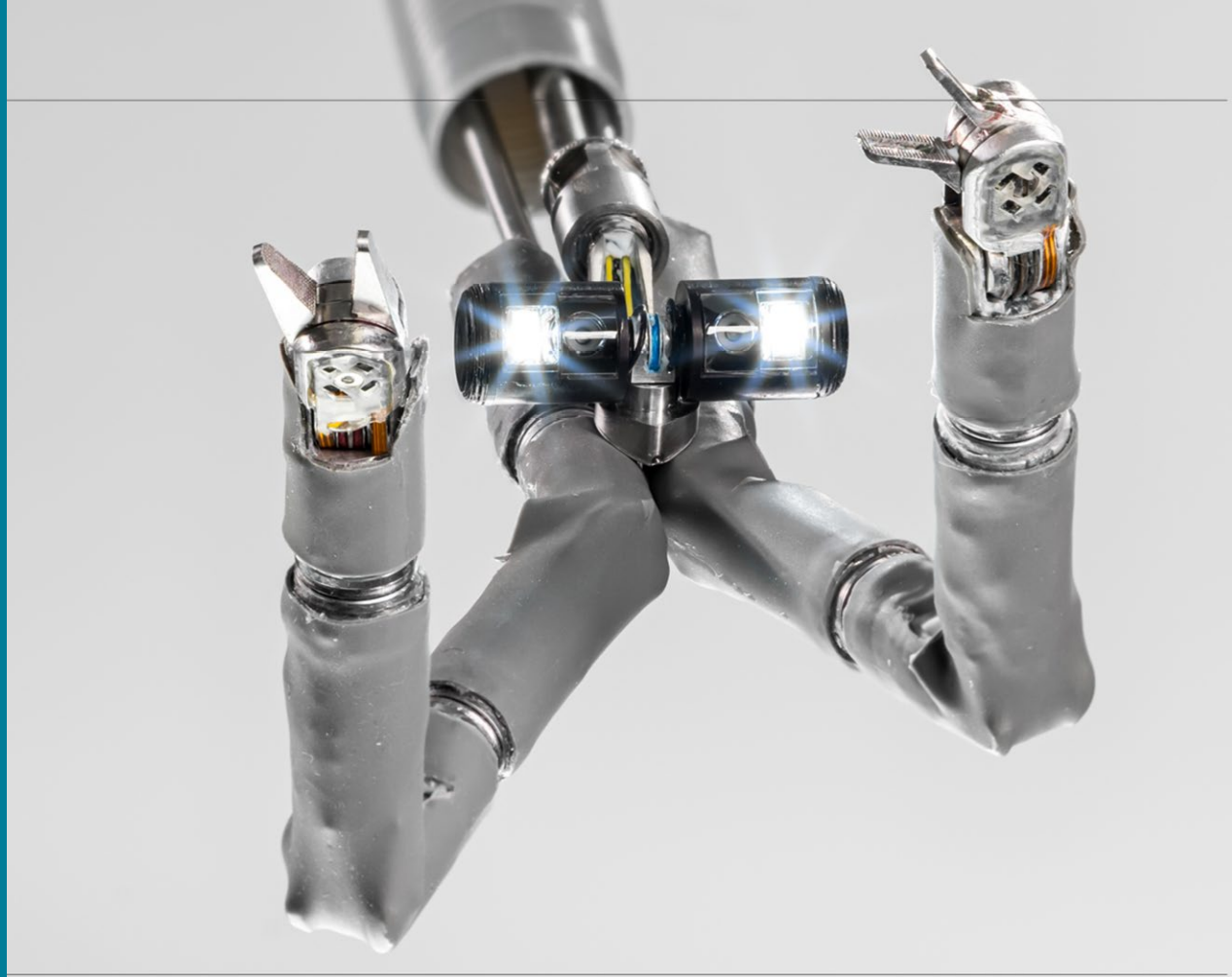
VICARIOUS SURGICAL

A New Surgical Architecture for the Abdomen



Designed to solve the limitations of current robotic systems

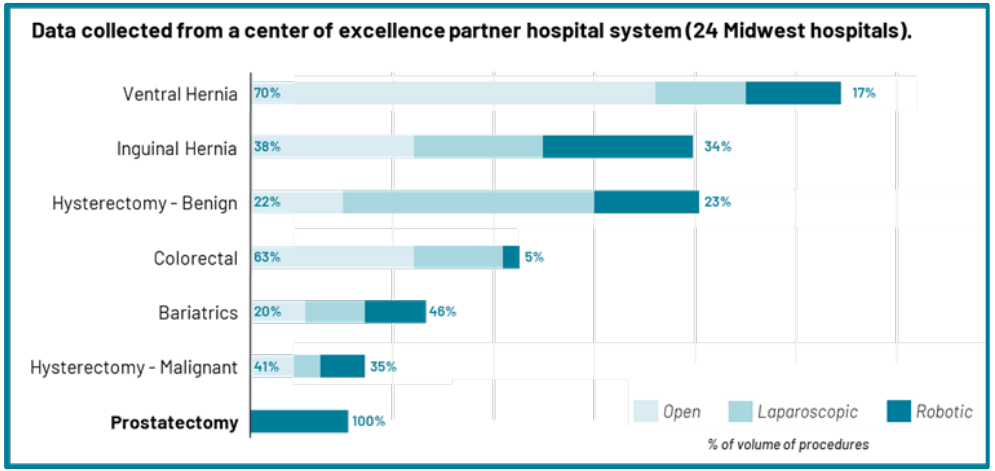
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The Majority of Abdominal Surgery Remains Open

Open surgery persists despite higher trauma, longer recovery, and increased cost

- Robotics transformed pelvic surgery
- Adoption drops sharply in abdominal surgery
- High-volume abdominal procedures still performed open
- Driven by system limitations
- New systems increase competition, not capability, as they share the same underlying architecture

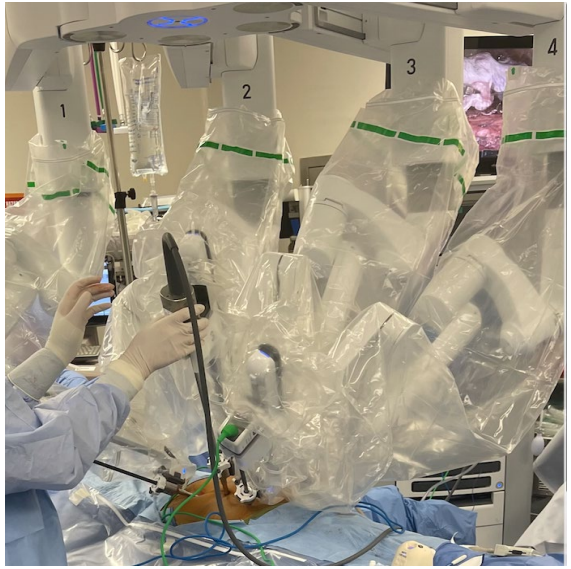


Robotics fails to address the majority of abdominal surgery.

Current Robotic Systems Were Not Designed for the Abdomen

Core architectural limitations restrict access and scalability

- Designed for confined anatomy, not the full abdomen
- External arms create collisions and procedural complexity
- Limited reach across multi-quadrant surgery
- Iteration improved performance, not architecture
- New entrants replicate the same architecture



Current Multi-Port System
External arms create collisions and limit access

This is not a market limitation,
it is a structural design constraint inherent to current robotic systems.

A New Architecture Designed for Full Abdominal Access

Enables procedures current systems cannot reach

- Internalized single-port eliminates collisions
  → Enables true abdominal access
- Human-like articulation enables full dexterity
  → Enables complex procedures minimally invasively
- Purpose-built for the full abdomen
- A fundamentally different architecture
  → Not an incremental improvement.



