5G HEART EXPERIENCES WITH WEARABLE VIDEO IN PILOTS WITH OSLO AMBULANCE SERVICE AND AMBULANCEZORG GRONINGEN.

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Agenda

Wearable Video for Paramedics

5G drivers

Early results from Pilots in Oslo and Groningen
Agenda

Wearable Video for Paramedics

5G drivers

Early results from Pilots in Oslo and Groningen
HealthCare Challenges

- No Visual Access for expert
- Lack of Information
- Additional resources
- Time delays
- Rising Costs
BlueEye
Handsfree

Medical Person in Field

Live Video Camera

Video
To Doctor
Audio

Senior Medical Support

4G today
5G tomorrow
WEARABLE VIDEO FOR PARAMEDICS

Doctor At Hot Desk
Example
Future
Pre-hospital Paramedic Practice
UK & Ireland Model
Video Headset Smart Phone

Video Headset

5G Smartphone

Blue Eye
Handsfree
Service Delivery Platform

Patient

Paramedic & Nurse

112 Caller & Emergency Patient

Hospital

Clinic

Health Care Professional

Call Center

4G / 5G

Accelerated Decisions

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
Agenda

Wearable Video for Paramedics

5G drivers

Early results from Pilots in Oslo and Groningen
Drivers

Camera performance outstrips 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

5G Differentiation & priority

Emergency Traffic
Everyday Internet Traffic

Prioritised

Everyday Internet Traffic
Agenda

Wearable Video for Paramedics

5G drivers

Early results from Pilots in Oslo and Groningen
Two Pilots in Oslo and Groningen (4G)
Can we improve Triage & Operational Process?

Different Skill levels
- Paramedic
- Community Nurse
- Remote Doctor

Different Locations
- In the Field
- In the Home
- In the Clinic

Center
- Senior Doctor
- Call Center

Improved Triage Process
More Collegiate Support
Improved Operational Process
Technical Configuration (on 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
Image size with 4G

640x480 pixel typical

1280x720 pixels possible with good uplink bandwidth
Also scenario with pneumothorax
Groningen Use Case

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

**Proof point**
Why it matters in clinical practice

Image definition is important

Camera performance outstrips 4G capacity

4G cannot well support 2 - 5 Mpixel camera uplink video.

5G is needed with better target uplink bandwidth
Next Steps

Add 5G

More detailed scenarios with more users

Measure KPI
THANK YOU
FOR YOUR ATTENTION

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