

A photograph of an operating room. Several surgeons in blue scrubs and masks are gathered around a patient on a table, performing a procedure. The room is filled with medical equipment, including large overhead surgical lights, monitors, and various tubes and cables. The background shows a typical hospital setting with green walls and medical carts.

Haermonics' investor presentation



Haermonics' investor presentation

# THE TEAM



National Clinical Trial centre



MCT - LOI



MCT - LOI



MCT - LOI



prof. dr. de Mol, MD PhD

Scientific and Research Partners

Quality and Regulatory Partners

Development Partners

Investors and Industry Experts



**Johan Manshanden, BSc**  
PhD Candidate  
National Trials & Research  
Co-Founder



**Dave Koolbergen, MD PhD**  
Cardiothoracic Surgeon  
Chief Medical Officer  
Inventor & Co-Founder



**Freek Hulsman, MSc**  
Industrial Designer  
Research & Development  
Co-Founder



**Eva Diephuis, MD**  
Product Owner  
Clinical Research  
Trial Coordinator



**Wouter Markus, BEng**  
Serial Entrepreneur  
Chief Executive Officer  
Sales & Marketing



Sjaak Deckers



System Developer



Disposable Developer



Blood specialists and test lab



Competent Authority Certification



Quality and Regulatory advice



connecting innovators

Take Off Grant phase 1

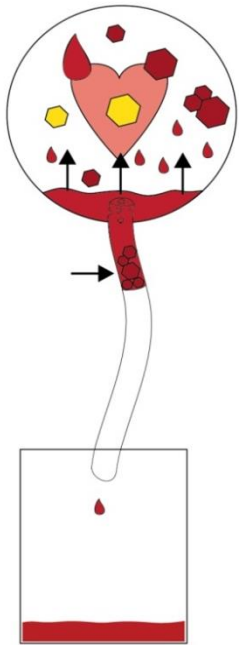


BUILDING  
HEALTHTECH  
VENTURES

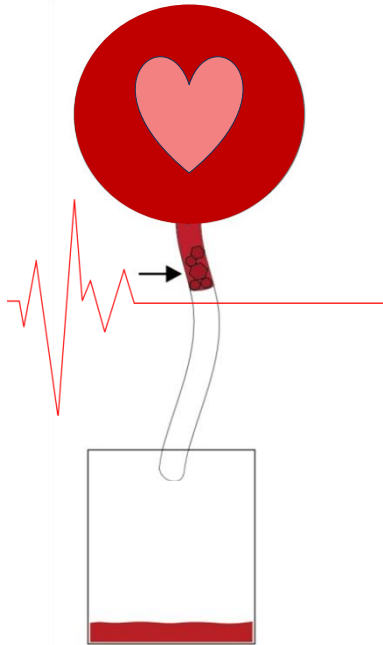
Co-Investor



# RETAINED BLOOD SYNDROME (RBS) CAUSES COMPLICATIONS IN 17% OF CARDIAC SURGICAL PROCEDURES <sup>2</sup>



RBS is caused by insufficient drainage



Leading to tampones (heart failure)