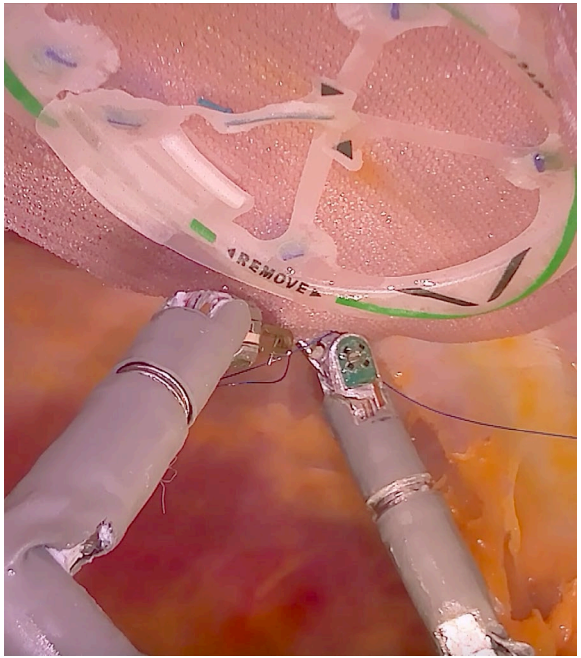
Internalized architecture enables full abdominal access without external constraints

We extend robotics beyond the limits of current systems.

A New Category in Robotic Surgery

Not an incremental improvement, a structurally different platform

- ✓ Different architecture
- ✓ Different market
- ✓ Different economics



A new architecture unlocks a new market.

Clear Path to Near-Term Value Inflection

Design freeze = the moment risk collapses → development risk behind us

Parallel Execution Strategy: Australia FIH and U.S. IDE conducted in parallel
- ~6 months from FIH submission to initial clinical data

Mid-2026
Porcine lab to validate core IDE elements

YE-2026
Design freeze, clinical-ready system

Primary value inflection point

1H-2027
- Regulatory V&V
- Submit in Australia

Mid-2027
- Submit IDE (U.S.)
- Initiate FIH trial in Australia (N=6)

YE-2027
- IDE cleared
- FIH trial complete

Pivotal clinical trial (U.S./Australia)
- 35 to 40 patients
- Open-label
- 30-day primary endpoint
- FDA-aligned design

A fully integrated, de-risked system marks the primary value inflection point.

Starting with Ventral Hernia Repair

A high-volume procedure where access limitations drive open surgery

Initial adoption is driven by open conversion, not displacement of existing robotic systems

Reach where others cannot

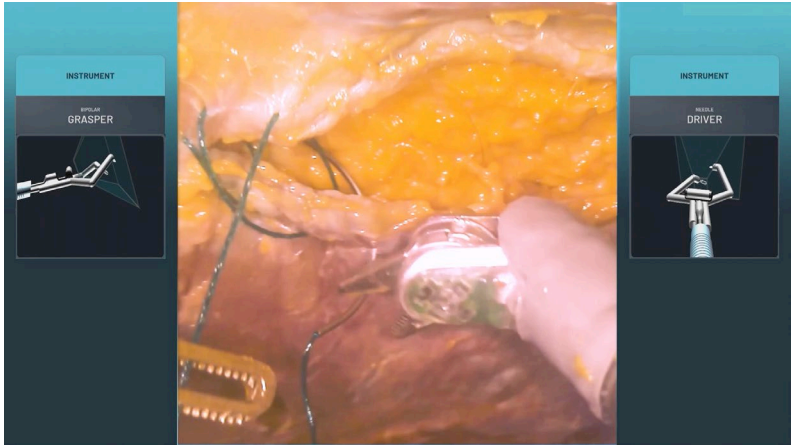
Full abdominal wall access → enables minimally invasive treatment of cases that are currently performed open.

Large, Constrained Market

>60% of ventral hernia repairs remain open, driven by access limitations.[1]

High-Impact First Indication

High-volume procedure → strong utilization and repeatable, high-margin consumable revenue.



A direct application of our architecture in a high-value indication[2]

"We begin by converting the >60% of ventral hernia cases that remain open."

