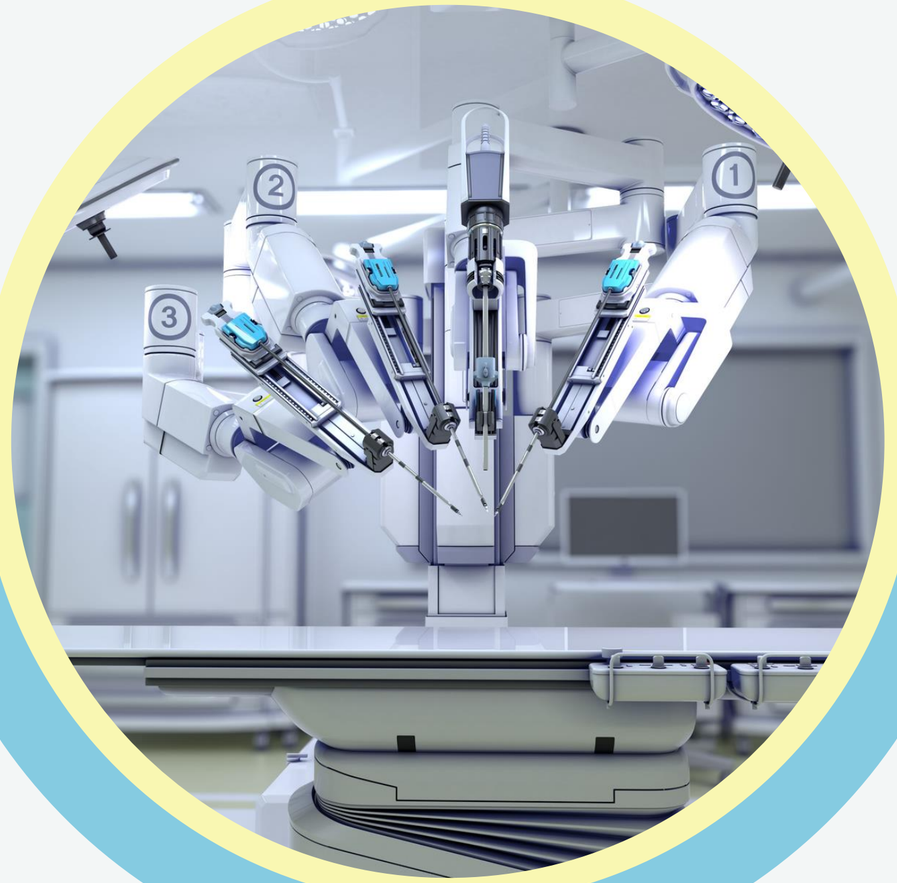
Remote Robotic Surgical

# REMOTE ROBOTIC SURGERY




**Join us in revolutionizing healthcare!**

- Aging & growing population[1]
- 53% of surgeries performed on people over the age of 65[2]
- Low income & lower-middle-income countries → 48% of the global population
- Only have 19% of all surgeons[3]

1. (Bloom & Zucker, 2022)
2. (Yang et al., 2011)
3. (Holmer et al., 2015)

