



# 5G HEART

5GHEART.ORG

## 5G WEARABLE VIDEO FOR PARAMEDICS IN THE 5G-HEART PROJECT

Donal Morris

[dmorris@redzinc.net](mailto:dmorris@redzinc.net)

[www.redinc.net](http://www.redinc.net)

+353 86 8130009



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Driving Innovations in Healthcare  
with 5G and Smart Networks

5G HEALTH AQUACULTURE AND TRANSPORT VALIDATION TRIALS

# 5G-HEART Stakeholders



<u>Health Impact</u>	<u>Transport Impact</u>	<u>Aquaculture Impact</u>
More Efficient Clinical Processes. Improved Patient Pathways & Outcomes. Reduced Hospital OPEX. Reduce the impact of geography & economy on the quality of health care globally	Public Safety in Platooning Autonomous & Assisted driving, New business models. Standards impact for high-level automated road transport	Better Food Production in Europe Advanced Production, Autonomous Feeding Fish Health, Farm Management, Enhanced production efficiency & quality

--- Health Cluster --- Transport Cluster --- Aquaculture Cluster ---

Oslo universitetssykehus RedZinc PHILIPS	OXFORDSHIRE COUNTY COUNCIL dynniq POLAR epitomical®	Marine Institute SKIRONIS SEALAB VWINGS ACTA LTD
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Telecom Cluster

