LIVE WEBINAR

Supporting Business Continuity during the COVID-19 Pandemic and Beyond with REAL-TIME, REMOTE VITAL SIGNS MONITORING

David Maman, Co-Founder and CEO

May 6, 2020

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David Maman, Co-Founder and CEO

Spearheading the team in fulfilling Binah.ai's vision and mission. A serial entrepreneur who has taken numerous start-ups from vision to international success: Hexatier (acquired by Huawei), Precos, Vanadium-soft, GreenCloud, Teridion and others. Binah.ai is my 13th start-up where I set the strategy and manages the execution of the company's mission to enable healthcare services to anyone, anywhere.

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Binah.ai Traction and Execution

Founded 2016

Funding: A Series

Offices: Israel, USA, UK, Japan

45 employees

14 PhDs

Customers

> Over 20 customers WW in Healthcare and Insurance

> Japan's leading Insurance company - **SOMPO**

> Japan's largest automotive Tier-1 supplier - **DENSO**

Customer Acquisition

> Global consultancy firms and partners

> Ready-to-use Digital Health Applications

> Up to 90% cost and time savings

Market Recognition

> CES INNOVATION AWARDS 2020 HONOREE

> NTT DATA OPEN INNOVATION 2020 GRAND CHAMPION

> NTT DATA OPEN INNOVATION 2020 DOMAIN CHAMPION

> Gartner COOL VENDOR 2019

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Leadership

David Maman
Co-Founder,
CEO and CTO

Michael Markzon
Co-founder and
Chief Scientist

Konstantin Gedalin, PhD
Co-founder and Chief
Research Officer

Alon Shem-Tov
VP Sales,
International

Sam Friedman
VP Sales, North
America

Mitsuhiro Hirao
VP Sales, Japan

Ido Sher
VP Product Management

Udi Ben Senior
VP R&D

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Public Health Monitoring

Global Level: World Health Organization (WHO)

National Level: Government imposed

Ministry Level: NHS

Organization Level: App

Examples of monitoring initiatives:

- Apple and Google Initiative

- Israel – Purple Tag

- China – COVID-19 tracking app

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Critical Industries Sectors

Energy | Financial Services | Food and Agriculture | Government | Healthcare | Communications | Other Manufacturing

Business Continuity Challenges

1. Protect employees' health

2. Protect services' customer health

3. Ensure proper workspace sanitization

4. Ensure yield is not contaminated

5. Maintain production, services and revenues

Other Industries

Air Transportation | Hotels | Tourism | Catering | Retail | And more..

Business Continuity Challenges

- Protect staff health

- Ensure proper workspace sanitization

- Ensure yield is not contaminated

- Maintain production, services and revenues

- *Customer safety:*
  a. Restore and maintain customer trust
  b. Proactively ensure public health
  c. Maintain brand's high standard - #Peoplefirst

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Employees' Health Protection

Employees' Personal Responsibility
- Follow rules imposed by workplace and governments: masks, gloves, social distancing

Employers' Responsibility
- Make sure rules are being enforced
- Provide tools and conditions for enforcing rules
- Provide strategies for ensuring employee's safety: working in shifts, flexible working

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Customers' Health Protection

Business' Responsibility

- Services are delivered in "safe" mode

- Yield is not contaminated / Yield is safe to be consumed

- Monitor customers' health:

  - Temperature monitoring – is it enough?

  - COVID-19 blood tests – can all afford it money and time wise ?

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COVID-19-related Symptoms

Mild Disease Symptoms

- Fever
- Tiredness
- Dry cough
- Some patients: runny nose, sore throat, nasal congestion and aches, and pains or diarrhea
- Some people report losing their sense of taste and/or smell

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Early Signs of Deterioration

"Tachycardia, tachypnoea and **reduced oxygen saturation** are the early indicators of deterioration."