# Introduction – Who are we?

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Hristo

- Software Engineer

Niklas

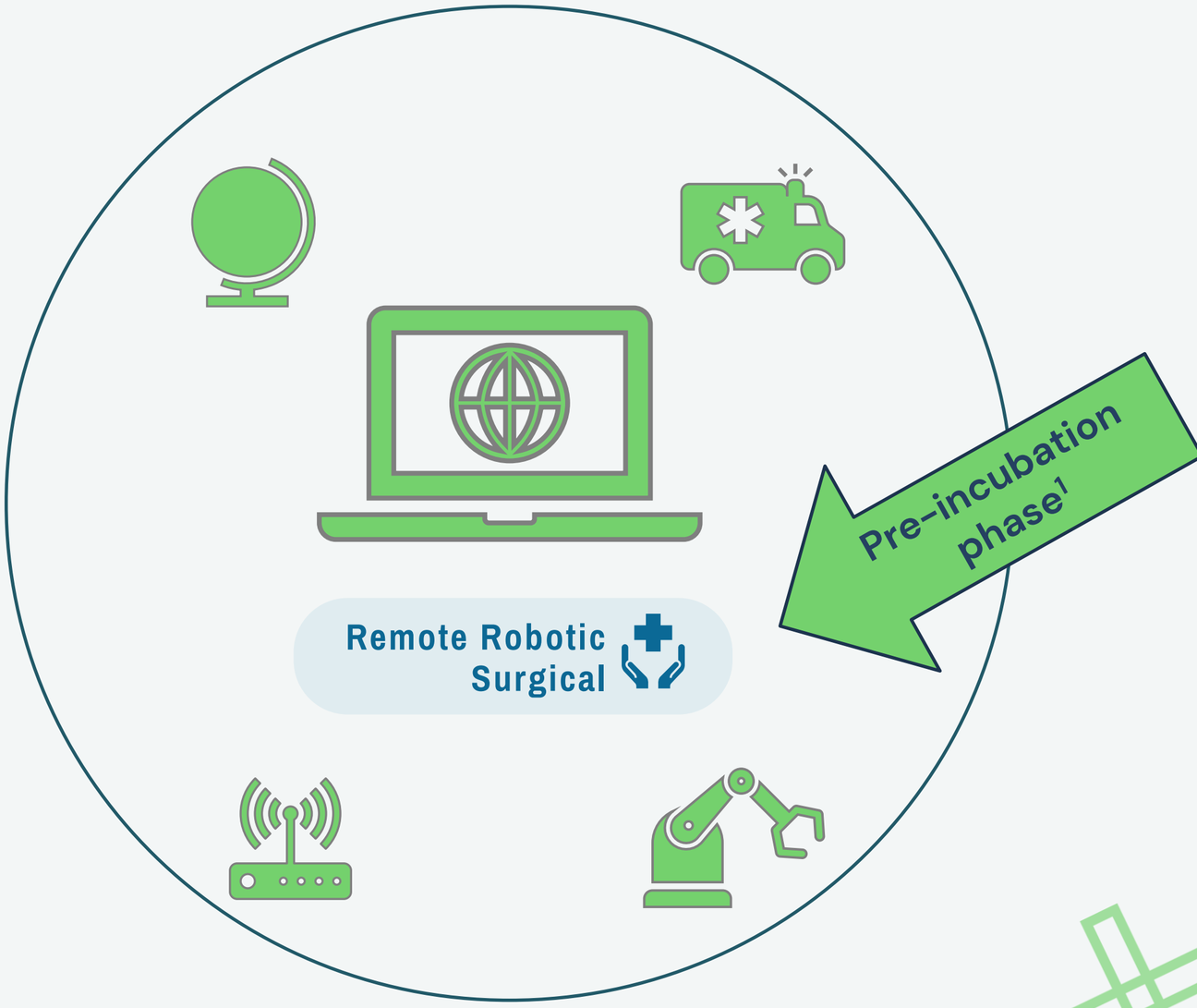
- Sales & Regulations

Sjuul

- Marketing

Mona

- Financial Advisor




1. (Subrahmanya et al., 2019)

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...

Connection to server ✅

...

5G connection ✅

...

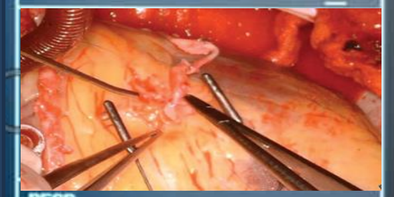
Equipment check ✅

...

Ready to start procedure ✅

...

