

TAIRIS

Welcome to The AI Revolution In Surgery

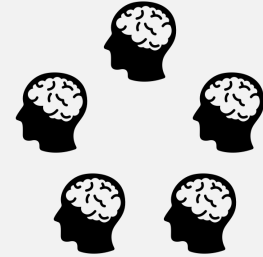
THE CHALLENGE



Surgical Outcome
Success vs. Failure



Surgical Intelligence
=
Skill + EXPERIENCE



Experience is not Easily
Quantified or Shared

How do we **access**, **quantify**, and **distribute** surgical experience?

THE OPPORTUNITY

Experience = Pattern recognition

Structures

Relationships

Efficiency

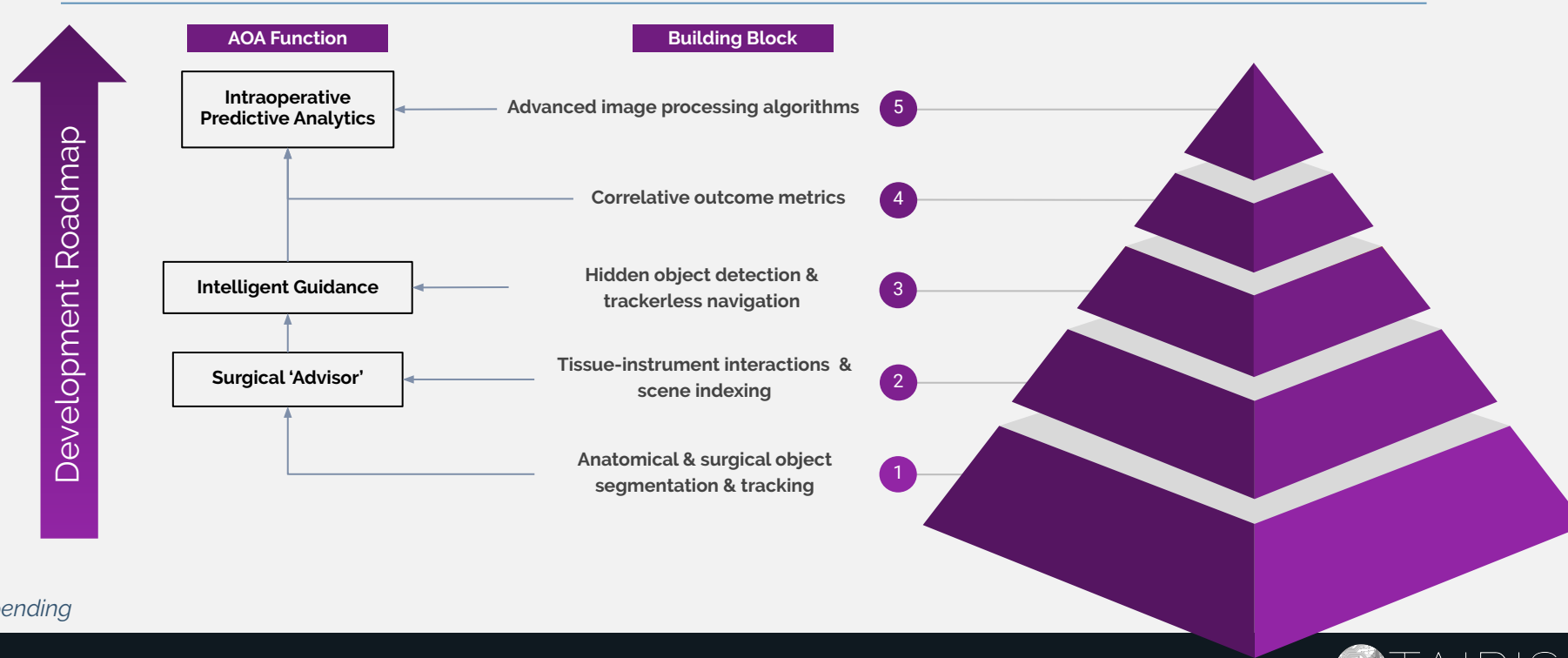
Anticipation



What if we could develop an AI system that would learn those patterns?

Then tailor and present this information back to *all* surgeons in real-time?

