clinics in Dillenburg, Germany



„Here, there was a desired significant increase in the local silver concentration in the wound, whereas the systematic silver concentration in the rest of the body was very low and therefore completely unproblematic. These are very positive findings that show that the silver ions are released by aap's special coating and essentially only appear where they are actually supposed to act.“

Prof. Dr. Dr. Volker Alt, Director of the Clinic for Trauma Surgery at the University Hospital Regensburg

\* Individual therapeutic trials are used in exceptional cases when there is no (more) standard treatment; the decision is up to the physician and patient after a precise clarification of all alternatives as well as a well-founded explanation, see reference [https://www.med.lmu.de/einrichtungen/ethik/individueller\\_heilversuch.pdf](https://www.med.lmu.de/einrichtungen/ethik/individueller_heilversuch.pdf)

# Attractive region Asia

Asian countries respond very **positive** on *aap*'s silver coating project. **China** and **Vietnam** are the first, showing great interest in this technology.

*aap*'s trauma portfolio is newly registered in **China**, but as an importer. To rejoin the tenders the **registration should be switched to a local affiliate**.

In 2020 **Youshi Medical** joined *aap* as an investor which opens new opportunities with China.



Targets:

- Switch the registered trauma portfolio to *aap* China affiliate
- Have the silver coating registered with NMPA
- Roll-out Silver in SEA

**Approval strategy for China** for the antibacterial silver-coated product portfolio is based on the approach of **applying for an innovative patent**. Patent's **not older than two years and show novelty quality**, it qualifies for "fast" track.

A patent submission has taken place in China and EU and is under evaluation through patent authorities.

## Attractive region USA

The **US shows great interest**. Bottleneck to continue the started FDA process is the wish of FDA to have an animal study. Therefore, the US is for the time being on hold till data of the German human study can be used for further discussion with FDA. Restart FDA meetings estimated by end of 2024 with available study data.

*aap* has its **full trauma portfolio** FDA registered in US and has growing access to facilities, today > 6.000, including GPOs, IHNs, academy contracts (veteran owned), others...



Target:

- FDA approved silver trauma portfolio
- Silver implants will become a must for listings with GPOs, IHN and other clinic groups but prospectively also the US Military

**Approval strategy** for the antibacterial silver-coated product portfolio is based on the approach of **using the data of the German human study** and to avoid an animal study.

# Value creation potential



Trauma application **exclusive for aap** usage -> **gear up aap's market share** through aap's silver trauma line becoming the new gold standard.



### Sales price for coated products

estimated mark-up +15% - +50% compared to non coated products. Final strategy fixing after ending of the human clinical study and the launch of the product.



"When this coating has its MDR approval, it has the potential to become the **new gold standard in the trauma field.**" states a coordinating investigator of the human aap silver coating study.



### COGS

Based on current production process estimated between +5% - +15% compared to non coated products.



**Patent lifetime** EU 2030, US 2034, first market product in trauma expected in 2026, depending on MDR. New patents in evaluation. Even after expiration of the patent lifetime **high protection due to complex production and regulatory process.**



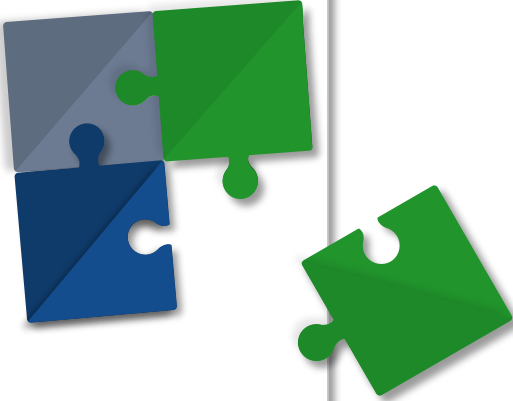
Portfolio of aap trauma products **converted to silver trauma portfolio** estimated between **20% - 50% up to potential 100%**, to be decided later and depending on regulatory path

# Table of contents

<b>1</b>	<b>Executive Summary</b>	<b>3</b>
<b>2</b>	<b>Trauma Business</b>	<b>12</b>
<b>3</b>	<b>Antibacterial Silver Coating Business</b>	<b>18</b>
<b>4</b>	<b>Resorbable Magnesium Implant Business (since 2020 on hold)</b>	<b>29</b>
<b>5</b>	<b>Financials</b>	<b>33</b>

# Resorbable magnesium screws with clear economic benefits

**New Age:**



**Avoid second operation and shorten the follow up duration**

**Resorbable Magnesium Implants by *aap***

- ✓ Innovative degradable product avoids a second surgery and results in a much shorter follow-up (control intervals for the healing process) due to its degradation and new bone formation for up to one-year healing process.
- ✓ Minimal surgery time required to perform a one-time short surgery. Future implants are aimed for essential human mobility of foot and hands.
- ✓ Successful non-GLP study performed at Colorado State University (CSU).
- ✓ Broad patent protection in place.
- ✓ Typical application is screws in the small and micro-fracture market.
- ✓ FDA granted “DeNovo” pathway. Assessed the technology as likely to meet definition of “novel technology”, which is a strategic benefit. According to the FDA, up to date there is no existing predicate which can answer a metal degradation need.
- ✓ *aap* plans to partner to co-finance a GLP study at CSU.