## Patients

- ❖ 30,000 lives lost in open heart surgery
- ❖ 250.000 complications due to RBS



## Medical professionals

- ❖ 18,000 re-operations

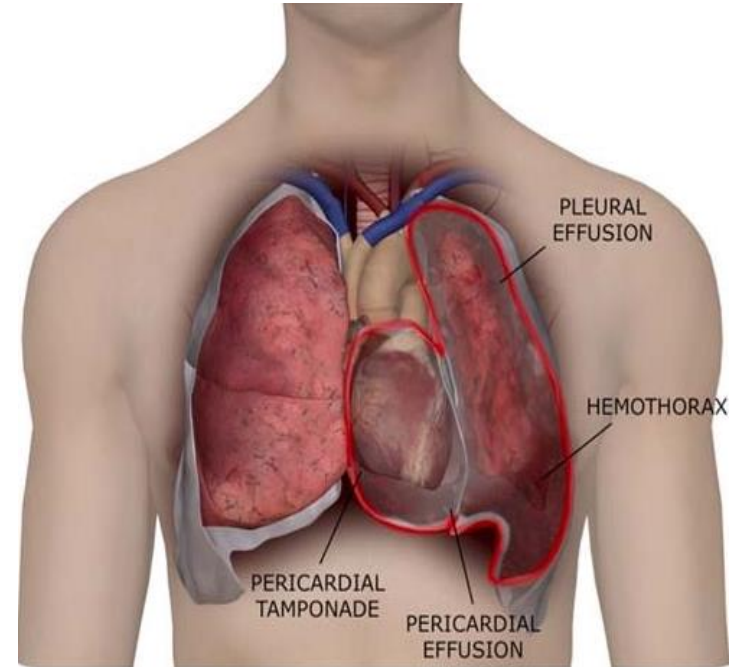
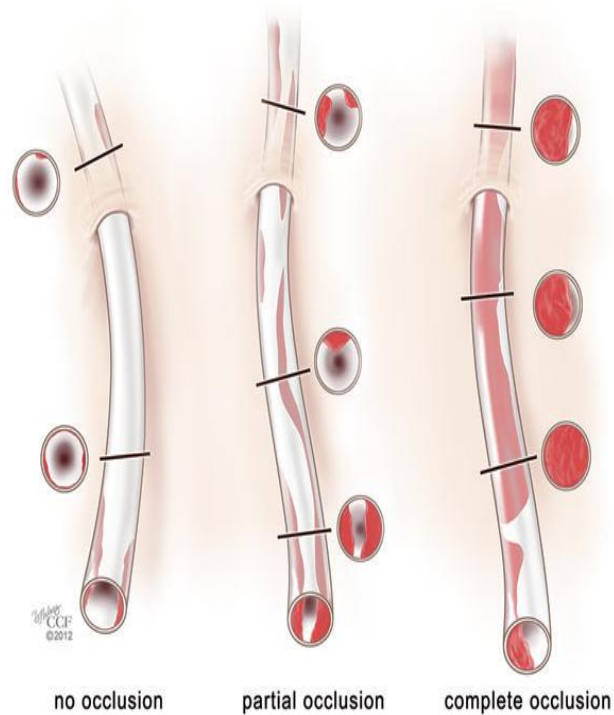


## Hospitals

- ❖ Aggregated RBS cost €15.5 B

2: Boyle EM Jr, Gillinov AM, Cohn WE, Ley SJ, Fischlein T, Perrault LP. Retained Blood Syndrome After Cardiac Surgery: A New Look at an Old Problem. Innovations(Phila). 2015 Sep-Oct;10(5):296-303

# Retained Blood Syndrome (RBS) in cardiac surgery



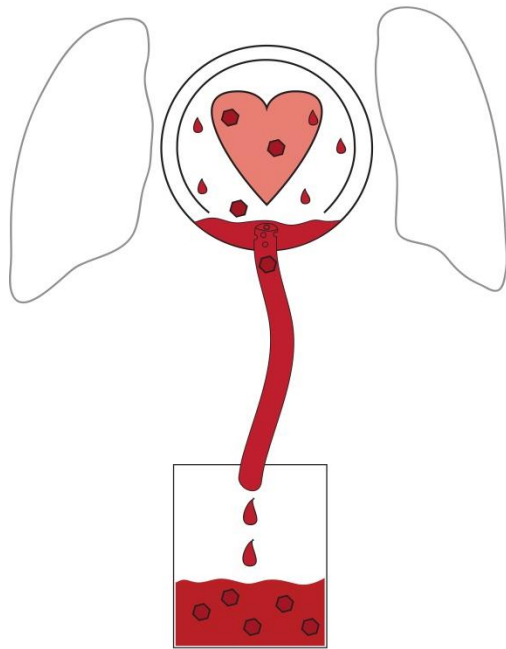
**36%** of chest tubes occluded<sup>1</sup>

1: Karimov JH, Gillinov AM, Schenck L, Cook M, Kosty Sweeney D, Boyle EM, Fukamachi K. Incidence of chest tube clogging after cardiac surgery: a single-centre prospective observational study. Eur J Cardiothorac Surg. 2013 Dec

Accumulation of blood and clots:  
Toxic remnants, infections, tamponades, re-operations, A-fibs and blood transfusions