ARTIFICIAL OPERATIVE ASSISTANT

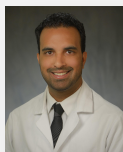


Patent pending

CONFIDENTIAL

THE TEAM

Founders



Vivek Buch, MD

President
Neurosurgical Resident
University of Pennsylvania
Background: Computational neuroscience, machine learning.



Peter Madsen, MD

Vice President
Neurosurgical Resident
University of Pennsylvania
Background: Genomics and bioinformatics

A.I. Engineering



Jianbo Shi, PhD

Professor
Computer and Information Science
University of Pennsylvania
Expertise: Computer vision, deep convolutional learning
NSF Career Award Recipient

Business Development



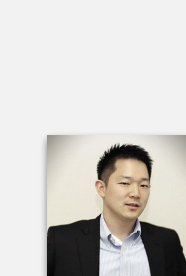
Paresh Buch, MS, MBA

Head of Business Operations
Expertise: Executive management, complex engineering systems development



Kevin Nikitzuk, PhD

Business Development
Expertise: Executive management, Immuno-Oncology, Biomedical Engineering



Product Management

Arty Han, MBA

Product Management
Expertise: Agile product management, healthcare and life sciences industry

Data Infrastructure



Keinan Greene

Data Science
Expertise: Data Science
Data Analytics, Social Network Analysis

Partners

PENN
CENTER FOR
INNOVATION

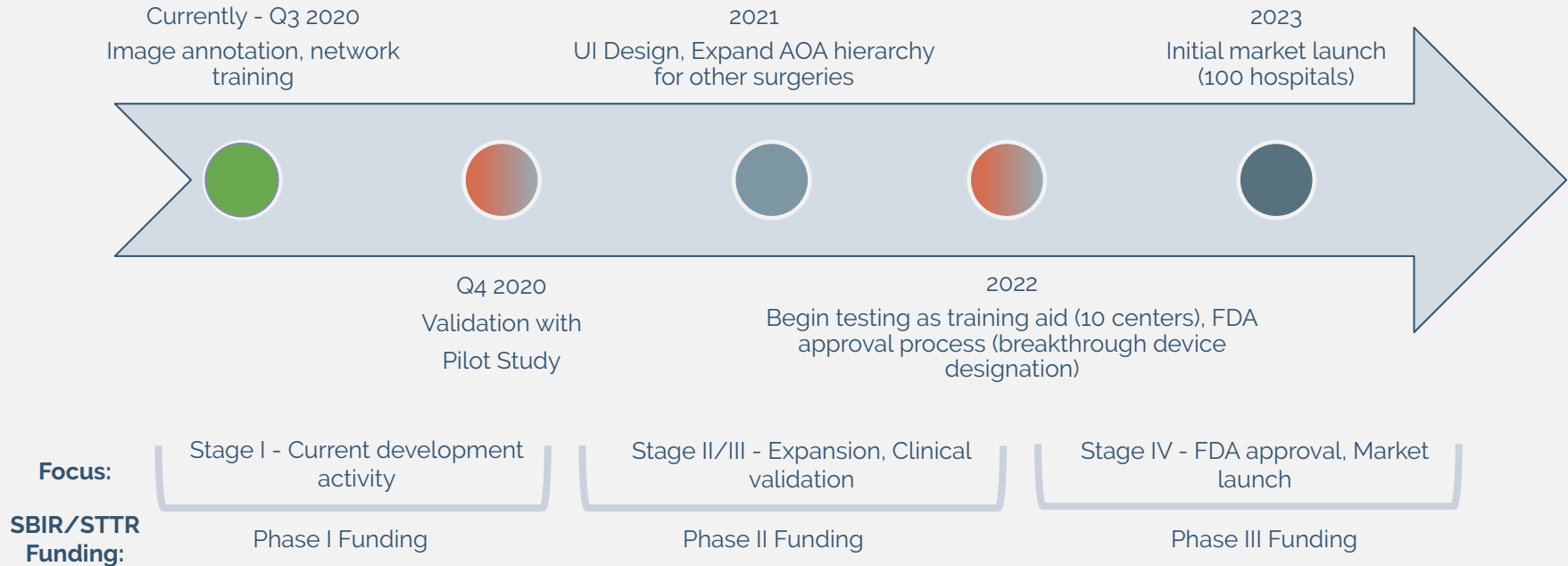


Clinical Advisor

M. Sean Grady, MD, FACS

Professor, Chairman
Department of Neurosurgery
University of Pennsylvania

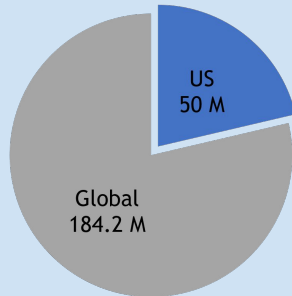
DEVELOPMENT TIMELINE



PATH TO MARKET

Market Size

Surgeries Per Year (Millions)



Surgical care = **5%** of US GDP

Customer Segments:

Hospitals/Health Systems

Surgeons

Surgical industry partners

Cost Structure:

Product development

Product delivery

Service/Maintenance

Employees

Revenue Streams:

1. Access to segmented and labeled videos for teaching institutions/training
2. One time acquisition cost per hospital/surgeon/operating room of integrating equipment
3. Subscription service for cloud access to TAIRIS AOA with continuous updates, improvements, and new features
4. Device manufacturer partners licensing TAIRIS AOA to train surgical teams on new products and techniques

MARKET POTENTIAL



Initial market launch (select surgery types)

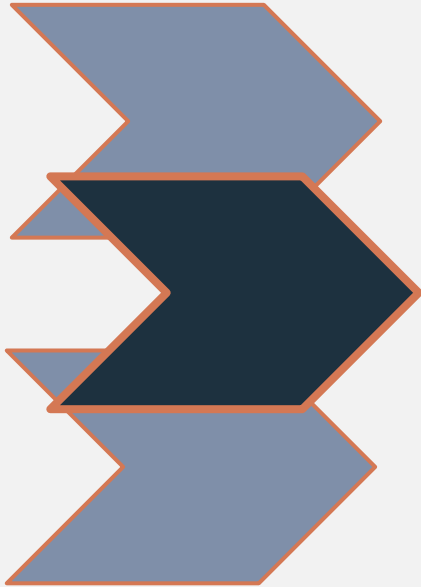
- Teaching hospitals
- 100,000 surgeries (**0.2%** annual market capture)