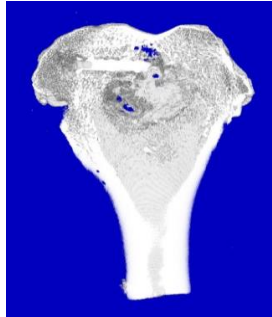


**Highly innovative technology also with game-changing potential**

(valued with € 0.- in *aap*'s balance sheet)

# Pilot non-GLP animal study in the US indicates superiority of technology

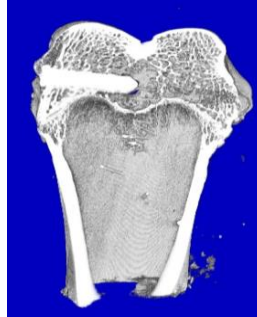
## MicroCT Analysis after 6 weeks



Coated Magnesium Pin



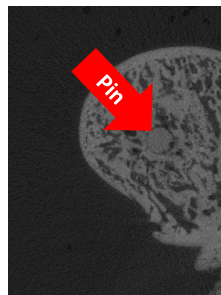
Un-coated Magnesium Pin



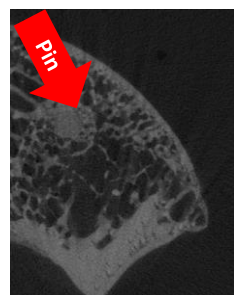
Titanium Pin

✓ Good bone contact and no significant gas formation

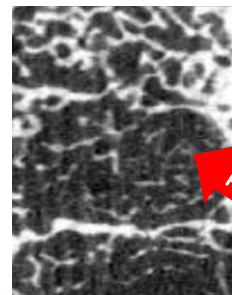
## MicroCT Analysis after 6, 12, 24 weeks