Move instrument(R1) 3 inches to the right



Powered by Remote Robotic Surgical

# What’s new? – Value Proposition

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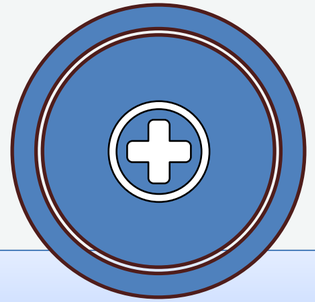
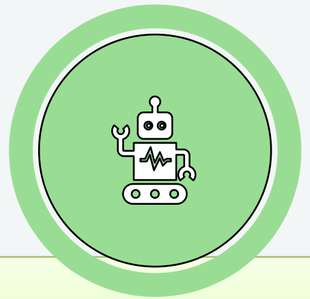


Location independent



Precision

Accessibility of specialized surgery

# Ethical OS Checklist

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| Risk Zone 2

WSJ PRO

## Hospitals and Pharmacies Reeling After Change Healthcare Cyberattack

Healthcare organizations forced to revert to manual procedures after Change Healthcare, part of Optum, disconnects services

*By James Rundle and Catherine Stupp*

Updated Feb. 23, 2024 12:19 pm ET | WSJ PRO


Change Healthcare provides prescription processing services through Optum, which supplies

1. La Caixa (n.d

# A/B Experiment

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**Objective:** "Determine effective communication method for patient willingness."

**Hypothesis:** Face-to-face increases willingness over video communication

**Group A:**
Receives face-to-face information session

**Group B:**
Receives video information session

# Our Customer

*Remote Robotic Surgical* → *Manufacturer of robotic surgery equipment* → *Hospitals* → *Patients*


## Robot surgery manufacturers need:

- Innovation and competitive edge
- Safety and reliability
- Regulatory compliance

# Customer Acquisition Strategy

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## Marketisation:

- Showcase proof of concept
- Leverage industry events
- Direct outreach

## Growth Hacks:

- Early adopter program
- Strategic partner-ships

## Business Model:

- $80K MRR from subscription
- 21 potential clients[1]

1. (iData Research 2022)

# Market Analysis: Defining the Gap & Assessing Size

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## Market Gap[1]

- Introduce **Remote Robotic Surgery** as a new field

## Medical Software Market

- 2023: USD 31.53 billion
- 2032: USD 77.43 billion
- **Growth rate 10.5%**[2]

## Change of Healthcare Market

- Through Covid-19 pandemic
- Shift toward **more technology** and **digitalization** of processes[3]

## Volume of Surgeries (US)

- **64 million** surgeries per year[4]
- **Surgeries with robotics 22% (2022)** [5]
- **Estimation 14,1 million** robotic surgeries

## Adoption Rates

- Differs from the type of surgery
- E.g. neurosurgery **51%** adoption rate[6]

## Regulatory Landscape

- **Clearance from the FDA** under the traditional 510(k) pathway are nearly **six months**[7]

1. (Stern & Thapar, 2022)
2. (Acumen Research & Consultancy 2023)
3. (Pahel 2024)
4. (Darow 2017)
5. (Strategic Market Research 2023)
6. (Stump et al. 2020)
7. (FDA 2024)

# Acquisition & Competition

Medtronic

INTUITIVE

Get technology cheaper than inhouse

Substitutes

Vertical integration

Acquisition archetype[1]

No direct competition

1. (Goedhart et al., 2017)

# Four Challenges of Software Startups

(Giardino et al., 2015)

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## Product

- Quality concerns
- Technological challenges

## Market

- Uncertainty
- Customer base
- Market share

## Financials

- Fundraising
- Sales growth
- Break even

## Team

- Composition
- Workload
- Motivation

## Regulations

Laws & ethical concerns

# KPIs – Balanced Scorecard Framework

(Elmore, 2016)

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## Financial Perspective

Investment

Profitability

Market Share

Time to market

## Customer Perspective

**Customer satisfaction[1] ≥ 80%**

$$\frac{Number\ of\ sat.customers}{total\ customers}$$

## Internal & Process Perspective

**Employee Satisfaction ≥ 90%**

$$\frac{Number\ of\ sat.employees}{total\ employees}$$

## Development & Learning Perspective

**Globalize & democratize healthcare**

Positive image → Marketing campaign
*Emergent – focused*[2]