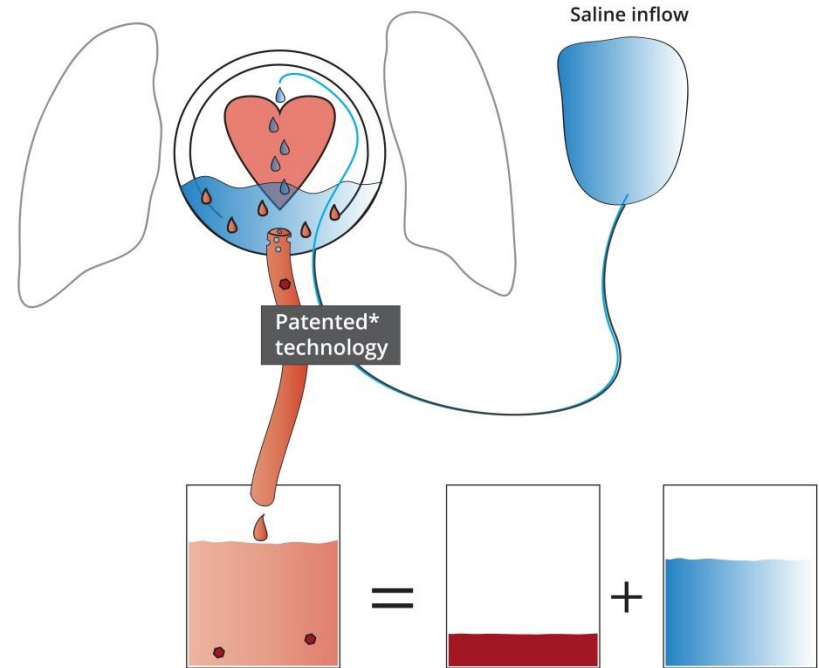
# Haermonics tackles the problem at the root cause

## Current practice



- Blood
- Blood clots
- Diluted blood
- Saline

## Haermonics' Flush



\*Safe and feasible with patented technology. Patent no. WO2015086857

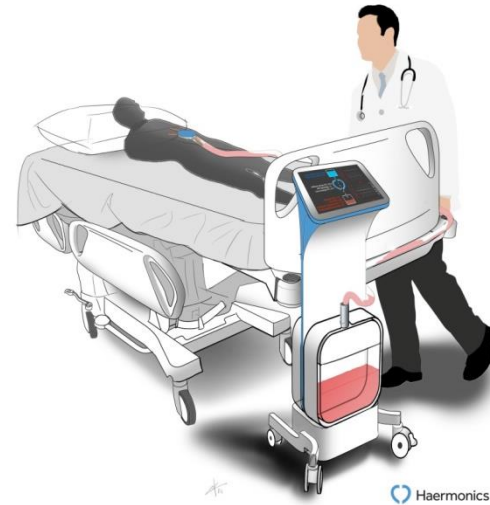
Continuous Postoperative Pericardial Flushing (CPPF)<sup>4</sup> works by continuously flushing the pericardial cavity with a warm saline solution during the first 6 to 12 hours after surgery to assure chest tube patency and complete evacuating of blood and clots out of the pericardial cavity, starting at the end of surgery.

4: [2015] Manshanden JS, Gielen CL, de Borgie CA, Klautz RJ, de Mol BA, Koolbergen DR. Continuous Postoperative Pericardial Flushing: A Pilot Study on Safety, Feasibility, and Effect on Blood Loss. EBioMedicine. 2015 Jul 31;2(9):1217-23. doi: 10.1016/j.ebiom.2015.07.031. eCollection 2015 Sep. PubMed PMID: 26501121; PubMed Central PMCID: PMC4587997.

# Haermonics' technology is superior to state of art

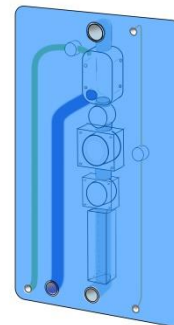
## Technical proof of concept

- ✓ Technical feasibility proven and externally validated
  - ❖ 1<sup>st</sup> version Haematocrit sensor
  - ❖ Multi-lumen drain and fluid balance
- ✓ ISO 13485 for organisation in application
- ✓ Patented technology - WO2015086857



## Technology Focus

1. Proof of Principle (POP)
  - ❖ Pressure
  - ❖ Haematocrit
  - ❖ Disposable unit
2. Build first working prototype with disposables as a demonstrator
3. METC approval documentation



Working disposable

+



P2 prototype with sensors

= Demonstrator

# Haermonics' clinical proposition is superior



## Clinical proof

- ✓ Safety and feasibility proven in clinical trial<sup>5</sup>
- ✓ 306 Patients included in RCTs: showing 30-40% blood loss reduction
- ✓ Zero tamponades in study population against 3 in control group

