



H A M B U R G



**M**-Lab

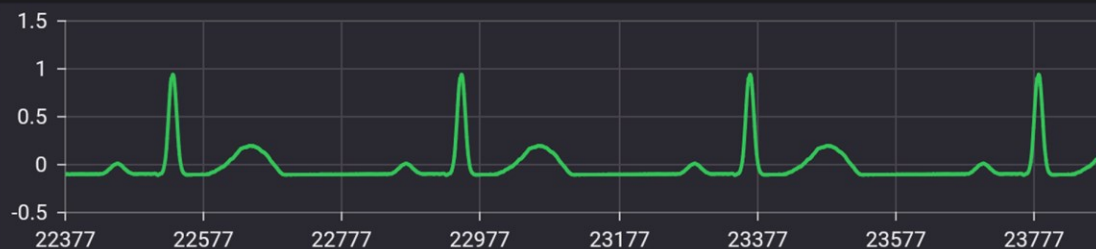


27.01.2022





VentCore



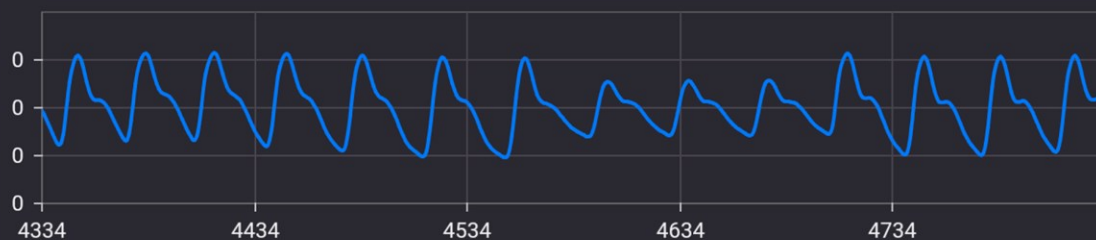
HF 86 bpm  
55 85

Br. Freq.

AF 20  
15  
10 br/min

MVe

MVe 9.0  
4.50  
3.5 l/min



SpO2 70 %  
90 100

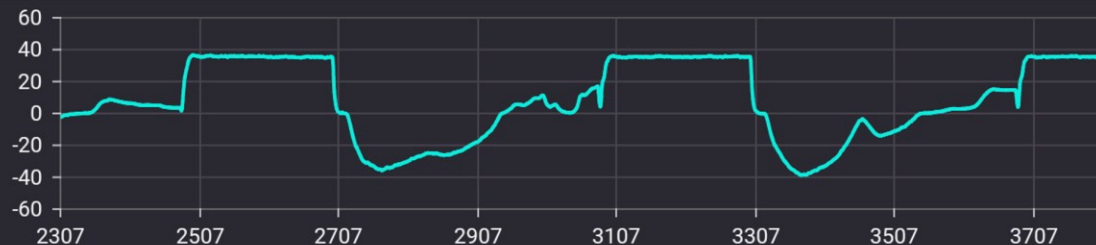
pPeak 50.12 mBar

pPlat 4.58 mBar

pMean 16.58 mBar

Heart Freq.

HF 100  
86  
50 bpm



Flow 35 l/min  
Graph Value

IPPV

- Freq. 15 /min +

- Vt 300 ml +

- PEEP 60 mBar +



PAW 8 mBar  
Graph Value

Acknowledge all Alarms

Single Alarm Conf ↑





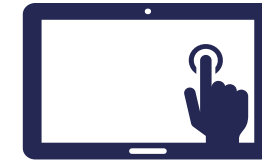
# UKE Project 2022



3-in-1



Scenarios



Tablet



Redesign



Alarm Management



Mock Data





# UKE Project 2022



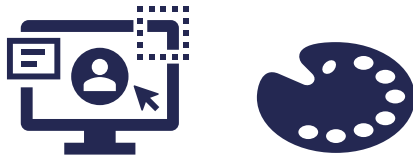
3-in-1



Scenarios



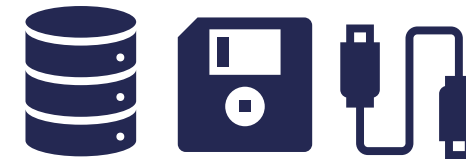
Tablet



Redesign



Alarm Management



Mock Data

☑ DONE!