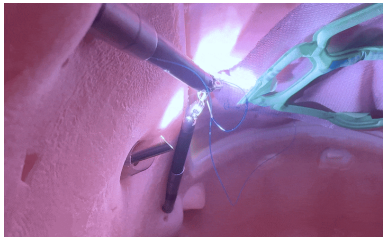
1. FRY BT, HOWARD RA, THUMMA JR, NORTON EC, DIMICK JB, SHEETZ KH. SURGICAL APPROACH AND LONG-TERM RECURRENCE AFTER VENTRAL HERNIA REPAIR. JAMA SURG. 2024;159(9):1019-1028. DOI:10.1001/JAMASURG.2024.1696
2. CADAVERIC IPOM+ PROCEDURE, DR. IGOR BELYANSKY

Why Vicarious Enables Conversion of Open Procedures



Limited Access (Laparoscopy)

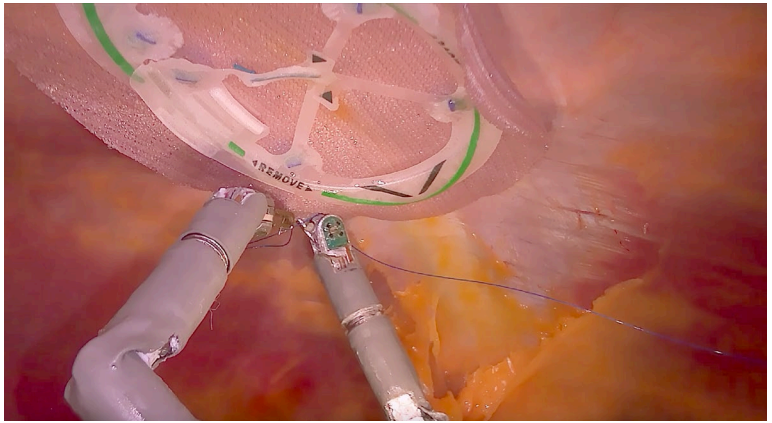
- ✗ Like chopsticks, limited motion
- ✗ Assistant-driven, rigid scope



Constrained Access (Multi-port Robotics)

- ✗ Chopsticks with wrists, added dexterity
- ✗ Robotically-driven, rigid scope

Designed for full abdominal access and visualization



Full Access (Vicarious Surgical)

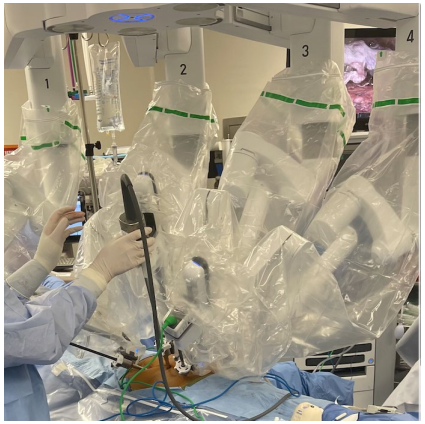
- ✓ Miniaturized shoulders, elbows and wrists, as if a full arm was operating inside the abdomen
- ✓ Fully articulating robotic camera enables full abdominal visualization

This is what enables conversion of open procedures to minimally invasive robotic surgery.

Simplified Workflow Drives Utilization and Recurring Revenue.

Higher throughput → more procedures per system → increased recurring revenue per installed system

Current Multi-Port Systems



Multi-Port Systems Limit Throughput:

- ⮡ Pre-op planning required
- ⮡ External and internal collisions
- ⮡ Poor bedside access
- ⮡ Incision site trauma

Vicarious Single-Port System



Single-Port System Enables Efficient Turnover:

- ✓ Minimal pre-op planning
- ✓ Collision free surgery
- ✓ Superior bedside access
- ✓ Limited incision site trauma

Faster setup and turnover drive higher system utilization.