Coated Magnesium Pin after 6 weeks



Coated Magnesium Pin after 12 weeks



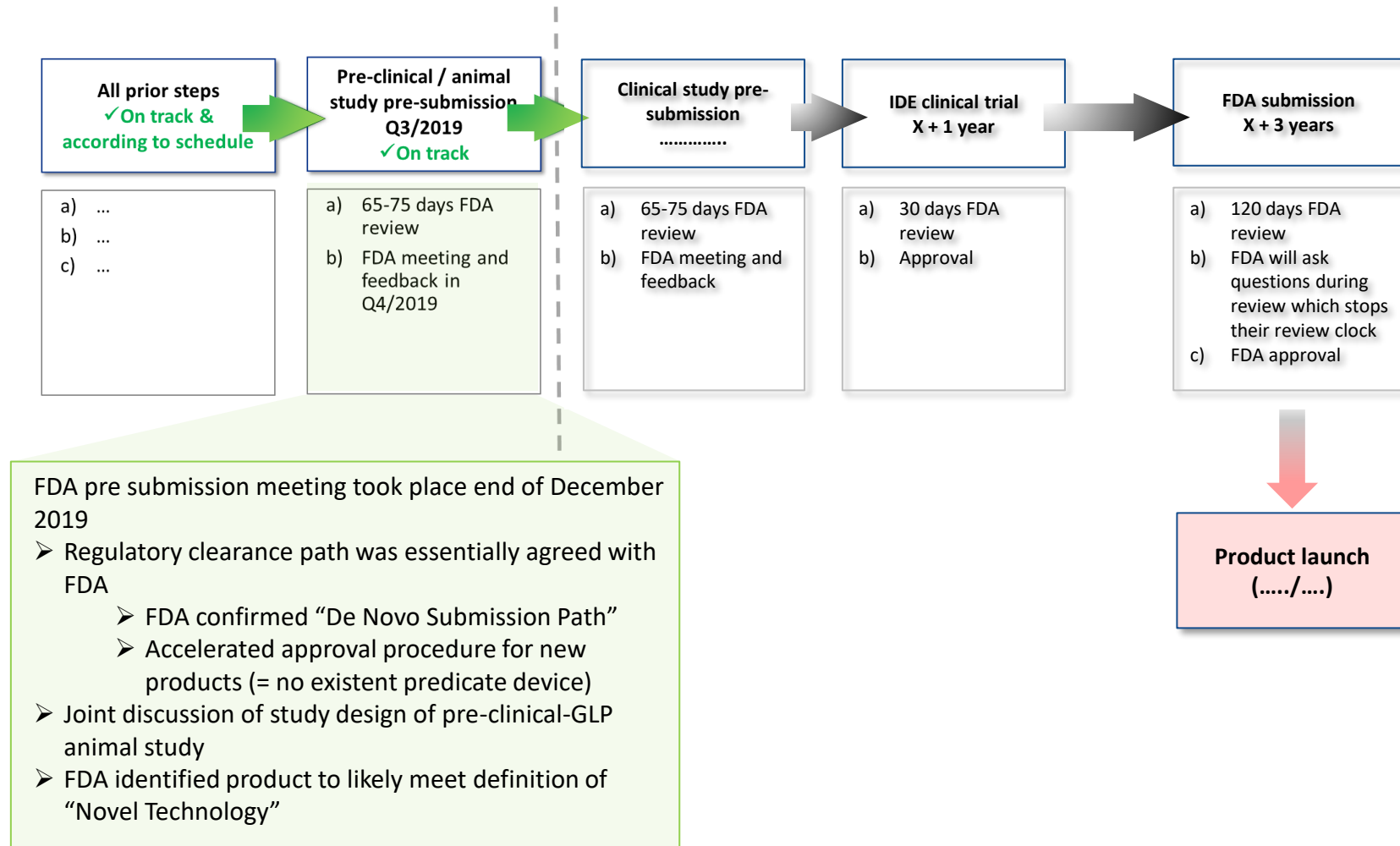
Coated Magnesium Pin after 24 weeks

✓ After 6 weeks: Good bone contact and no significant gas formation

✓ After 12 weeks: Good bone contact and no significant gas formation

✓ After 24 weeks: Controllable resorption process and good bone growth ("proof of concept")

# Product launch path for resorbable magnesium





# Table of contents

<b>1</b>	<b>Executive Summary</b>	<b>3</b>
<b>2</b>	<b>Trauma Business</b>	<b>12</b>
<b>3</b>	<b>Antibacterial Silver Coating Business</b>	<b>18</b>
<b>4</b>	<b>Resorbable Magnesium Implant Business</b>	<b>29</b>
<b>5</b>	<b>Financials</b>	<b>33</b>

## Investment opportunity – your chance

### Participation in **subscription right convertible bond transaction**

- ✓ Enabling *aap* to **build sustainable and profitable trauma business** with € 20m sales and positive cash-flow by 2026
- ✓ Combined with the unique LOQTEQ® technology **becoming the first silver coated** trauma line in the market
- ✓ Enabling *aap* to **unlock the significant value potential** of its **game changing Silver coating technology** by keeping the trauma license with *aap* and open the license to non-competing third parties in the MedTech industry
- ✓ Have an option in Magnesium



**Become part of an exciting investment opportunity at an attractive price level with great value creation potential**

## Conditions capital measure

### Participation in a **subscription right convertible bond transaction**

- Issue of **2,625,091** shares (equals to 29% pre capital increase)
- Nominal volume/ max inflow: **EUR 2,703,843.73**
- Signing period: 2 weeks; expected from September 15 – September 29, 2023
- All participating anchor shareholders and larger new investors shall sign up in the private placement (rump)
- Exchange ratio: 3,42 : 1 (each 3.42 shares entitles the shareholder to subscribe for one bond with a nominal value of EUR 1.03)
- Conversion price: EUR 1.03
- Conversion rate: 1 : 1
- Conversion by bondholders / exercise period: During the period of 14 days prior to and including 31 October, 31 January, 30 April and 31 July of each year, commencing on the period of 14 days prior to 31 October 2024
- Blocking period/ No-Call Period: one year from the issue date of the Notes; expected until October 6, 2024
- Mandatory conversion date:
  - Either at the end of the term on 6 October 2028, provided that the closing price of the aap share in XETRA trading on the Frankfurt Stock Exchange on 5 October 2028 is at least EUR 1.03 or
  - If the volume-weighted average price of the *aap* share with ISIN: DE000A3H2101 in XETRA trading on the Frankfurt Stock Exchange on at least sixty (60) consecutive trading days reaches an amount of EUR 1.60
- Interest rate: 6% p.a.
- Maturity/Duration: October 6, 2028 / October 6, 2023 to October 6, 2028
- Anti-dilution: In accordance with market standard for future capital measures, either by granting subscription rights, compensation payment or adjustment of the conversion price (at the choice and discretion of the Executive Board)
- Extraordinary termination: In the usual marketable scope

