



Revolutionizing Orthopedic
Surgery & Implants

Submitted by Chris Van Slyke

NASDAQ: **MGRM**



Forward-Looking Statements

Legal Disclaimer This presentation by Monogram Orthopaedics, Inc. ("Monogram") may include "forward-looking statements." To the extent that the information presented in this presentation discusses financial projections, information, or expectations about Monogram's business plans, results of operations, products or markets, or otherwise makes statements about future events, such statements are forward-looking. Such forward-looking statements can be identified by the use of words such as "should," "may," "intends," "anticipates," "believes," "estimates," "projects," "forecasts," "expects," "plans," "goal", "target" and "proposes."

Although Monogram believes that the expectations reflected in this presentation are based on reasonable assumptions, there are a number of risks and uncertainties that could cause actual results to differ materially from such forward-looking statements.

Our Vision:

One robot, to **perform safe** and **fast** orthopedic surgeries.

Coupled with **best-fit implants**,
to drive **better patient outcomes**.



Joint reconstruction & spine surgery are large & growing markets

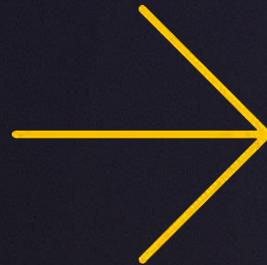
\$22.28B¹

2022

Global orthopedic joint replacement market size

\$37.99B¹

2030



\$11.42B²

2021

Global spinal implants and surgery devices market size

\$18.08B²

2030



By 2027, 50% of knee replacements may be robotic³



The global spinal implants and surgery devices market size is expected to grow by a CAGR of over 12% between 2022-2032⁴



But current orthopedic surgery is **inefficient** and **untailored**

88%
of surgeries
are manual⁵

Most implants are
**one-size-
fits-none**

Robots in the market
are expensive
& **becoming
outdated**

**In-market
solutions**
not automated or slow,
limiting adoption



We're
revolutionizing
orthopedic joint
replacement



What makes us different?



750+

Precision parts



23

Patent
Applications



1,500,000+

Lines of code



1 life changing solution



Our technology:

More advanced than the largest incumbent
and the only other autonomous player

	monogram	stryker	CUREXO ROBOTICS BEYOND CARE
No External Fixation	✓	✓	-
Fast Registration	✓	-	-
Fast Cutting	✓	✓	-
Advanced Imaging	✓	✓	✓
Platform Capability	✓	-	✓
AR Integration	✓	-	-

Differentiating factors

Most advanced robotics
(1.5M+ lines of proprietary code)