"A temperature higher than 37.8°C/100.04 Fahrenheit, a crackling sound in the patient's lungs, a **pulse rate of more than 100 beats per minute, and oxygen saturation in the blood lower than 95%**. It was found that **86.1%** of patients with pneumonia exhibited at least one of these signs."

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Disease Progression

- **Mild disease** - Approximately 60-70% of laboratory confirmed patients - includes non-pneumonia

- **Moderate disease -** ***15-20% Lower respiratory*** tract and pneumonia cases - Tachycardia/Tachypnea/Low oxygen saturation

- **Severe disease -** ***4-8%*** have dyspnea, ***respiratory frequency ≥30/minute***, ***blood oxygen saturation ≤93%,*** PaO2/FiO2 ratio <300, and/or lung infiltrates >50% of the lung field within 24-48 hours

- **Critical -** 2-6%: respiratory failure, septic shock, and/or multiple organ dysfunction/failure

- Crude Death rates varying from 0.45% to 3.8%

- Crude Death rates with pre-existing comorbidity or age group more than 60 varies -7.6 to 13%

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So, how can Binah.ai help support business continuity?

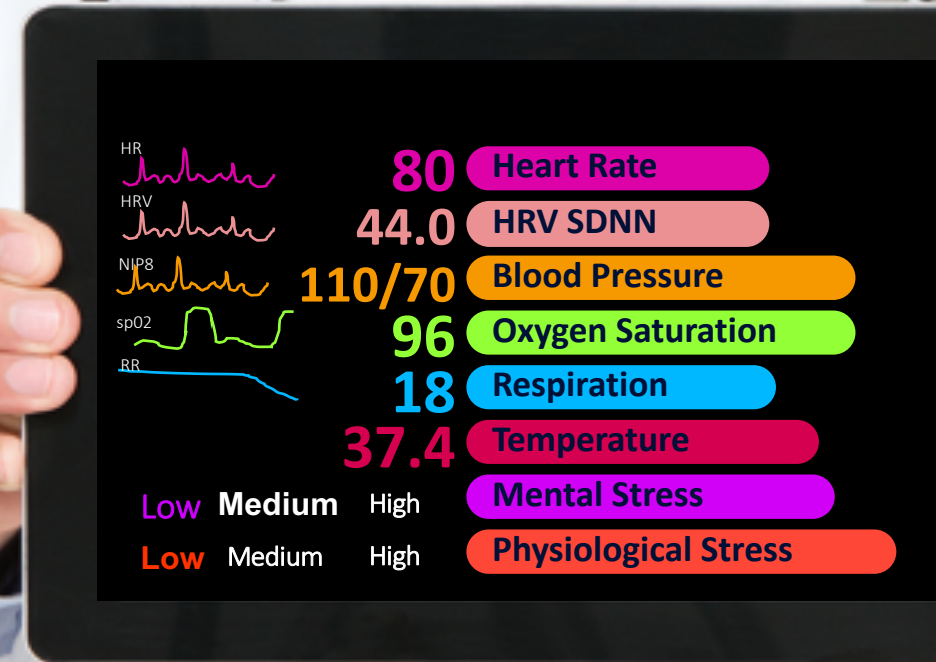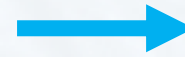binah.ai
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Binah.ai's Video-based Vital Signs Monitoring