## Current Research Focus

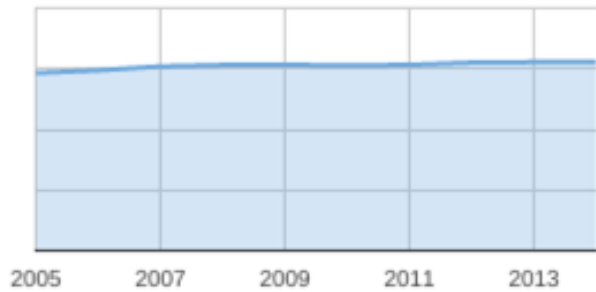
- ✓ Publications
- ✓ Multi Centre Study

5: Manshanden JS, Gielen CL, de Borgie CA, Klautz RJ, de Mol BA, Koolbergen DR. Continuous Postoperative Pericardial Flushing: A Pilot Study on Safety, Feasibility, and Effect on Blood Loss. EBioMedicine. 2015 Jul 31;2(9):1217-23. doi: 10.1016/j.ebiom.2015.07.031. eCollection 2015 Sep. PubMed PMID: 26501121; PubMed Central PMCID: PMC4587997.



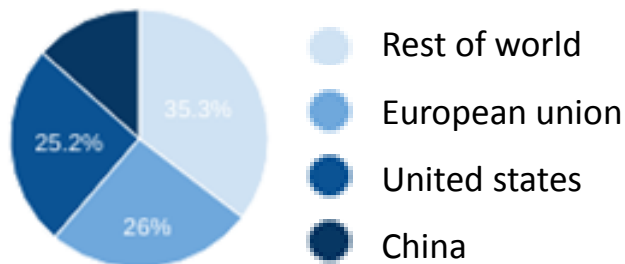
# THE ANUAL IMPACT HAERMONICS HAS ON RBS IN CARDIAC SURGERY WORLDWIDE

## Surgeries worldwide



1.5 mln operations

## Distribution of surgeries



## Patients

- ❖ 7.000 lives saved in cardiac surgery
- ❖ 20-30% of 250.000 complications saved



## Medical professionals

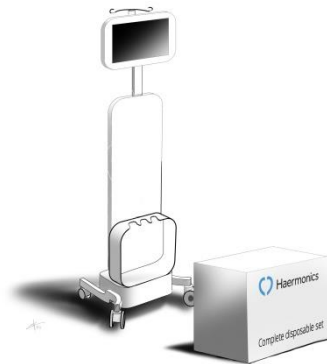
- ❖ 15.000 re-operations prevented
- ❖ 1.000.000 blood transfusion bags saved



## Hospitals

- ❖ Aggregated RBS cost €15.5 B
  - €2.0 B direct costs saved (<60 days)
  - €1,5 B indirect costs saved (>60 days)