Integrated Architecture Lowers Cost and Expands Adoption

Patient Cart

compact footprint, easy integration



Surgeon Console

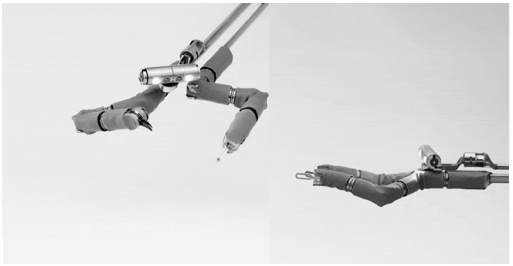
with integrated display, no vision cart required



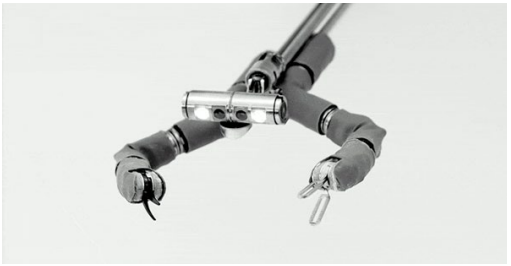
Lower cost, improved economics, and recurring revenue drive adoption beyond large academic centers.

Bringing Open Surgery Capability to Minimally Invasive Robotics.

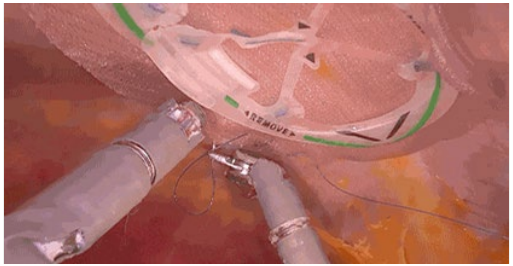
Replicating the access of open surgery through a minimally invasive approach



Decoupled actuators enable additional intra-abdominal joints with **true intra-abdominal dexterity and reach.**



360° camera articulation with 120° field of view provides **full operative field visualization & self cleaning**.

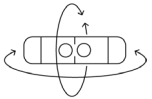


Instrument arms generate high forces needed across **soft-tissue indications**.

This is what enables conversion of procedures that remain open today.

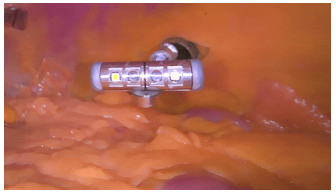
[1]SMALLEST INCISION FOR A SINGLE-PORT RAS DEVICE

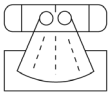
Integrated Visualization Enables True Abdominal Access



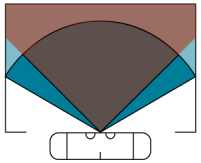
Unprecedented Range of Motion



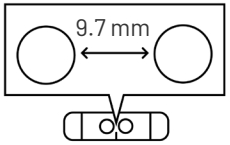




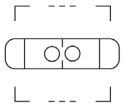
Best in Class Visual Performance
- Immersive, natural depth perception
- Wider field of view compared to competitors



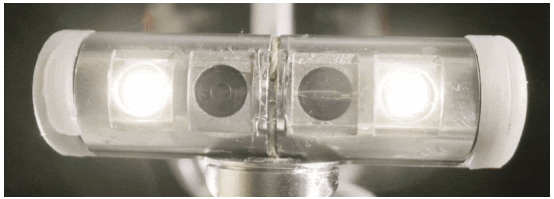
VS Camera: 120° FOV



Extended Interaxial Lens Distance



Self Cleaning
- Improves efficiency of surgical workflow



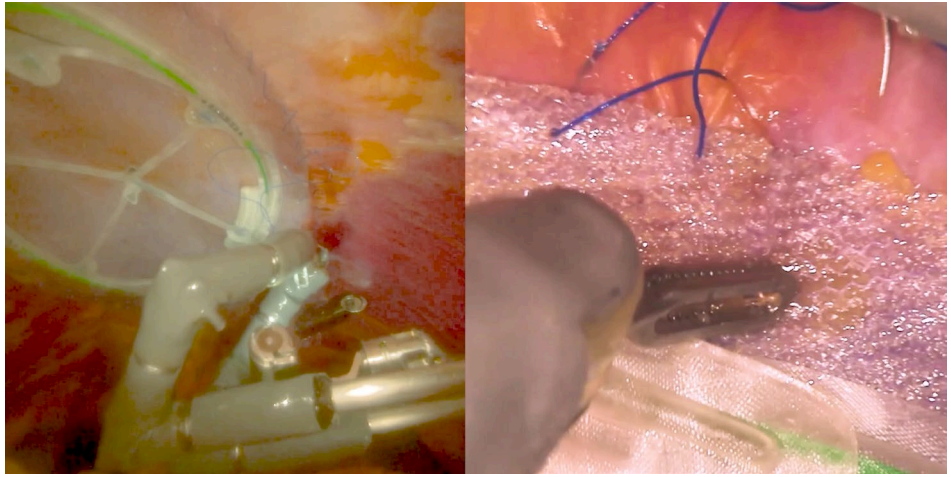
Physician can see the entire abdomen with immersive clarity all from a single access point.