## Conditions capital measure

### Participation in a **subscription right convertible bond transaction**

- Change of control: Early redemption at the option of the noteholders in the event of a change of control
- Merger: Early redemption at the option of the noteholders in the event of a merger
- Offer type: Subscription offer to existing shareholders with possibility for oversubscription. Bonds not subscribed for as a result of the subscription offer will be to institutional investors in Germany and other European countries by way of a private placement, with the purchase price corresponding to the subscription price.
- Listing: Prior to the issuance of the mandatory convertible bonds, *aap* plans to apply for the inclusion of the mandatory convertible bonds in trading on the Regulated Unofficial Market of the Frankfurt Stock Exchange.
- Delivery of conversion shares: *aap* is currently not in the position to issue conversion shares that will be admitted to trading. *aap* intends to achieve full admission of all shares issued under this bond on the basis of a securities prospectus in accordance with Regulation (EU) 2017/1129 no later than before the expiry of a one-year lock-up period from the issue of the mandatory convertible bond.
- Status: The obligations of *aap* under the notes shall rank at least pari passu with all other unsecured and unsubordinated obligations of the company (Pari passu clause)

## Attachment – Profit and Loss Statement

	Profit & Loss Statement <i>aap</i> - Group		
kEUR	6M/2023	6M/2022	Diff
<b>Sales</b>	<b>5.864</b>	<b>5.553</b>	<b>311</b>
Changes in inventories	-22	209	-231
Other own work capitalized	59	67	-8
<b>Total revenues ex grants</b>	<b>5.901</b>	<b>5.829</b>	<b>72</b>
Other operating income	355	687	-332
Cost of purchased materials and services	-718	-925	207
Personnel expenses	-3.611	-3.622	11
Other operating expenses	-2.954	-3.148	194
<b>EBITDA</b>	<b>-1.027</b>	<b>-1.179</b>	<b>152</b>

## Attachment – Balance Sheet and Cash-Flow

	Balance Sheet <i>aap</i> - Group		
kEUR	Jun 30/2023	Dec 31 /2022	Diff
<b>Balance Sheet Total</b>	<b>21.127</b>	<b>20.228</b>	<b>899</b>
Non-current assets	8.513	9.047	-534
Current assets	12.614	11.181	1.433
Non-current and current liabilities	6.920	7.401	-481
<b>Equity</b>	<b>14.206</b>	<b>12.827</b>	<b>1.379</b>
Equity ratio	67%	63%	4 pp.
	Cash-Flow <i>aap</i> - Group		
kEUR	6M/2023	6M/2022	Diff
Cash-Flow Operating	-1.542	-1.319	-223
Cash-Flow Investment	-140	-300	160
Cash-Flow Financing	2.847	-179	3.026
	Jun 30/2023	Dec 31 /2022	Diff
Cash and cash equivalents	1.402	236	1.166
Net debt	1.516	2.989	-1.473

# Key abbreviations

Abbreviation	Description
3D	three-dimensional
aap	aap implantate AG
Ag	Argentum (silver)
ANVISA	Regulatory body for medical devices in Brazil
B2B	Business to business
BfArM	Das Bundesinstitut für Arzneimittel und Medizinprodukte
BMBF	Bundesministerium für Bildung und Forschung
bn	billion
BRIC	Brasil, Russia, India, China
BU	Business unit
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenses
CE	Conformity marking of European Union
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CFR	Code of Federal Regulations (US)
COO	Chief Operating Officer
CSU	Colorado State University
CT	Computer tomography
CTO	Chief Technology Officer
DANN	Deoxyribonucleic acid
DE	Germany (DEutschland)
DTO	Distal Femoral Osteotomy
e / E	estimate
EBITDA	Earnings before interest, taxes, depreciation and amortization
f	forecast
FDA	Federal Drug Administration
FTE	Full time equivalent
FY	Financial year
GLP	Good laboratory practice
GM	Gross margin
HA	Hydroxyapatite
HTO	High tibial osteotomy

Abbreviation	Description
HY	Half-year
IP	Intellectual Property
ISO	International Standards Organization
k	kilo (thousand)
KPI	Key performane integator
K-wire	Kirschner wire
Log	Logarithm
MDR	Medical device regulation
Mg	Magnesium
m	Million
MIS	Minimally invasive surgery
NMPA	Regulatory body for medical devices in China
OD	Overdose
OPEX	Operational expenditure
PEO	Plasma electrolytic oxidation
PEO	Plasma Electrolytic Oxidation (PEO) process
Q1	Quarter 1 (January - March)
QM	Quality managment
R&D	Research and development
ROI	Return on investment
RoW	Rest of world
SG&A	Selling, general and administrative expense
SMIT	South Korea, Mexico, Indonesia and Turkey
SSI	surgical site infections
USD	US Dollar
VA	Variable angle
VET	Veterinary
w/o	Without
y, yr	year
YE	Year-end
ZMX	Mg-Zn-Mn Alloys
Zn	Zinc

Thank you

aap: > 30 years of...



***...and continuing committed to innovation***





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