- Industry standard estimate \$500/case → **\$50m** revenue/yr

Stage II launch (expanded surgery types)

- Teaching and non-teaching hospitals
- 500,000 surgeries (**1%** annual market capture)
- Industry standard estimate \$500/case → **\$250m** revenue/yr

Peak potential: Redefine the surgical standard of care.
Every surgeon, every surgery.

EXPECTED BENEFITS



Patients:

- Enhance safety
- Provide novel intraoperative predictors of success
- Improve access to highest caliber surgical care

Surgeons:

- Provide real-time decision support
- Enable tailored automated metrics, intelligent guidance, and predictive analytics
- Allow access to surgical collective intelligence

Health systems:

- Minimize variability of outcomes
- Reduce surgical costs
- Enhance the overall delivery of surgical care

EXECUTIVE SUMMARY



The Challenge: There are 230 million surgeries performed per year worldwide. Surgical experience is the primary factor dictating outcome of each operation. However, surgical experience is not quantifiable, not accessible as a data source, and not easily distributable between users. This leads to variability in outcomes, complications, inefficiency, and high costs in surgical care delivery.

The Opportunity: What if an artificial intelligence (AI) platform could be designed that would quantify and learn from surgical experience, then customize and distribute tailored information back to all surgeons in real-time?

The Innovation: Our novel platform, which we are calling the Artificial Operative Assistant (AOA), is an Augmented Intelligence system built on a custom deep learning framework with a generalizable and scalable infrastructure. The AOA processes live surgery feeds and presents intelligent guidance and predictive analytics back to surgeons in real-time.

The Market: In the US alone, surgical care is 5% of GDP (~\$800b) with 50 million operations per year. Based on industry-standard charge estimates, initial goal 1% market capture could generate \$250 million revenue per year.

The Potential: The AOA has the **transformative** potential to **redefine** state-of-the-art surgical care by enhancing safety, training, & efficiency, introducing novel outcome metrics, improving access, decreasing variability, and lowering costs.