Designed for Real Surgical Workflows That Drive Adoption

Miniaturization
Faster workflow, reduced complexity

Full abdominal access
Enables minimally invasive treatment of open procedures

Stable visualization
Improves precision and consistency



Faster setup, more consistent workflows, and reduced surgeon fatigue



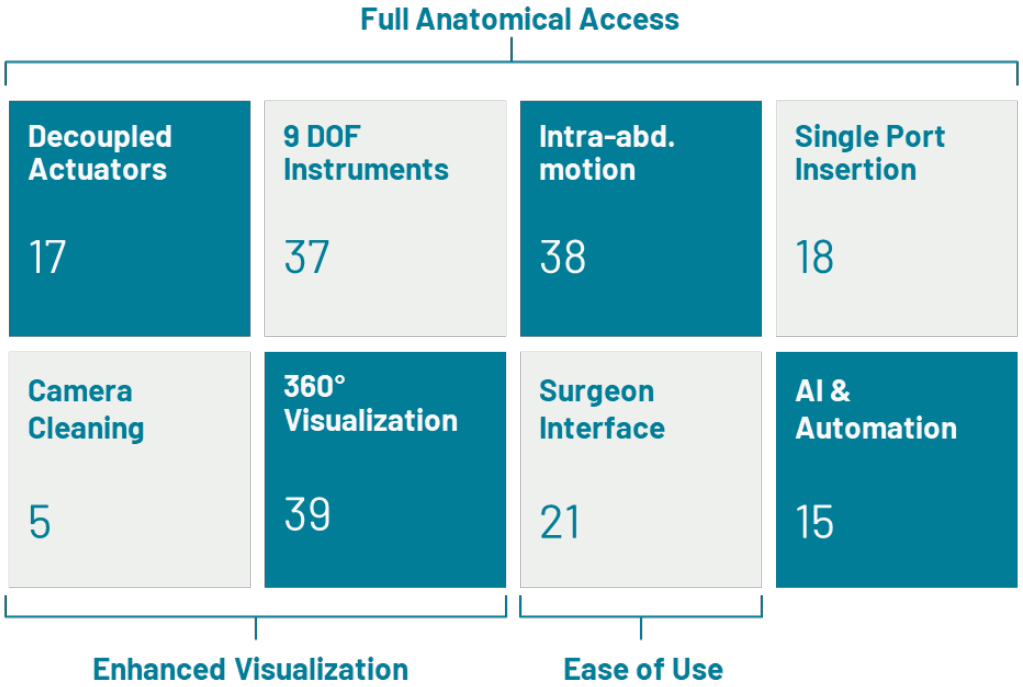
Surgeon Validation

"Often with existing technologies, you fix the trajectory of your arms and your instruments and you're stuck there. If you have to move too far out of that region, the arms start banging into each other; your mobility gets limited. The ability to have a grouped camera and two arms that can ***move around anywhere in the belly through one incision****, one fulcrum, is exciting."*

Richard Hoehn, MD | Surgical Oncologist | University Hospitals (Cleveland, OH)

Full-Stack IP Protection Across Core System Architecture

IP spans the full system, not isolated components



52 granted patents

138 pending

190 total protections filed

[1]PATENT APPLICATIONS MAY CLAIM MORE THAN ONE FEATURE.

Initial Target Procedures: >1M Open Surgeries Annually in the U.S.