# INSTALLED BASED MARKETING STRATEGY



- ✓ Device
- ✓ Disposables
- ✓ Service/updates

Direct sales  
  
 NL, GER, BEL
























Via distributor  
  
 Medela  
 Sorin/LivaNova  
 Terumo



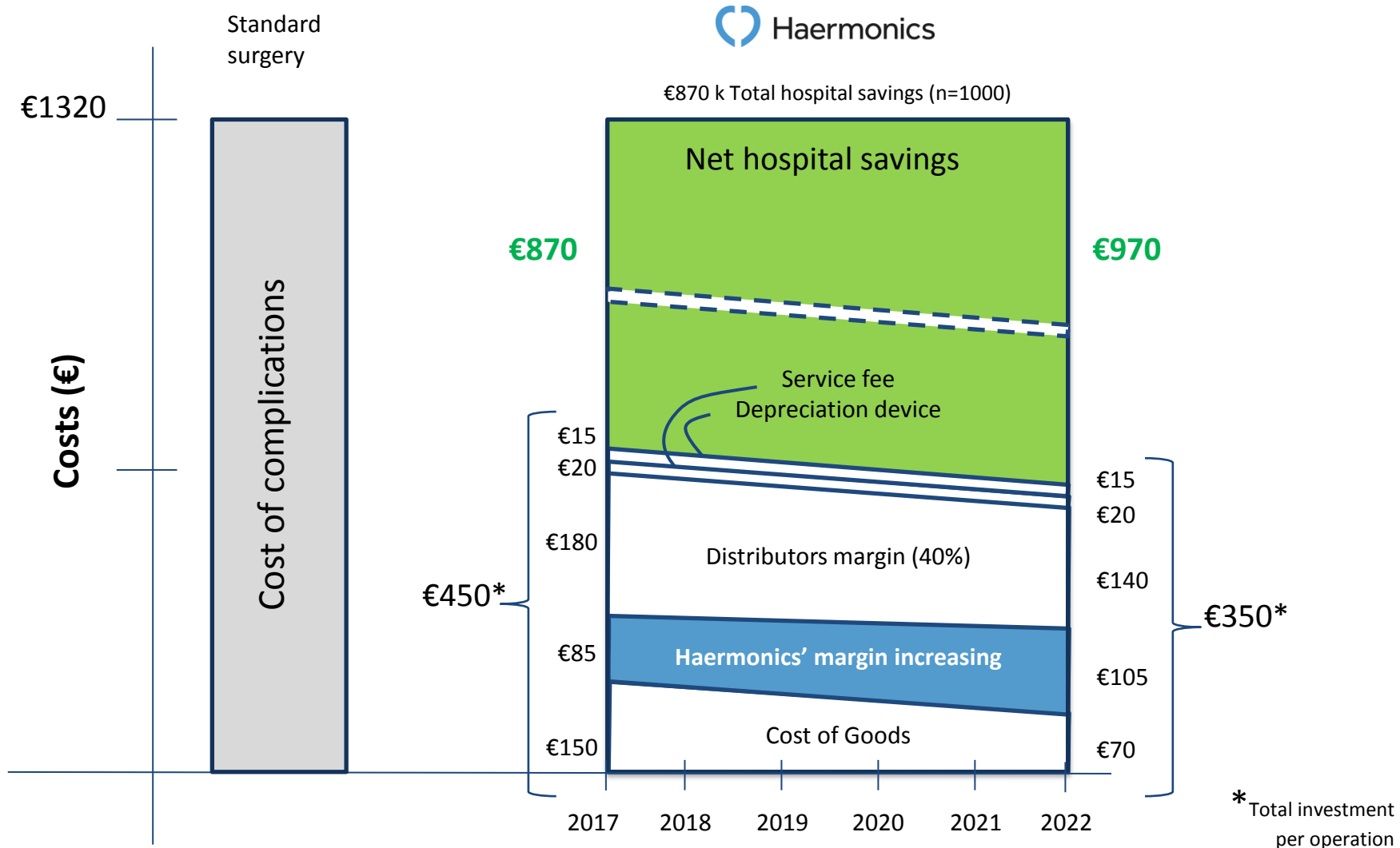
  USA+  
 After two years  
 world wide introduction