Binah.ai provides an easy way to remotely measure Vital Signs

Runs in Real-Time or Offline

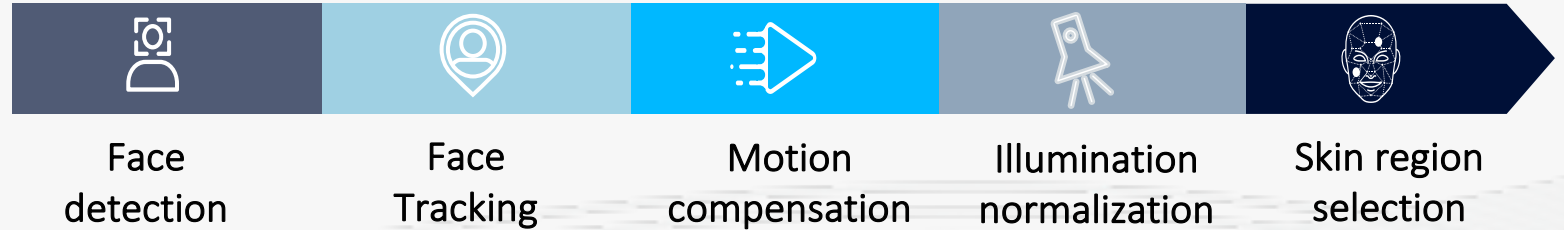The solution works on any mobile phone/camera and does not require additional wearables

Supports any gender, age and skin color

HR		80	**Heart Rate**
HRV		44.0	**HRV SDNN**
NIP8		110/70	**Blood Pressure**
sp02		96	**Oxygen Saturation**
RR		18	**Respiration**
		37.4	**Temperature**
Low	**Medium** High		**Mental Stress**
Low	Medium High		**Physiological Stress**

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Runs in Real-Time on Any Smartphone

rPPG – Front Facing Camera (Face extraction), or PPG – Back Camera (Finger)

I removed the video – will add it after design ready , PPT too heavy

Face detection	Face Tracking	Motion compensation	Illumination normalization	Skin region selection

Heart Rate

Oxygen Saturation

Respiration Rate

Mental Stress Level

HRV (Heart Rate Variability)

Coming Soon:

- Blood Pressure – Q2/20
- Hemoglobin Level – Q2/20
- Alcohol Blood Level
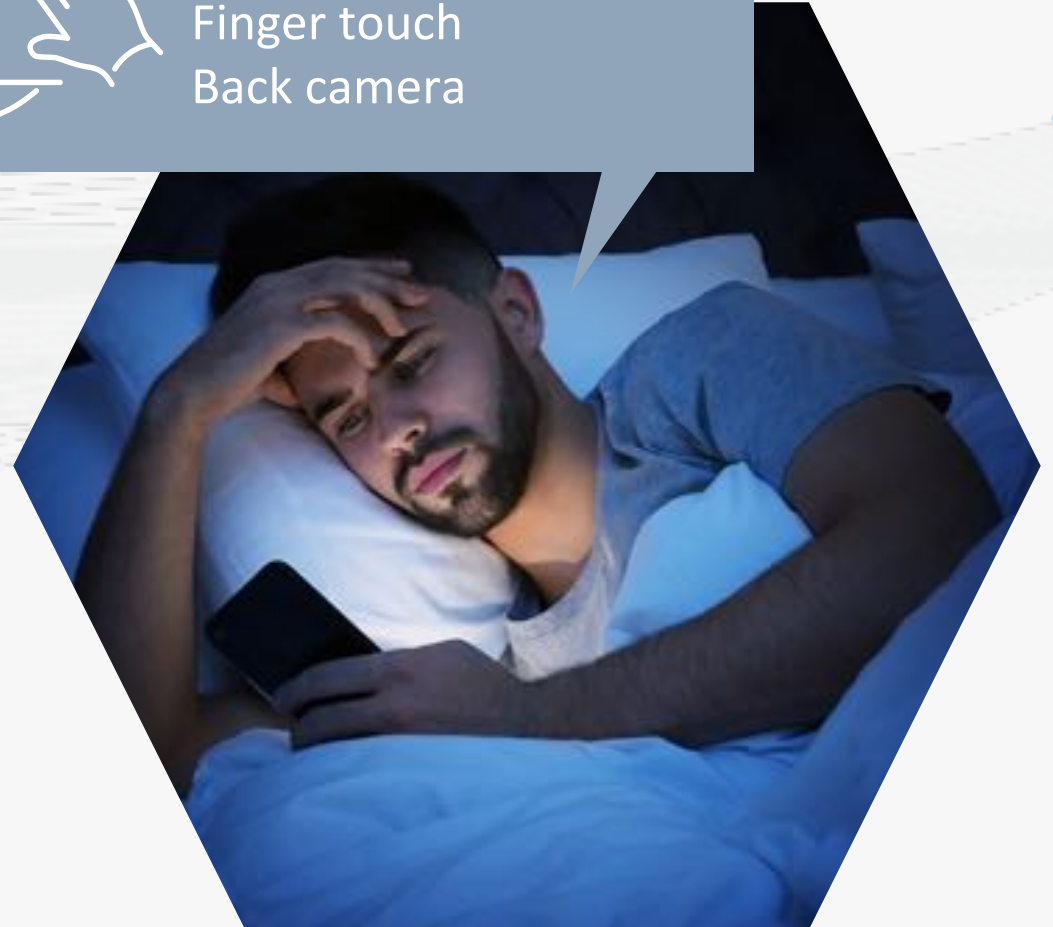- Temperature
- And More..