Across global markets, the opportunity expands significantly

Initial Target Procedures (~2M annually)[1]:

- Ventral hernia: ~350-500K (60-70% open)
- Inguinal hernia: ~700-800K+ (60-80% open)
- Hysterectomy: ~500-600K (25-30% open)
- Colorectal: ~300K+ (30-40% open)

Conversion Opportunity

- ~45–55% still open
- ~0.9M – 1.2M procedures annually

Near-Term U.S. Procedure TAM[2]

- $2B – $4B recurring revenue
- Based on $2K – $3.5K per procedure

Recurring, procedure-driven revenue model

- Growth driven by conversion of open surgeries
- Targets procedures robotics has not penetrated
- Expands access, not just competition

A large, underpenetrated U.S. opportunity.

[1]US ONLY - PROCEDURE VOLUMES AND OPEN RATES DERIVED FROM AHRQ HCUP, CDC NCHS, ACS NSQIP, AND PEER-REVIEWED LITERATURE; REVENUE ASSUMPTIONS BASED ON INTUITIVE SURGICAL PUBLIC DISCLOSURES.
[2]DOES NOT INCLUDE CAPITAL EQUIPMENT AND SERVICE REVENUE

Same-Architecture Competition Compresses Price, Not Market Expansion

New entrants compete for the same procedures, not expand the market

- Competing for the same procedures using similar architectures
- New entrants are reinforcing this dynamic, not expanding the market
- Pricing pressure already visible in competitive regions (e.g., China)
- Likely to emerge in the U.S. as new systems enter
- **Incremental innovation drives competition, not market expansion**

Competing systems fight for share; Vicarious expands the market and creates new procedure volume

We expand the market, not compete for share.

Technical Risk Reduced; Value Now Driven by Execution

Leadership now operating with a focused, capital-efficient model

~$300M invested in platform development
- ✓ *Core architecture complete*
- ✓ *Major technical risks addressed*

What remains is execution, not invention
- ✓ *Architecture is defined, system is integrated*
- ✓ *Focus on reliability, validation, and regulatory execution*

Capital-efficient model
- ✓ *Burn reduced from ~$50M to ~$19M*
- ✓ *Lean, execution-focused team*

Execution-focused leadership
- ✓ *Shift from development to clinical execution*
- ✓ *Defined scope aligned to first-in-human pathway*
- ✓ *Non-core development outsourced to accelerate timeline*

Prioritization of design freeze over feature expansion to accelerate clinical timeline

Majority of development risk removed.
Focus now on execution, validation, and clinical readiness.

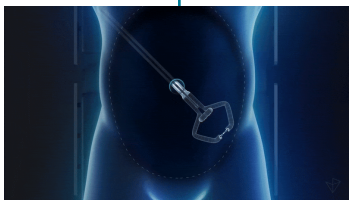
Transitioning from Technical Feasibility to Clinical Execution

With a differentiated architecture, clear clinical application, and strong economic profile, the focus shifts to execution and clinical validation.

Eleven Years to a Defined, Integrated System Architecture

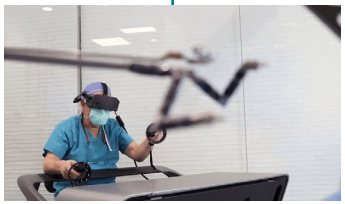
Core architecture defined and integrated

2014
The beginning



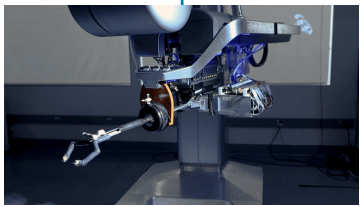
Miniaturization Breakthrough:
Foundation for fully internalized robotic system

2018
Beta builds



Platform Architecture Defined:
Complete system concept validated

2022
Engineering builds



Integrated System Development:
Robotics, controls, and vision unified

2025
Controlled builds



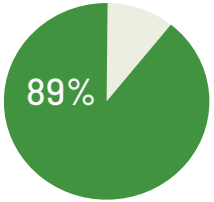
Controlled Builds and Refinement:
Production-intent systems and reliability focus

Eleven years and ~$300M invested to build a fully integrated, clinical-ready system.