☑ DONE!

☑ DONE!



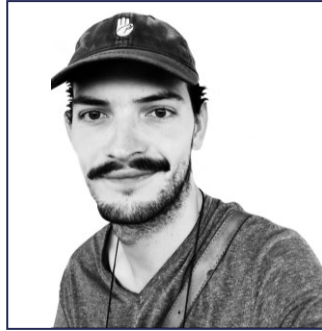


# Team UKE



Arne

System Design  
Full Stack Developer



Max

UX Design  
Full Stack Developer



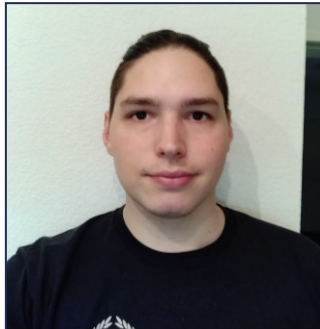
Noah

Data Engineer  
Full Stack Developer



Mudi

Performance Engineer  
Full Stack Developer



Corvin

Marketing  
Documentation



Fynn

DevOps Engineer  
Full Stack Developer



Anni

Marketing  
Project Organisation



# Project Journey



Requirements



Design & Data

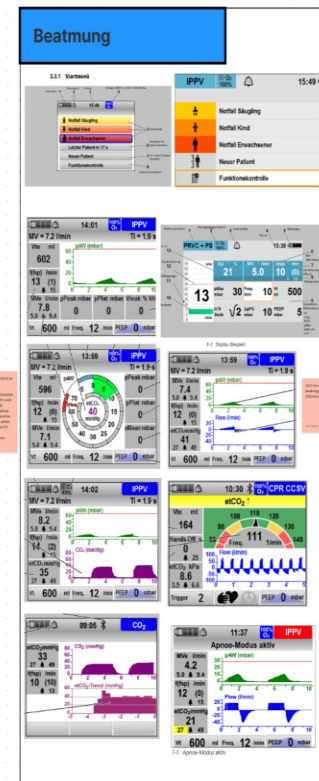


Alarms &  
Sounds



Release

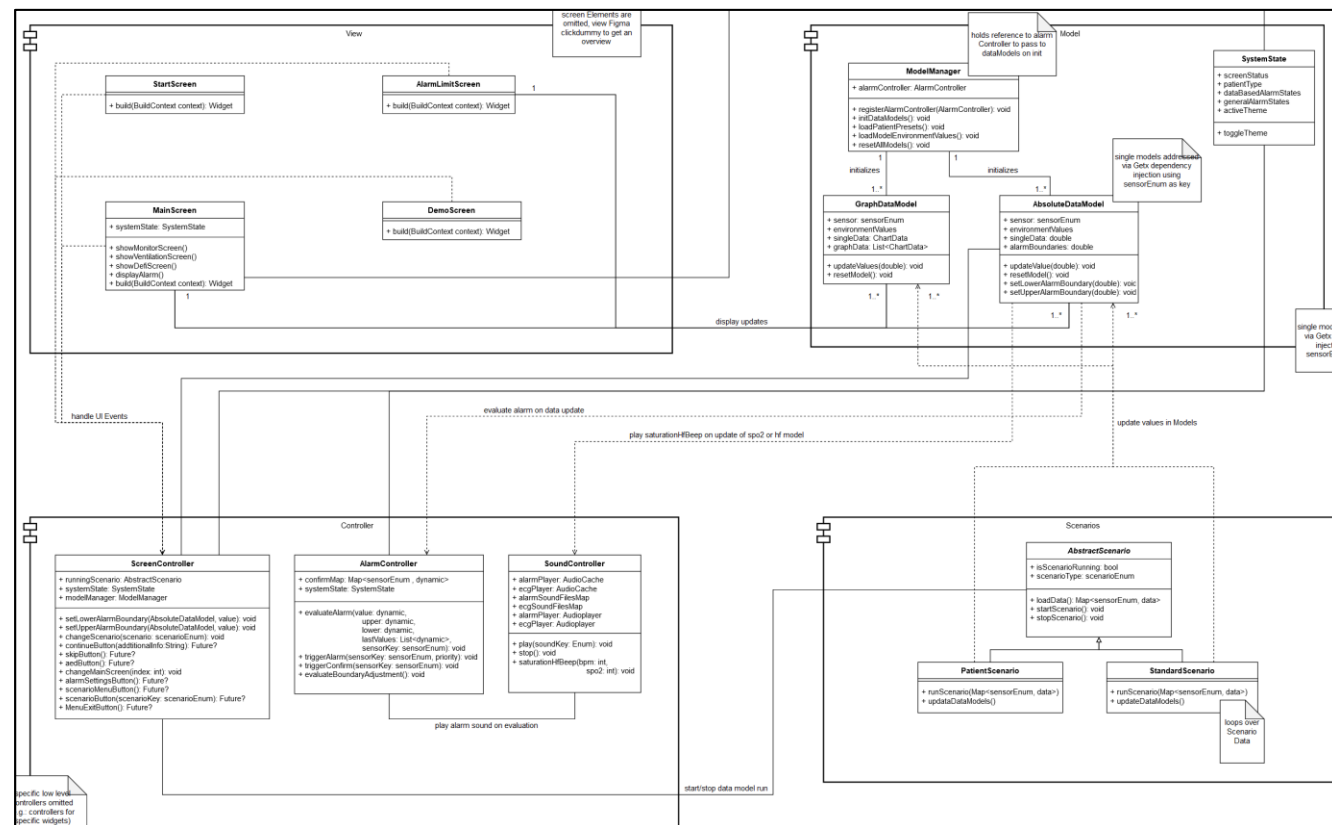
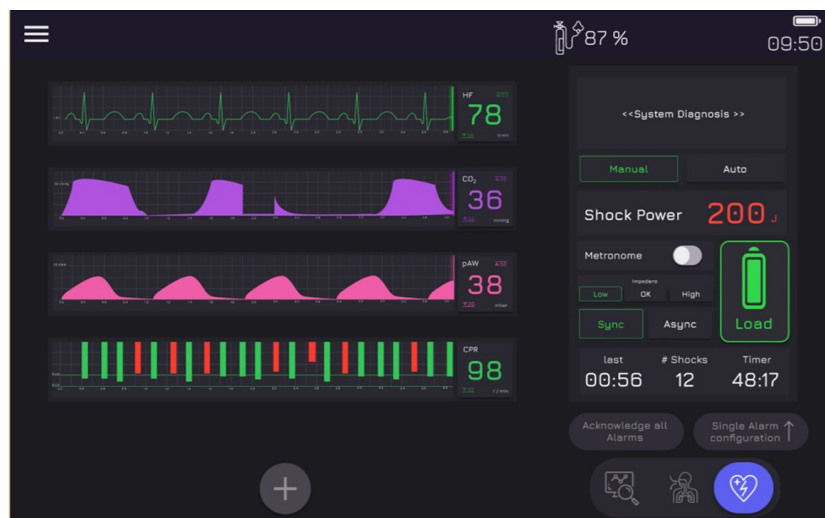
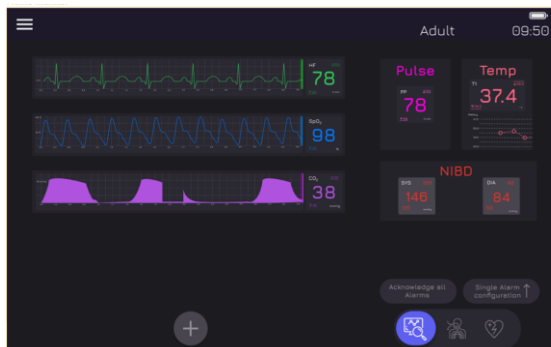