Trend Detection and Historical View

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User Side

Equipment needed: Smartphone

Challenging conditions:
Finger touch
Back camera

Good conditions:
Video-only
Front facing camera

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Accuracy Verification

#	Vital sign	/Motion No motion	First results appear after ~X seconds	Measurement range		Error level
				Minimum	Maximum	
1	Heart rate (bpm - beats per minute)	No Motion	8	60	120	±2 bpm
			8	40	60	±3 bpm
			8	120	240	±3 %
2	SpO2 (% oxygen saturation)	No Motion	8	85	100	±2 %
3	Respiration (rpm – respiration per minute)	No Motion	30	8	25	±3 rpm
4	HRV	No Motion	End of test	n/a	n/a	n/a

Clinically Tested

- Indira Gandhi government General Hospital - India
- Jewish Central Hospital – Canada – In progress
- Several trials by "high-end" customer, such as SOMPO, etc.

Regulatory Approval – in process

- Canada Health
- FDA
- CE
- PDMA - Japan
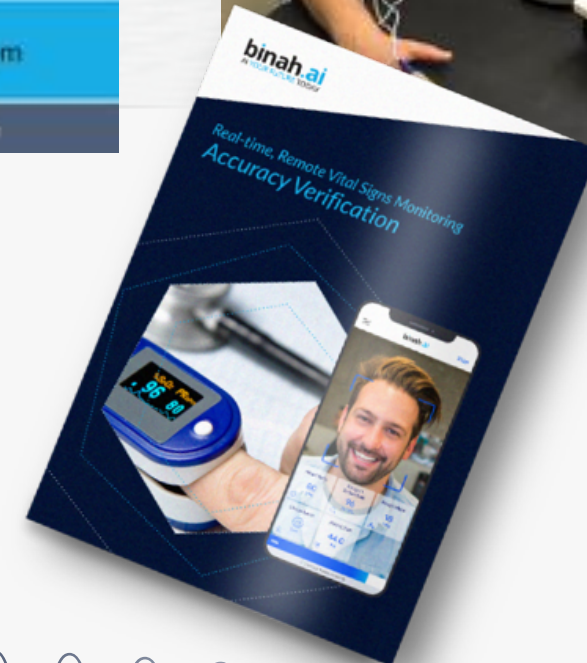
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Employees' Health

Employee's Responsibility
## Monitor

7:30 Need to get ready for work, let's check vitals…

Great!.. All looks fine. Let's get going! Have such a busy day today…

…So this is not just a cough after all…need to inform the office and call my doctor's.. obviously not going to work today…

Employer's Responsibility
Protect

Good morning all. Please be informed that Julie seems to be showing COVID-19 related symptoms. She has been asked to stay at home for now. All those who came in close contact with her during the last 5 days are requested to work from home in the coming 5 days. Please let me know who these people are. Thank you and take care!
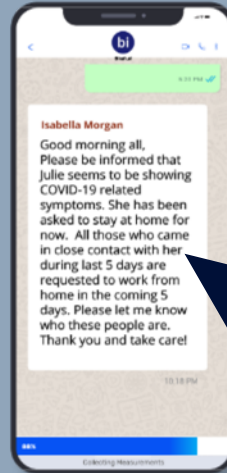
Binah.ai's dashboard displays history and trends of measurements over 7,14 and 21 days.