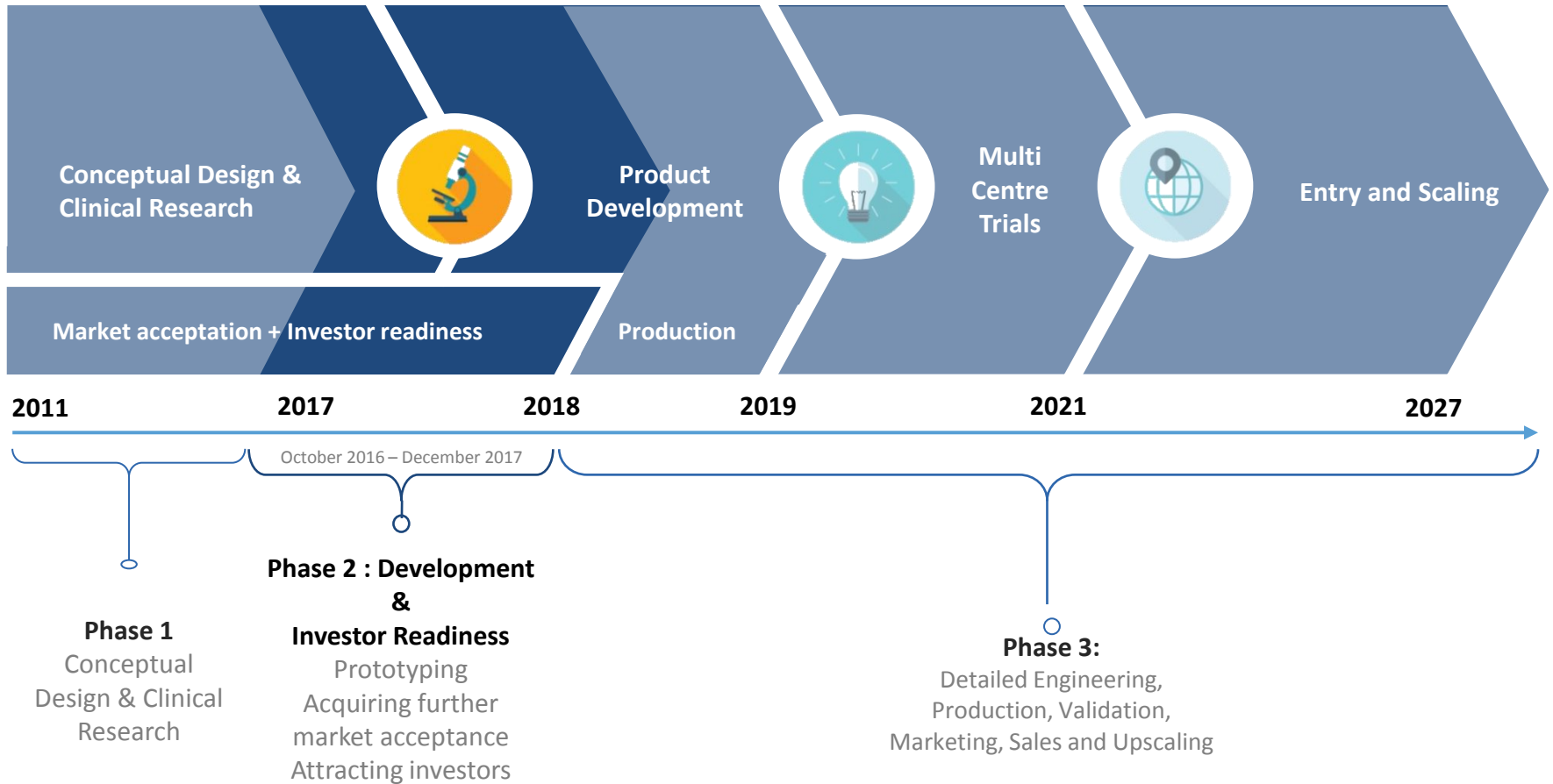
# Haermonics has the potential to beat competition

	Haermonics	Clearflow	Standard care
Save lives			
Reduce complications			
Fact based clinical decision making			
Labour independent			
Return on investment			
Market acceptance			
Market penetration			

# HAERMONICS' BUSINESS CASE: DIRECT HOSPITAL SAVINGS



# TIMELINE AND INVESTORS



LIFE SCIENCES  
FUNDAMSTERDAM

ZonMw

STW

Brabantse Ontwikkelings Maatschappij  
BOM

GAP4 Kansen voor West II

NLC BUILDING HEALTHTECH VENTURES

# HAERMONICS IS LOOKING FOR INVESTORS

SUPERIOR SOLUTION FOR RBS



Retained Blood Syndrome is a serious problem in health care



Haermonics Flush addresses the root cause of RBS: removing the blood remnants

ALL STAKEHOLDERS BENEFIT



7.000 lives saved



Data driven decisions  
More control



€ 2,0 B direct and  
€ 1,5 B indirect hospital  
costs saved

€5,3 M TOTAL CAPITAL NEED

investments



Product development  
International multi-centre trials  
Scaling up: distribution and sales

non-dilutive



Grants (STW, Horizon, KvW, ...)  
Financing



**WHAT CAN WE**

**LEARN**

**FROM THE**

**MARINE CORPS?**

A group of soldiers in camouflage gear and heavy winter clothing are walking away from the camera through a snowy forest. The trees are heavily laden with snow. In the background, a large body of water is visible, surrounded by snow-covered hills and mountains under a cloudy sky.