 telenor
 OTE
 ERICSSON
 INTRACOM TELECOM

Research

 cea
 VTT
 TNO innovation for life
 UNIVERSITY OF SURREY
 

Health Health      Transport Transport      Aquaculture Aquaculture

# HealthCare Challenges



**No Visual Access  
for expert**



**Lack of  
Information**



**Additional  
resources**



**Time delays**



**Rising Costs**



### Medical Person in Field



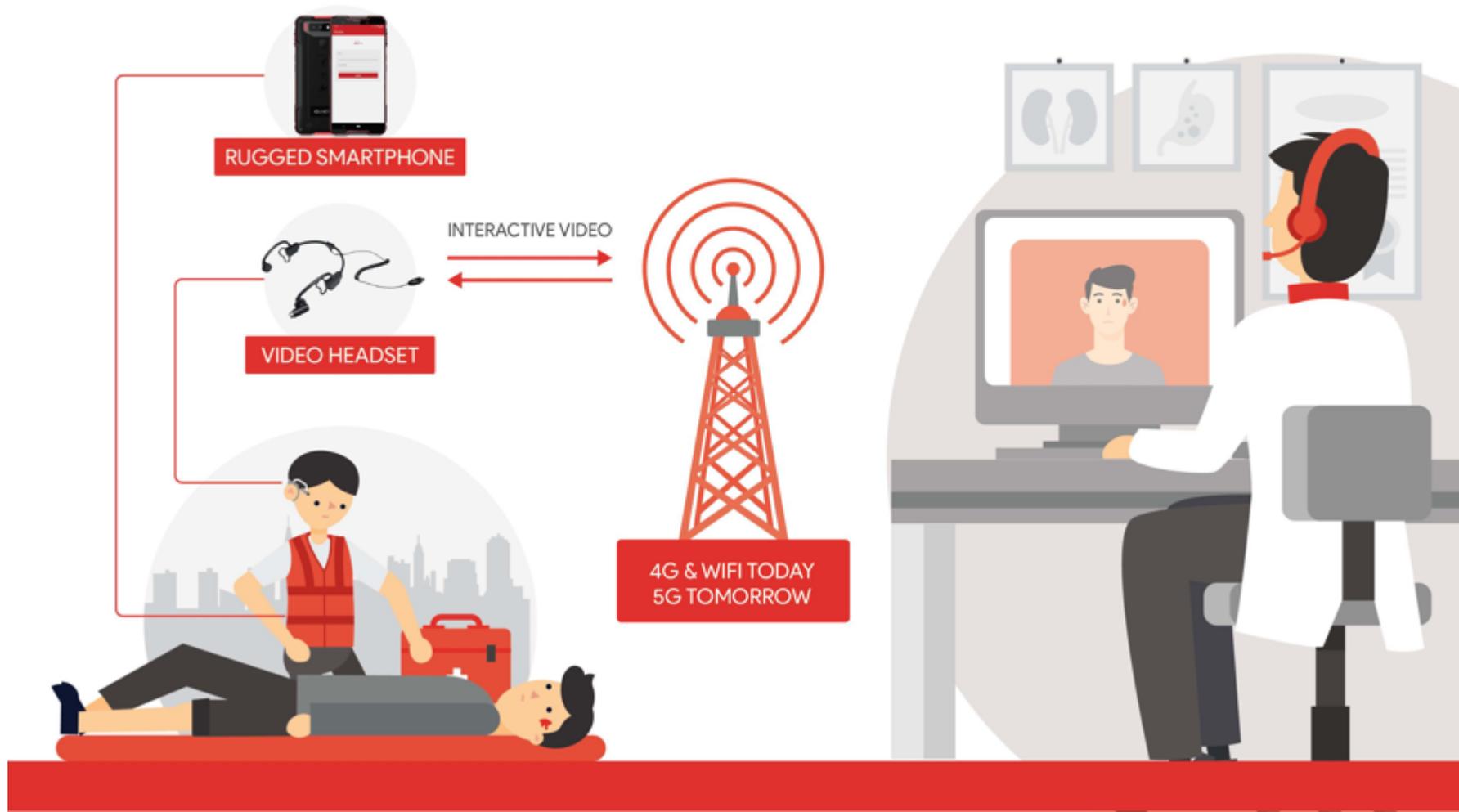
### Senior Medical Support



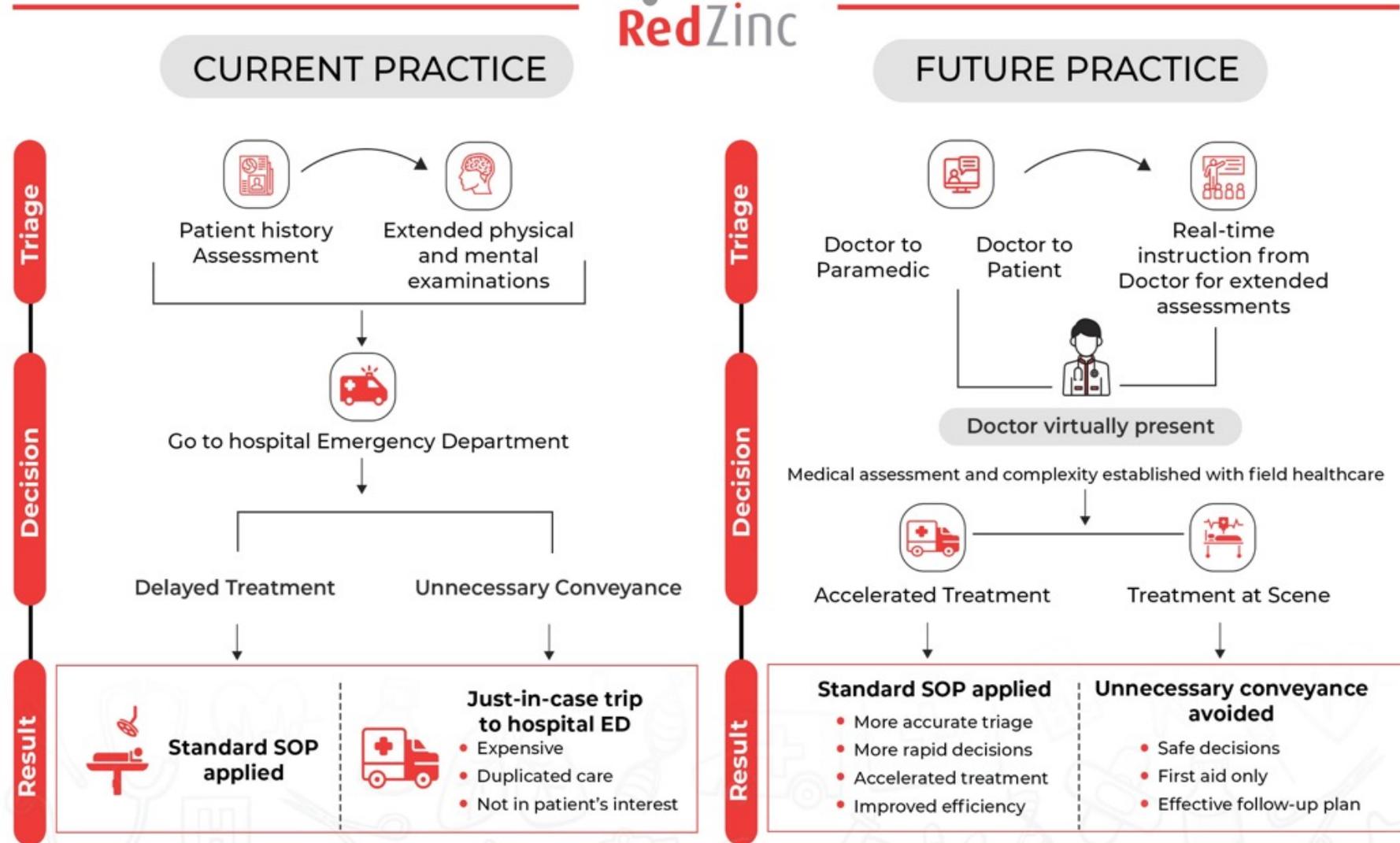
Public Wireless

# Doctor At Hot Desk

## WEARABLE VIDEO FOR **PARAMEDICS**



Example  
 Future  
 Pre-hospital  
 Paramedic  
 Practice  
 UK & Ireland  
 Model