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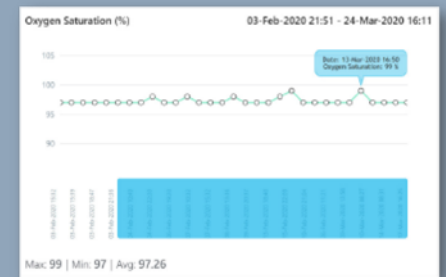
Customers' Health

Organization's Responsibility

- Services are delivered in "safe" mode and safe environment
- Validate health level prior to using the company services
- Temperature – is it enough?
- COVID-19 blood tests – can all afford it money and time wise ?
- VAS – Health and Wellness Monitoring App

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Use Case: Air Travel and Hotels

Staff and Equipment

- Staff health
- Services
- Planes sanitization
- Hotels and restaurants sanitization

"I understand that PHE has concluded that temperature checks are ineffective, and we think it would be useful if this evidence base is published both to reassure the public that current airport processes are scientifically appropriate but also to help establish what measures are appropriate in creating a Common International Standard for health screening in the future."

Customer Facing

- At all touch-points:
  - Booking and Check-in App – add Health Monitoring features
  - At the Airport
  - At check-in
  - At boarding
  - At immigration/airport at landing
  - Ground transportation: Uber app
  - Hotel: Booking app, Airbnb app

https://news.sky.com/story/coronavirus-heathrow-boss-urges-health-chiefs-to-publish-screening-data-11979940x

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Binah.ai Uniqueness

Accessible
Runs on any smartphone/tablet/pc

Camera(s) only!
Supports any age and skin color

Accurate
Deliver unprecedented levels of accuracy with 1-2 BPM error level

End-to-end solution that can run on-demand or continuously

Works in daylight (FF Camera) Night-time (Back Camera)

Runs on the device, no need for internet connectivity!

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Process Flow - Fully Remote, Virtual, Contact-less and Automated

Register → **Screen** → **Monitor** → **Measure Trend** → **Inform** → **Protect**

Collect Data- Analyse and Report- Predict and Manage

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Delivery and Implementation Models
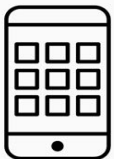
Delivery

White Label Platform

Fully Dedicated System

Pure Service

SaaS Platform

Application

Software Development Kit

Allows any application owner to embed Binah.ai's capacities into their app

SDK for Android and iPhone

Available for Windows, MacOS and Linux

- Implementation usually takes a few days

- The application runs on the device itself and does not require internet connection

- Available in 12 languages for white label version

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Post-pandemic Employees Wellness App

- Many organization have implemented employees' wellness programs, even before COVID-19

- Offer your employees a great tool for health monitoring even after the current pandemic

- Encourage employees to lead a healthier lifestyle and be better prepared for the next crisis

- Binah.ai constantly adds new measurements: blood pressure, hemoglobin levels, temperature and more soon to come
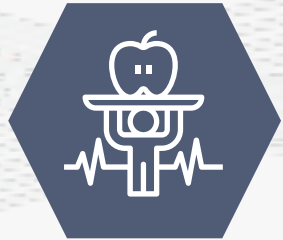
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Binah.ai's Video-based Vital Signs Monitoring Benefits

Protect employees

Slow the spread of the pandemic

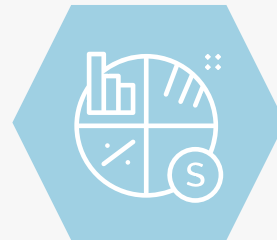Post-pandemic employee wellness

Support public health efforts

Regain customer trust

Ensure business continuity

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THANK YOU and STAY HEALTHY!

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