STAMINA IS WANTED

**The deal is seldom done  
the first time**



# ATTRACTING INVESTORS & WHAT I LEARNED IN THE MARINE CORPS

## MARINE CORPS: 5 PARAGRAPH ORDER

Situation  
Mission  
Execution  
Administration and Logistics  
Commands and Signals

## CEO STARTUP TASK: ESPRIT

End State  
Situation  
Plan  
Reinforce  
Inspire  
Test

## CIRCUMSTANCES MAY VARY

**You're in trouble – what to do?**

**Do not panic - Follow the drill (ask for advice) - If the drill does not work → stay calm and TRY AGAIN.**

**MOST IMPORTANT: what to do once you're out!**

# MY LESSONS LEARNT

Your success should not be depending on third parties  
(RUNE, spine clinic)

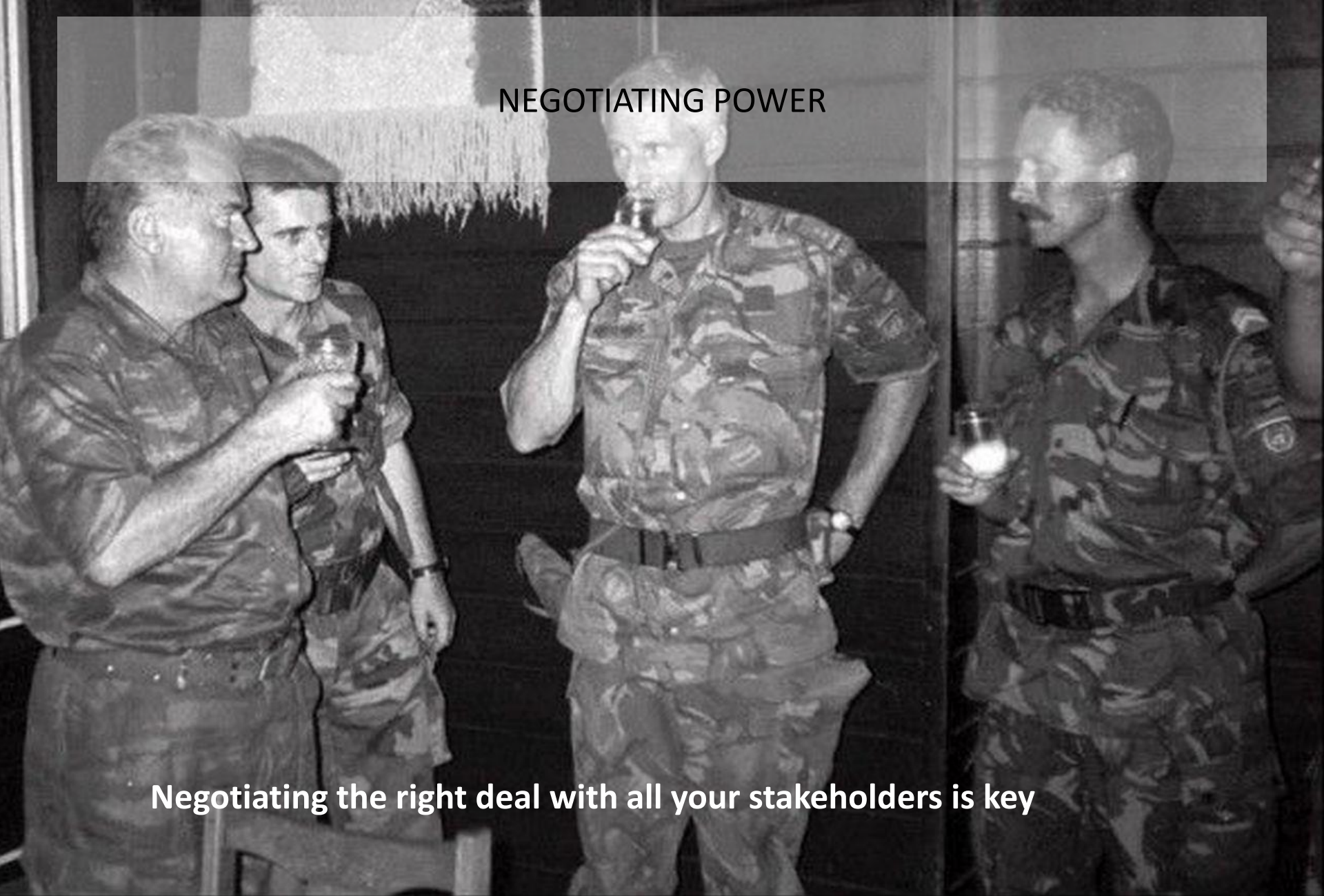
Alignment of shareholders is key

TEAM

Do NOT wait to take measures if there is no result

Gather the **STRONGEST** team you can imagine, **NO COMPROMISE!**

## NEGOTIATING POWER



**Negotiating the right deal with all your stakeholders is key**

WE'RE IN THIS TOGETHER... it's going to be a bumpy road anyway