# Video Headset Smart Phone

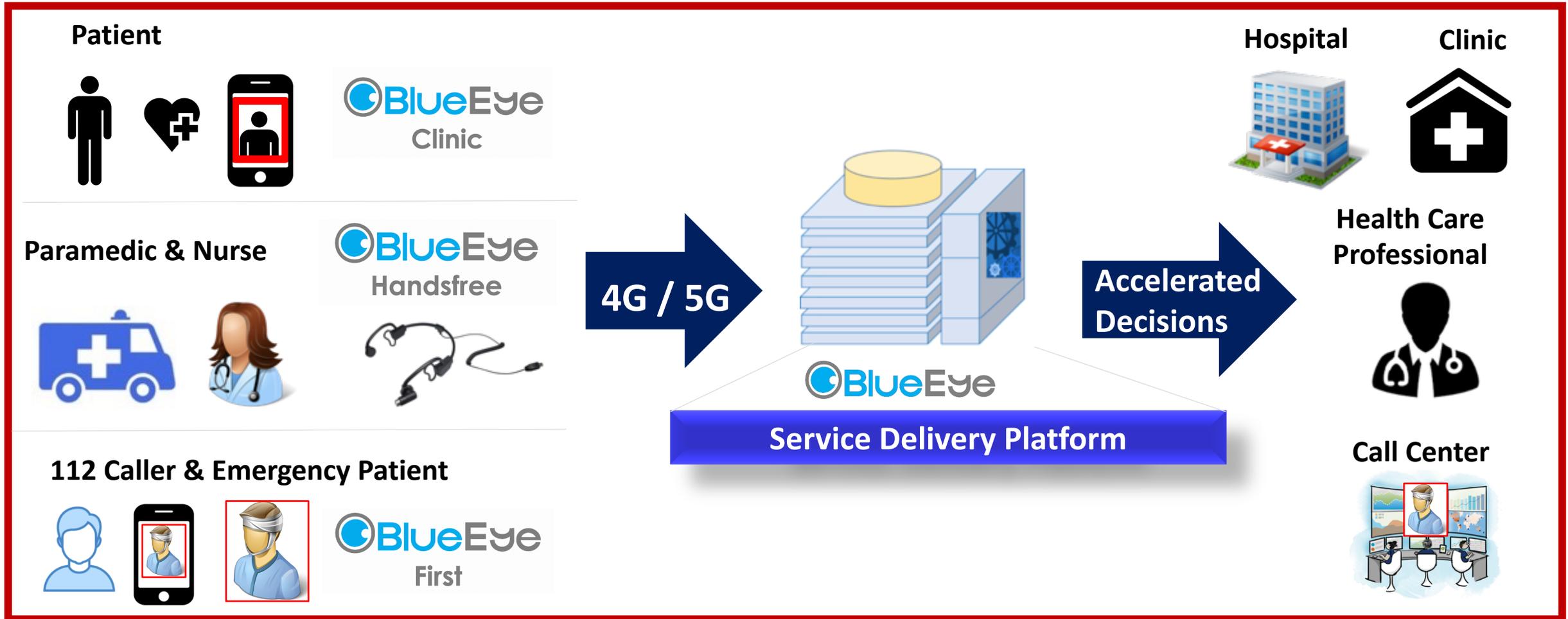


Video Headset



5G Smartphone

# Service Delivery Platform





# Benefits



- Accelerate time to decision
- Accelerate time to treatment
- Increase efficiency of pre-hospital emergency clinical process
- Improved patient outcome
- Improved pre-hospital emergency department economics

# Drivers

Camera performance out strips 4G capacity

Constrained uplink bandwidth

Users expect high quality images

Priority is needed for emergency

# Users expect high quality images

## 4G

### Medical Image Definition

1280x720 (sometimes)  
640x480  
320x240

Limited Image Definition  
Blurring during motion of head  
Constrained Uplink Bandwidth

## 5G

### Medical Image Definition

HD 1280x720  
Full HD 1920x1080  
2K 2048. X 1080  
UHD-1 3840x2160

5G gives better image definition via higher bandwidth

1280x720 wearable video (1k)  
potential for 4K

Reduced image blur due to higher frame rates  
Slice with

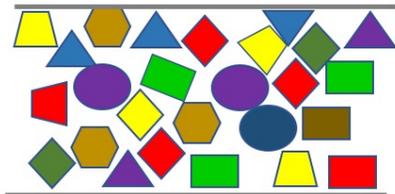
Dedicated network for Quality of Experience  
Isolation