Active Sagittal Cutting

Non-invasive tracking*

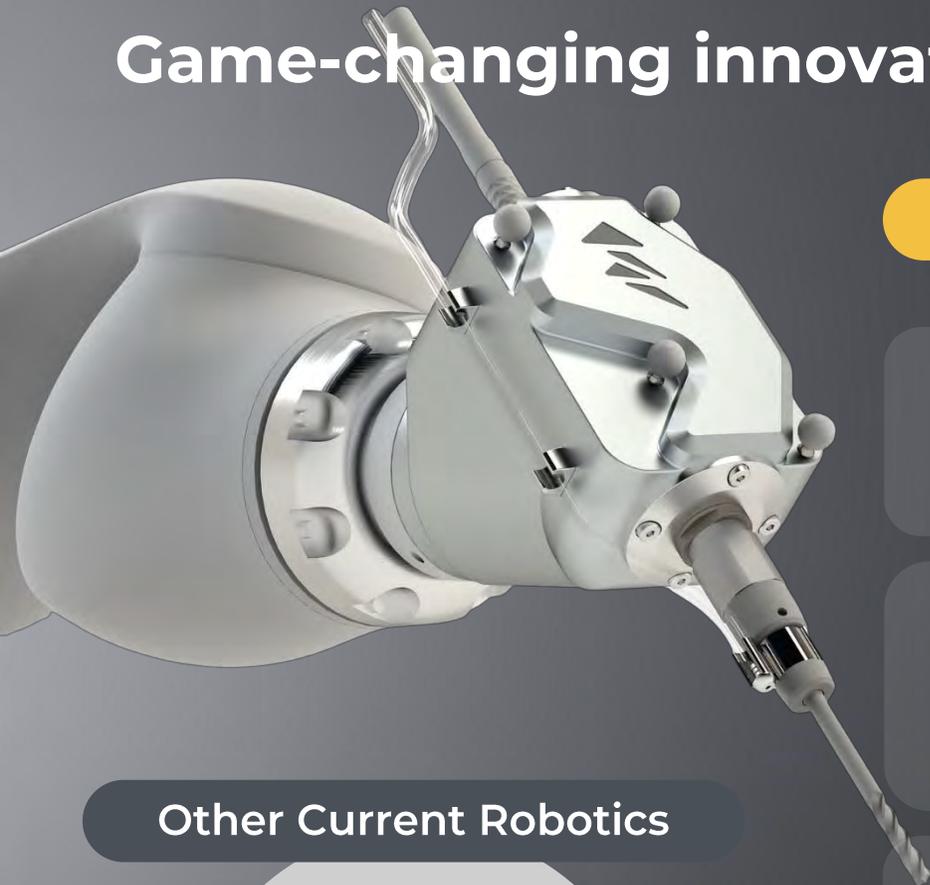
Fortressed IP

AR Integrations

Personalized implants*

*In development pipeline

Game-changing innovation in robotic orthopedics



Monogram Orthopedics

Future

Efficient autonomous robotics



Proprietary markerless tracking system

The only active 7-joint robot with sagittal cutting (*patented*)

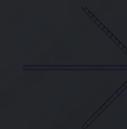


State-of-the-art Press Fit implants



Patient-optimized implants

Pre-Clinical Trial Cadaver Lab Results:
40 minutes



Goal:
20 minutes

Other Current Robotics

~81 minutes
to perform surgery⁶

*1 month Robotic Arm Assisted Total Knee Arthroplasty mean surgical time currently 81 min

Current registration process is primary obstacle to robotics adoption

Fixed Marker System	Our Proprietary Markerless System
Steep learning curve	Lowers learning curve
Time-consuming*	Eliminates
Inherent pin-site fracture/infection risk	Eliminates
High cost of ownership	Greatly-reduced cost of ownership
Per-procedure component cost \$175	Eliminates per-procedure cost
Inventory burden	Eliminates 36 components and \$10,000/Robot
Sterile reprocessing burden	Minimized with reduced components
Overall surgery time: ~81 minutes	Target surgery time: 20 minutes

*Knee Surgery, Sports Trauma Arthroscopy (2019) 27:1132-1141

Proprietary tracking system would eliminate a **major pain point in robotic surgery**

Goal: disrupting ortho with the **20 minute knee***

Patent applications filed



Video link: <https://vimeo.com/876391718>

Markerless Tracking

Development Goal:

Significantly reduced surgical time

Minimized learning curve

Eliminates infection & fracture risk from array pins⁷

Minimized occlusion

Advanced robotics enables press-fit knees



\$1.9B⁸

2022 Cementless knee
transplant market size



\$3B

2032 Cementless knee
transplant market size

Cement fixates the
implants in the bone,
longer surgical times⁹

VS.