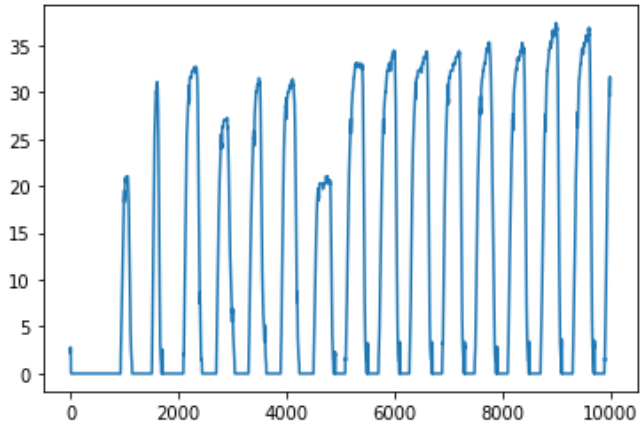


# Project Journey





# Project Journey



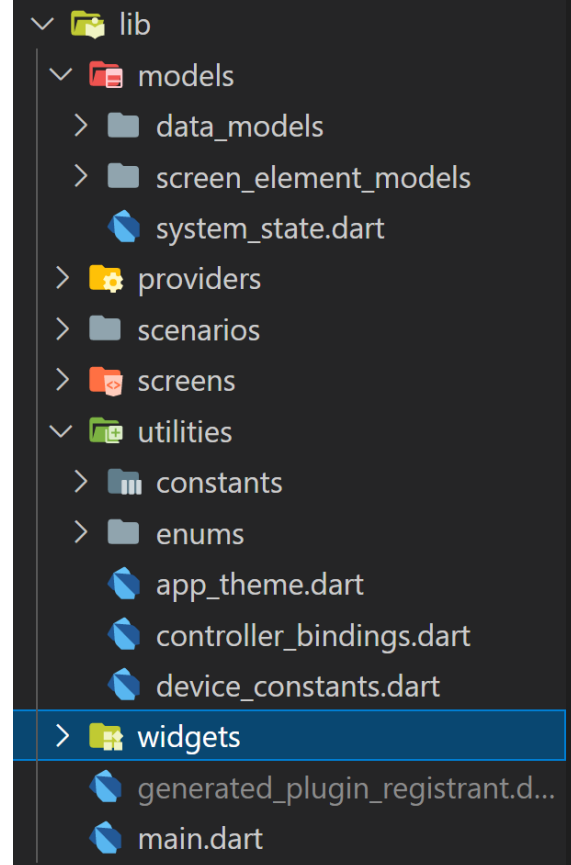
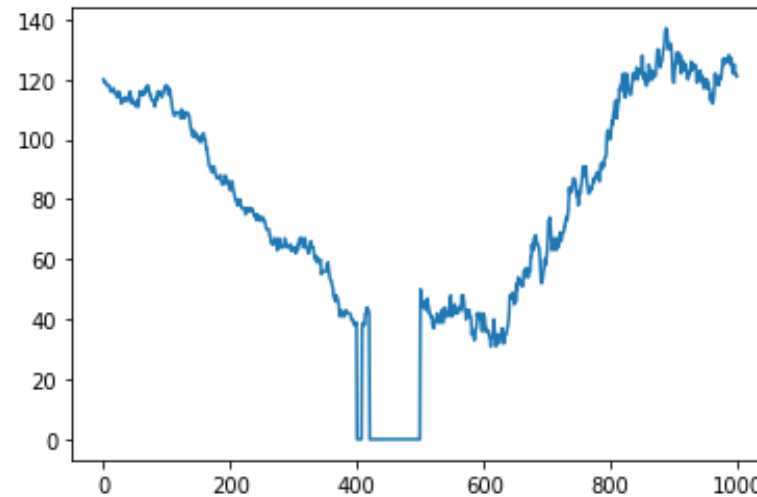
```
co2_data = co2_data * 7.50062

co2_data = simple_moving_avg(co2_data, 10)

for k,v in enumerate(co2_data):
    if v < 1:
        co2_data[k] = 0
plt.plot(co2_data[0:10000])
plt.show
```

```
# Calculates the simple moving average
# We use this function for noise reduction in our data
def simple_moving_avg(data, n):
    averaged = []
    for i in range(len(data)):
        temp_value = 0
        for j in range(n):
            # no check for loopback when i-j < 0
            temp_value += data[i-j]
        averaged.append(1/n * temp_value)
    return averaged

# Example call for simple_moving_avg
# avg = simple_moving_avg(dictionarylist[5]["data"], 10)
```