# Priority Issue 4G vs 5G

Every packet together

## 4G

Everyday  
Internet Traffic



5G Differentiation & priority

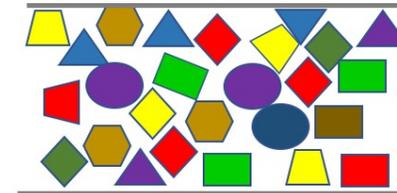
## 5G

Emergency Traffic



Prioritised

Everyday  
Internet Traffic



# Can we improve Triage & Operational Process

Different Skill levels

Different Locations

Center



Paramedic



In the Field



Senior Doctor



Community Nurse



In the Home



Call Center



Remote Doctor



In the Clinic



# Two Pilots in Oslo and Groningen (4G)

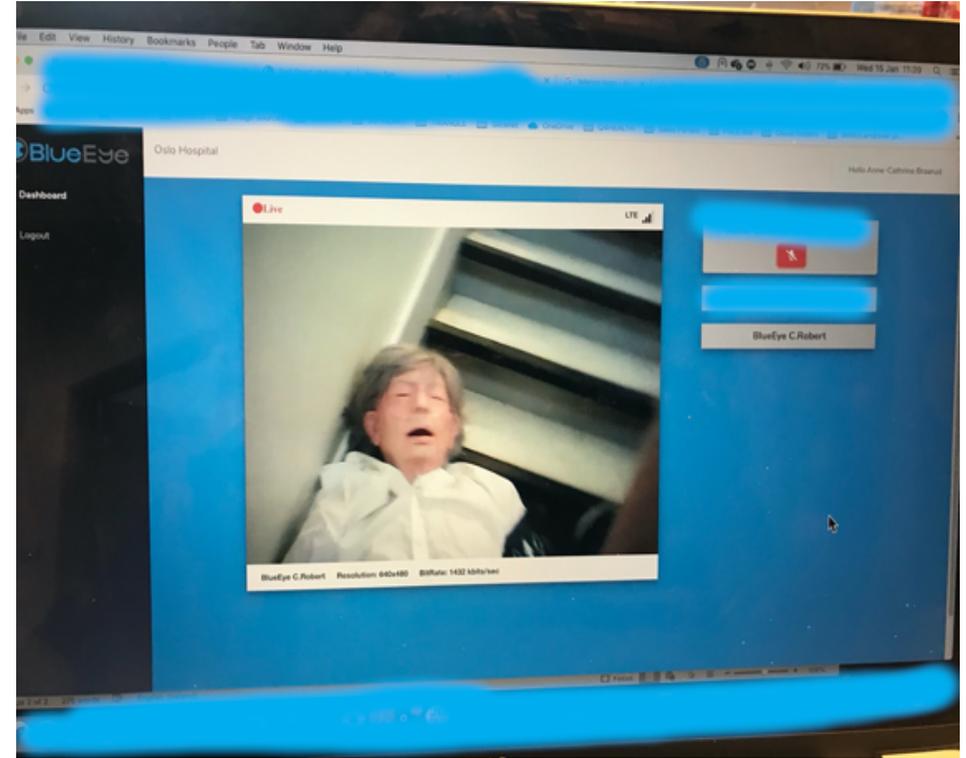
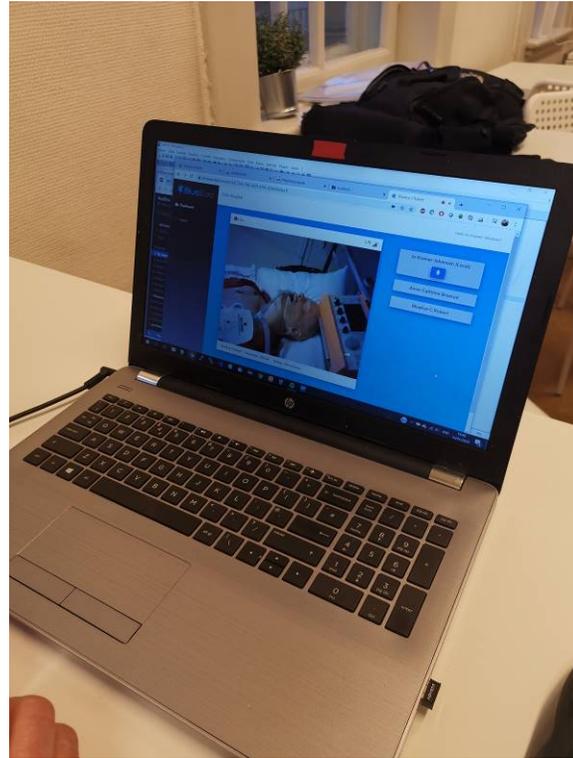


# Candidate Pilot Use Cases discussed in Oslo

## 4 Use cases

1. Mass casualty supervisor support (>2 patients)
2. Chronically ill child- chronic disease with child known to hospital.
3. Cancer Drug Follow up at home
4. Paramedic to Paramedic for fentanyl delivery.

# Oslo Early Pilot : Injured Frail/Elderly Patient



# Oslo scenario with pneumothorax

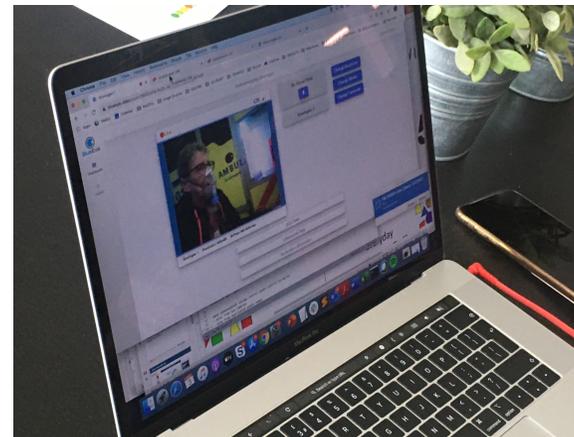


# Groningen Use Case

## Burn Use case

1. Burns Patient
2. Actor & Manikin
3. 4 levels of burn severity

# Burn Scenario



# Burn Scenario



# Thanks to partners in the pilots



# RedZinc



Guinness Enterprise Centre  
Taylor's Lane  
Dublin 8, Ireland  
D08 N9EX  
  
+ 353 (1) 906 9608



EMAIL US!

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[dmorris@redzinc.net](mailto:dmorris@redzinc.net)



69 Wilson St, London  
EC2A 2BB  
United Kingdom  
  
+ 44 (20) 808 99 614