Bone ingrowth into the
implants, faster surgical
times

Next-generation Knee & Hip Implants

Multi-generational product strategy

Now:

- State-of-the-art FDA-cleared press fit total knee implant with a clinical track record for robot launch
- Licensed Total Hip and partial knee

Next:

- 3D-printed implants
- Customization solves the inventory problem
- Multiple patents protecting our implant creation
- Designed to be press-fit, bone sparing, highly stable, easier to revise, and more anatomic loading for younger or active patients

Outcome from testing with UCLA and UNMC labs...



outperformed market leading knee and hip designs in simulated testing



Differentiated and heavily fortified IP

23

Patents filed

Now:

Studies conducted with

 +  UNIVERSITY of NEBRASKA
LINCOLN

Proprietary robotic system

First-of-its-kind software
(1.5M+ lines of proprietary code)

Augmented Reality system

Unique system morphology

Autonomous sagittal cutting

5

Patents in immediate pipeline

Next:

Markerless tracking system

Improved autonomous functionality

Additional novel tracking methods

Press Fit implants

Improved methods to laxity assessment

Automated planning & custom
instrumentation

7

Patents expected in the next
24-36 months

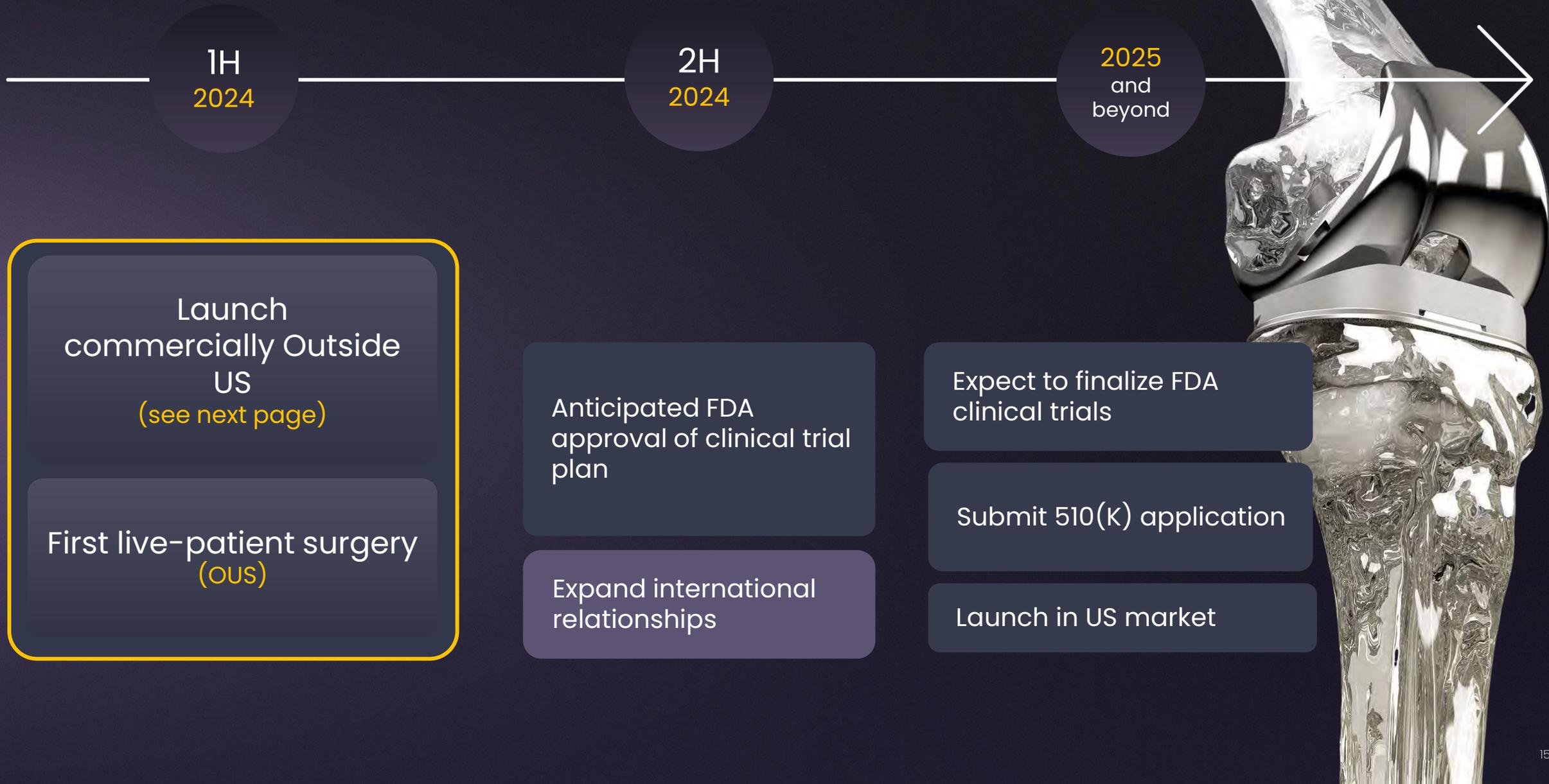
Future:

Patient-optimized implants

Specifics of autonomous robotics in other
clinical applications

Improved predictive modeling

Road to a 20-minute surgery



Massive opportunity outside US

Counterparty :

Major international
medical company

History of placing **major purchase
orders with similarly-profiled
companies**

**Active orthopedic robotics
system distributor**

Pilot program launching
Q4 2023



Live surgery trials starting
1H 2024

**Trials expected to lead to de-risking filing with US FDA*

Led by experts in running and scaling major tech and medical companies



Doug Unis, MD
Founder & CMO



Ben Sexson, CFA
Co-founder & CEO



Kamran Shamaei, Ph.D.
CTO



Noel Knape, CPA
CFO



Muhammad Afnan
Director of Software



Kevin Posey
Director of QA/RA



Easy to adopt technology with built-in annual revenue

Capital Equipment (the razor)

- » Surgical robot cart and tracking cart
- » Cutting system
- » Surgical instrumentation

Target ASP:

\$500,000

(goal to provide financing options)

Consumables (the razorblades)

- » Implants – primary TKA includes femur, tibia and insert
- » Cutting tools (blades) & Navigation consumables

Target ASP:

\$5,000

Recurring Licensing Annuity

- » Price target 10% of capital equipment revenue annually
- » Additional extended warranty

Target ASP:

\$50,000

5-Year Margin Targets

Robot Systems

Consumables

License

Billing Cycle

Once-off

Per Procedure

ARR

Gross Margin

~55%

~65%

~70%

Summary Balance Sheet

Cash on Hand	\$15 494 845
Debt	—
Common Shares	29 302 640
Current Valuation	\$78 238 049
Warrant	547 944
Conversion Price	\$1.83
Expiration: Feb 2024	