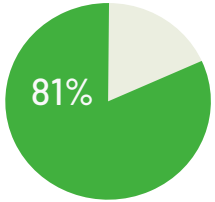
Integrated System Performance Has Increased from 49% to 84%

- System functionality has increased significantly since summer 2025:
  - **49% (June 2025) → 63% (September 2025) → 74% (November 2025) → 84% (April 2026)**
  - Transition from partial functionality to integrated, clinically relevant performance.
- Ongoing, steady incorporation of remaining design requirements and system features to be implemented, **with a clear path toward 100%**[1]:

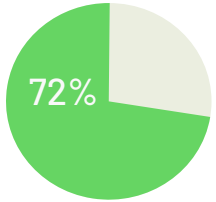
Capital
Surgeon Console & Patient Cart



Disposables
Camera & Instruments



System Integration
Capital & Software



Each step materially reduces technical and regulatory risk.

[1]ESTIMATE BASED ON INTERNAL DATA ON FILE FROM MOST RECENT SYSTEM EVALUATION IN CADAVERIC MODEL

Preclinical Data Demonstrates Feasibility and Reproducibility

Early data supports execution of target procedures and reproducibility across surgeons

Procedural Feasibility Demonstrated

- ✓ *Ventral hernia repairs successfully performed in cadaveric and porcine models*
- ✓ *Core procedural steps executed with current system configuration*

Reproducibility[1] across multiple surgeons and lab environments

- ✓ *Conducted across three model types: synthetic cadaver, human cadaver, and in vivo porcine lab*
- ✓ *13 procedures completed in synthetic cadaver models*
- ✓ *2 cadaver labs and 1 porcine lab*
- ✓ *Performed by 3 surgeons across multiple lab settings*

Demonstrates feasibility and reproducibility ahead of first-in-human studies.

[1]DATA GENERATED UNDER QMS-CONTROLLED DEVELOPMENT ENVIRONMENT

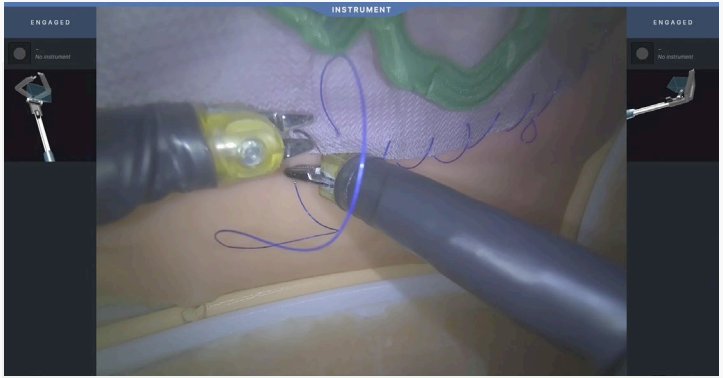
Demonstrated Improvements: *Instrument Precision & Reliability*



8/19 Syndaver lab with KOL Dr. Belyansky, pre-DV System

→ 45 Minute mesh fixation time

~70% reduction in procedure time



11/4 Syndaver lab with KOL Dr. Belyansky, pre-DV System

→ 13 Minute mesh fixation time



"The progress in the last six months has been exceptional. Instrument reliability and precision have taken a major leap forward — giving me consistent, confident control in complex maneuvers. This system is quickly reaching a level of performance that can truly change abdominal surgery."

Igor Belyansky, MD | Director, Abdominal Wall Reconstruction Program | Anne Arundel Medical Center

A Differentiated Platform with a Clear Path to Value Creation

This opportunity is defined by four structural advantages:

- Different architecture → full abdominal access, no legacy constraints
- Different market → expands into procedures not currently served
- Different economics → avoids same-architecture pricing pressure
- Final stage of risk removal → majority of technical risk behind us

Over $300M invested to build the platform

Only ~$10M of incremental capital to reach design freeze and unlock a high-margin, recurring revenue platform

Most technical risk is behind us; most value creation lies ahead.