**2 knowledgeable investors**

1. (Sheykin, 2023): satisfaction formula
2. (Aversa et al., 2021)

# KPIs – Balanced Scorecard Framework

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## Financial Perspective

**Pre-money valuation**[1]

$9 M

**Time to market**[2]

3 years

**FDA 510(k)**[3]

$25,000

**Investment:**

$3 M

**Develop-ment**[4,5]

$2.5 M

**Software Developer Salary**[6]

$125,000/ year

**Patent**[9]

$40,500

**Revenue in year 1**[7]

$1 M

**Annual revenue growth**[8]

- 1st year: 150%
- 2nd year: 120%
- 3rd year: 77%

1. (Elmore, 2016): see example calculation
2. (BrightInsight, 2024): average time to market
3. (FDA 510K Costs, 2024): average costs
4. (Shiklo et al., 2024)
5. (Chandrasekaran et al., 2014): 66% of start-ups go over budget
6. (USnews, n.d.)
7. (Richard, 2023): as a large business we plan to reach 1 M
8. (Girardi, 2023)
9. (BlueIron, 2022)

We are:

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# Conclusion

Don't you want to empower the most vulnerable?

Don't you want to balance the scales of unequal doctor distribution?

Don't you want to stop the endless travel of surgeons?

30% stake ⇒ $3 M


**Thank you for your attention! Do you have any questions?**

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# AI CANVAS

Kaminski (2021), inspired by Agrawal, Gans & Goldfarb (2018)

Remote Robotic Surgical

Goals and outcomes

## Job to be done

Globalize excellent surgical services

## Outcome

Easy interface for surgeons operating remotely

## Evaluation

Error rate must be extremely close to zero
→ Outperform human error rate

Data and biases

## Training

...

## Data Biases

...

## Business Model

...

# AI CANVAS

Kaminski (2021), inspired by Agrawal, Gans & Goldfarb (2018)

Remote Robotic Surgical

Data and biases

## Training

→ Clinical trials

→ Collaborations

- Healthcare institutions
- Academic and research organizations

→ Engaging with regulatory bodies

## Data Biases

- Inaccurate data inputs
- Interruption of 5G connection
- Undetected (technology) errors

## Business Model

- Subscriptions

→ with robot manufacturers

→ Price for monthly subscription: 80k

# Pre-Money Valuation

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**Exhibit 6**
**AlphaMed Company**
**Market Approach**
**Market Transaction Method**
**Computer Software Valuation Summary**
**As of January 1, 2016**

| Valuation Variables | Number of LOC | Sale Transaction Price | Sale Transaction Price per LOC |
|---|---|---|---|
| Comparable Software Sale/Licensing Transaction 1 | 408,700 | $ 7,560,950 | $ 18.50 |
| Comparable Software Sale/Licensing Transaction 2 | 587,020 | 8,394,386 | 14.30 |
| Comparable Software Sale/Licensing Transaction 3 | 362,892 | 4,572,439 | 12.60 |

| Valuation Analysis | Low End of Indicated Value Range | High End of Indicated Value Range |
|---|---|---|
| Subject Computer Software Total Number of LOC | 570,000 | 570,000 |
| Multiplied by: Market-Derived Price per LOC | $ 12.60 | $ 18.50 |
| Equals: Indicated Value of Subject Computer Software | $ 7,182,000 | $ 10,545,000 |
| **Indicated Value of Subject Computer Software (rounded) [a]** | | **$ 8,860,000** |

LOC = Line(s) of code
Note:
[a] Based on the average of the low and high end ranges.

(Elmore, 2016)

- The valuation was based on **comparing the subject software to similar software transactions**, focusing on sale prices and lines of code.
- A price per line of code was determined from comparable sales, then applied to the subject software's total lines of code to estimate its value.
- The final valuation was the average of the high and low ends of the estimated value range, offering a market-based valuation of the software.
- Another method we used to determine the pre-money valuation was **the rule of thirds** → 3x the investment = pre-money valuation