We're on our way to lead the market

Large Target Market

- » Focused on High Growth Target Segment
- » Multiple Revenue Drivers

Revolutionary Product Solution Architecture

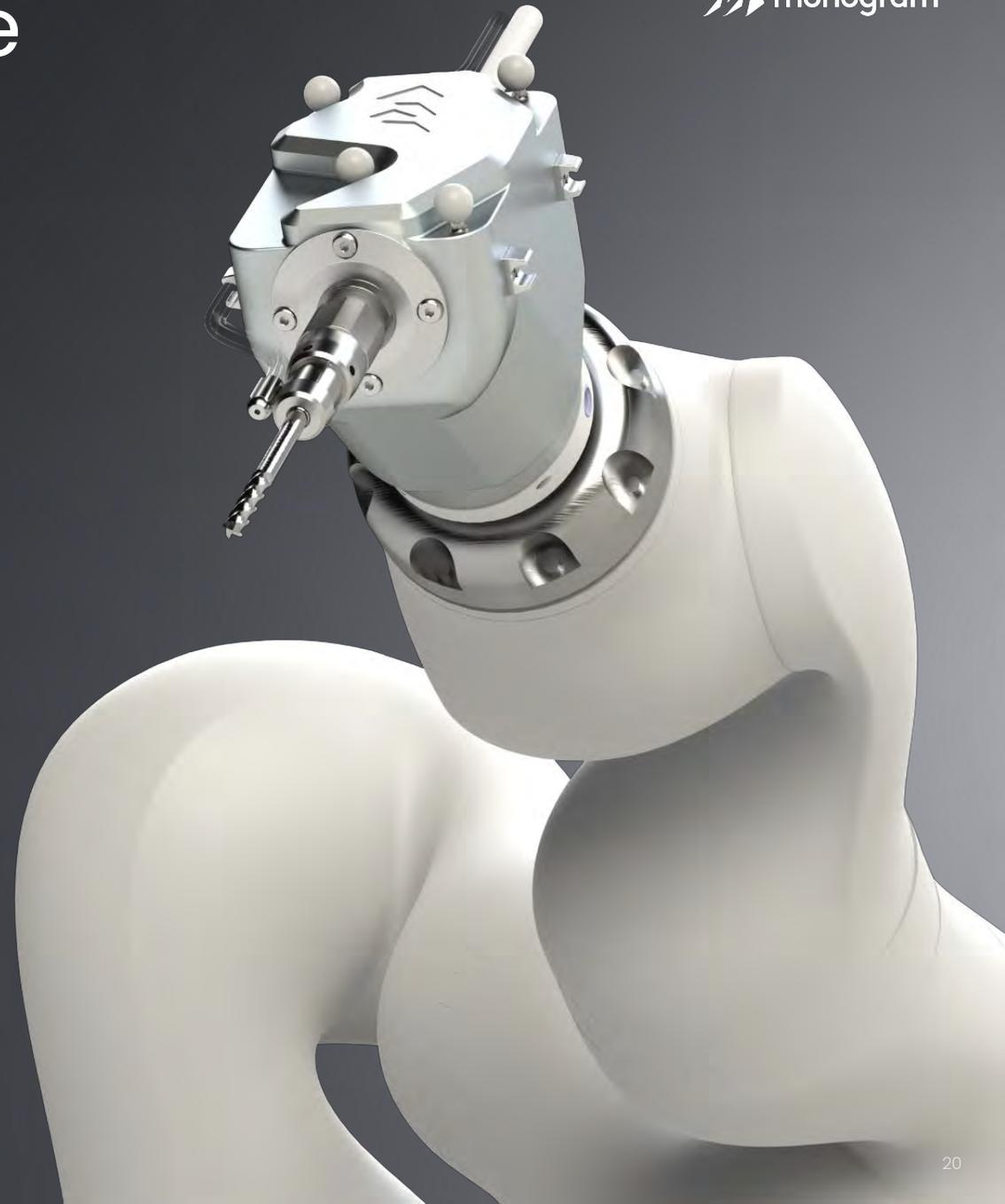
- » Autonomous Surgical Robotics
- » Patient-optimized Orthopedic Implants

Durable Competitive Advantages

- » Proprietary Technology
- » Strong IP backed by 20+ Patent Filings
- » First-mover Advantage

Strong Management/Advisory Team

- » Deep Medical/Technology/Capital Markets Experience





Michael Kim

MZ North America

Direct: 737-289-0835

MGRM@mzgroup.us

[monogramorthopedics.com](https://www.monogramorthopedics.com)