# Project Journey

Sounds
2A_High.wav
2A_High123_Alt.wav
2A_High123.wav
2A_Middle.wav
2A_Middle45_Alt.wav
2A_Middle123.wav
2A_MiddleAlt.wav
2A_Notification.wav
3H_HighAlert.wav
3H_Notification_Alter.wav
3H_Notification_Deep.wav
3H_Notification.wav
8B_Corepulse.wav
8B_High_Slow.wav

4. "Elektrotherapie"				
extr. Tachykardie/VT	160/min	x		
SpO2-Signal schwach				x
NIBP niedrig			x	
etCO2 niedrig/sprunghaft	24 mmHg	x		
SpO2 niedrig	74%	x		
SpO2 niedrig			x	
SpO2-Signal schlecht				x
HF	88/min			
RR	120/88 mmHg			
etCO2	42 mmHg			
100 Joule				

current alarm high	J	J	N	J	N	N
current alarm middle	N	N	J	N	J	J
current alarm confirmed	-	-	-	-	-	J
new alarm high	J	N	N	J	J	N
new alarm middle	N	J	J	N	N	J
new alarm with new message	N	-	N	J	-	J
trigger new alarm				X	X	X
don't trigger alarm	X	X	X			



# Project Journey



Your patient has been connected to the device.

1. Choose a patient preset and set the height lower and the weight higher.
2. Change the alarm limits of the heart frequency. Set the upper boundary +15 higher and the lower boundary -5 lower.

Your patients status is getting worse. He needs the Ventilator now.

3. Change the ventilator settings. Set the breath frequency +2 higher. The PEEP can be increased by +3.
4. You are interested in the last NIBP measurements. Change back to Monitoring and add the NIBP-History to the screen.



Home About Features Trailer Team Demo

## Supports You and Your Patient.

VentCore introduces a new generation of mobile life-saving equipment. Our 3-In-1 Device is specially designed to support paramedics and doctors in all situations. By combining 3 devices into one, we want to reduce the weight you carry and the sensory overload you endure by minimizing redundant settings and alarms.

Watch Trailer



Combines the advantages of three devices into one.

VentCore displays all necessary Parameter Values and Graphs for you on one display. You are able to switch between modes and adjust settings like you are used to. With a smart audible behaviour, VentCore seeks to minimize the possible stress you and your patient experience during an emergency.

Download Demo





# Project Journey

## VentCore

Requirements

Design & Data

Alarms &  
Sounds

Release



# VentCore

Patient Presets

Switching Modes

Adjusting Limits

Load & Shock Defi

Adding Graphs

Confirm Alarms



# UKE M-Lab 2022

167 Issues

1010 Commits

39.504 Codelines



# UKE M-Lab 2022







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Mudassar Zahid, Fynn Menk,  
Corvin Biebach, Anni Reinert



Supervisor: Tim Puhlfürß