NASDAQ: MGRM



Appendix

1. Orthopedic joint replacement market size, share, growth, 2030. Orthopedic Joint Replacement Market Size, Share, Growth, 2030. (n.d.). <https://www.fortunebusinessinsights.com/industry-reports/orthopedic-joint-replacement-market-100314>
2. Base Year: 2021 |. (n.d.). Spinal implants and surgery devices market size: Growth 2030. STRATEGIC MARKET RESEARCH. <https://www.strategicmarketresearch.com/market-report/spinal-implants-and-surgery-devices-market>
3. Medtech 360 Orthopedic Surgical Robotic Devices | Market Analysis | Global | 2019
4. Spine surgery robots market (by application: Spinal Fusion, minimally invasive procedures, scoliosis, osteoporotic compression fractures, others; by method: Minimally Invasive Surgery, open surgery; by end user: Hospitals, Ambulatory Surgical Centers) – global industry analysis, size, share, growth, trends, regional outlook, and forecast 2023–2032. Precedence Research. (n.d.). <https://www.precedenceresearch.com/spine-surgery-robots-market>
5. ONN, 2021 Hip and Knee Implant Review (Volume 33, Number 3, August 2022)
6. Marchand, Kevin & Ehiorobo, Joseph & Mathew, Kevin & Marchand, Robert & Mont, Michael. (2020). Learning Curve of Robotic-Assisted Total Knee Arthroplasty for a High-Volume Surgeon. The Journal of Knee Surgery. 35. 10.1055/s-0040-1715126.
7. Nogalo, C., Meena, A., Abermann, E., & Fink, C. (2022). Complications and downsides of the robotic total knee Arthroplasty: A systematic review. Knee Surgery, Sports Traumatology, Arthroscopy, 31(3), 736–750. <https://doi.org/10.1007/s00167-022-07031-1>
8. <https://www.alliedmarketresearch.com/cementless-total-knee-arthroplasty-market-A131520>
9. <https://news.hss.edu/study-finds-cementless-knee-replacement-outcomes-comparable-to-standard-knee-implant-less-time-needed-in-or/>

Advised by our end-users



Edward Adler, MD
NYC

- » Board Certified Orthopedic Surgeon
- » University Hospital in Newark Residency
- » The Hospital for Joint Diseases Fellowship
- » Heavy Mako user, former Stryker consultant
- » Icahn School of Medicine at Mount Sinai



Bobby Jamieson, MD
California

- » Board Certified Orthopedic Surgeon
- » Kansas City University Medical School
- » Michigan State University Residency
- » Depuy Synthes
- » Orthopedic Specialty Center



Doug Unis, MD
NYC

- » Board Certified Orthopedic Surgeon
- » Northwestern University Residency
- » Rush University Fellowship
- » Chief of Quality Improvement Mount Sinai West
- » 19+ years of clinical practice



Roshan Shah, MD
NYC

- » Board Certified Orthopedic Surgeon
- » Yale University School of Medicine
- » University of Pennsylvania Residency
- » Rush University Fellowship
- » Zimmer Blomet
- » Columbia Orthopedics



Gregory Catlett, MD
Austin

- » The University of Texas at Houston Medical School
- » The University of Texas at Houston residency
- » Duke University fellowship
- » Zimmer, OrthoAlign
- » Orthopaedic Specialists of Austin



Darwin Chen, MD
NYC

- » MBA Stern School of Business
- » Columbia University College of Physicians and Surgeons Medical School
- » The Mount Sinai Hospital residency
- » Former consultant with Smith & Nephew, Stryker & Depuy Synthes
- » Icahn School of Medicine at Mount Sinai



Adam Cohen, MD
NYC

- » Board Certified Orthopedic Surgeon
- » University Hospital in Newark Residency
- » The Hospital for Joint Diseases Fellowship
- » Heavy Mako user, former Stryker consultant
- » Icahn School of Medicine at Mount Sinai



Matthew Heinrich, MD
Austin

- » Board Certified Orthopedic Surgeon
- » Texas Tech School of Medicine
- » Baylor College of Medicine Residency
- » OrthoAlign
- » Orthopaedic Specialists of Austin

Scientific Advisory Board



Hani Haider, PhD
UNMC Biomechanics Lab

- » Professor Orthopaedic Surgery Research UNMC
- » Director Biomedical Engineering Research and Advanced Surgical Technologies
- » President of ISTA



Sophia Sangiorgio, PhD
UCLA Biomechanics Lab

- » Adjunct Professor UCLA
- » Director Biomechanics Laboratory
- » PhD in Biomedical Engineering, UCLA

We lead to better hospital unit economics



Standardized
revenue per
surgery:

\$4K

Average time per knee operation:

monogram

Other robot surgery companies

20

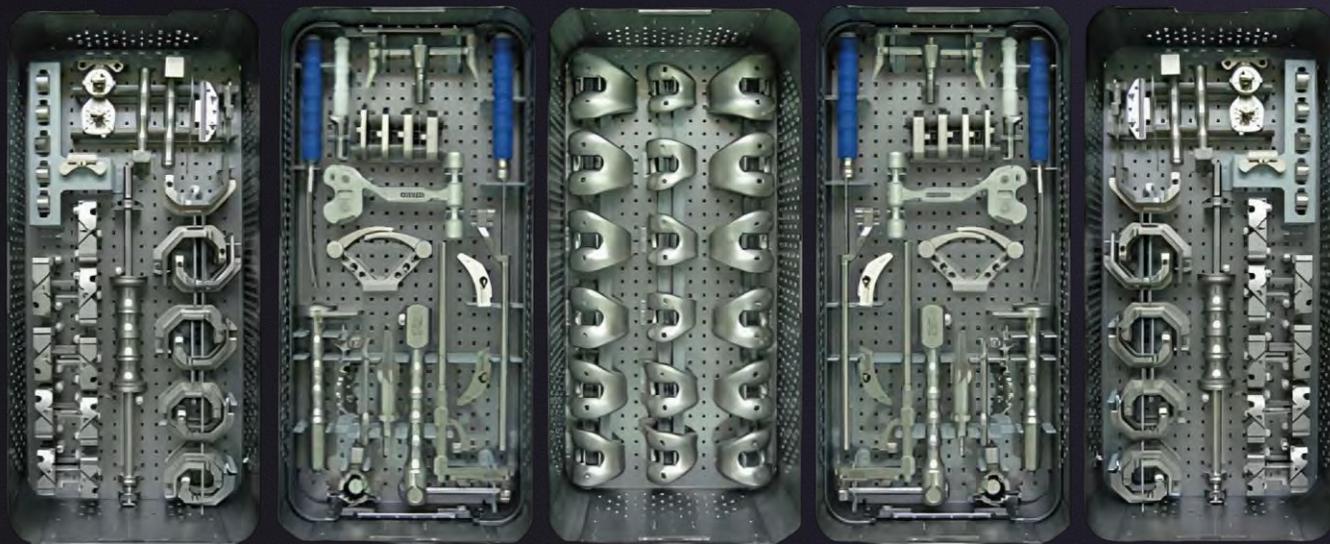
80+

Minutes (Goal)

Minutes

Monogram's Solution: 3-D Printed Custom Implants

The current **one size fits none** paradigm makes no sense with robotics, preoperative planning and 3D printing.



Monogram's proprietary patient optimized 3D printed implants are designed with **robotic bone preparation** in mind.

High inventory burden is wasteful; two leading companies average **456 average days sales in inventory**

Navigated



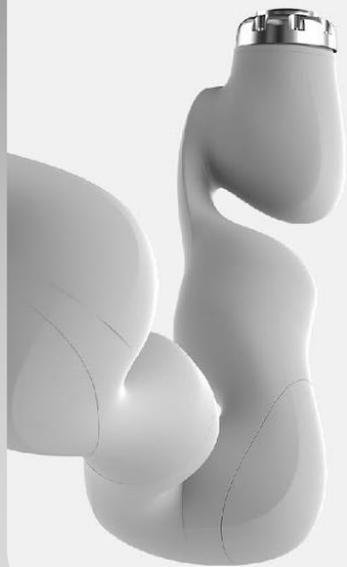
Efficient Planning



Precise Cutting



7 Degrees of Freedom

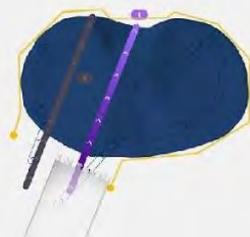


 monogram

mBôs
ROBOTIC SYSTEM



Safety First



Foot Actuation

