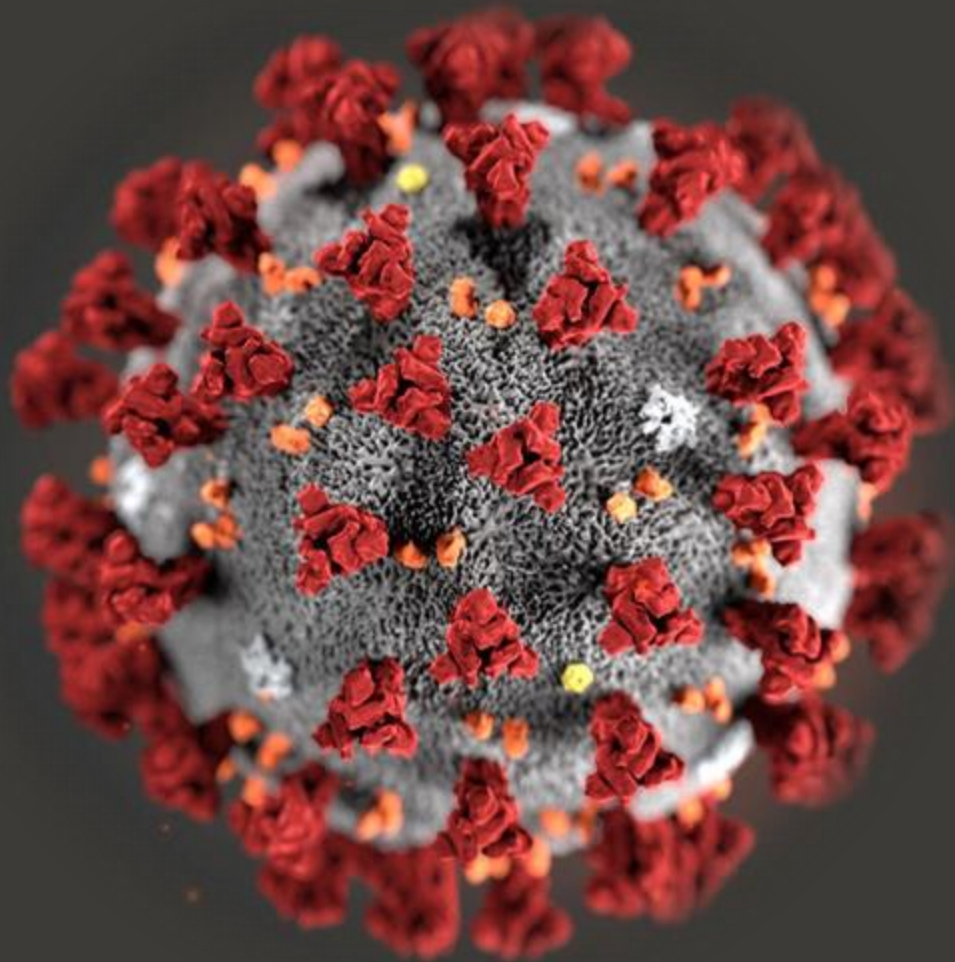**COVID** Resistance

An app for organizing
the resistance against
COVID-19

March 2020

WHY ARE YOU GETTING THIS?

WE ARE COMMITTED TO FIGHTING COVID-19.
WE NEED PEOPLE AS INFLUENTIAL AS YOU TO SPREAD OUR MESSAGE
AND TO PARTNER WITH US IN MAKING OUR IDEA HAPPEN,
ALL TOGETHER, AROUND THE WORLD.

WE MUST CO-ORDINATE OUR EFFORTS AND ACT COLLECTIVELY.

Agenda

1	**THE APP**

2	**USE CASES**

3	**FUTURE SCENARIOS**

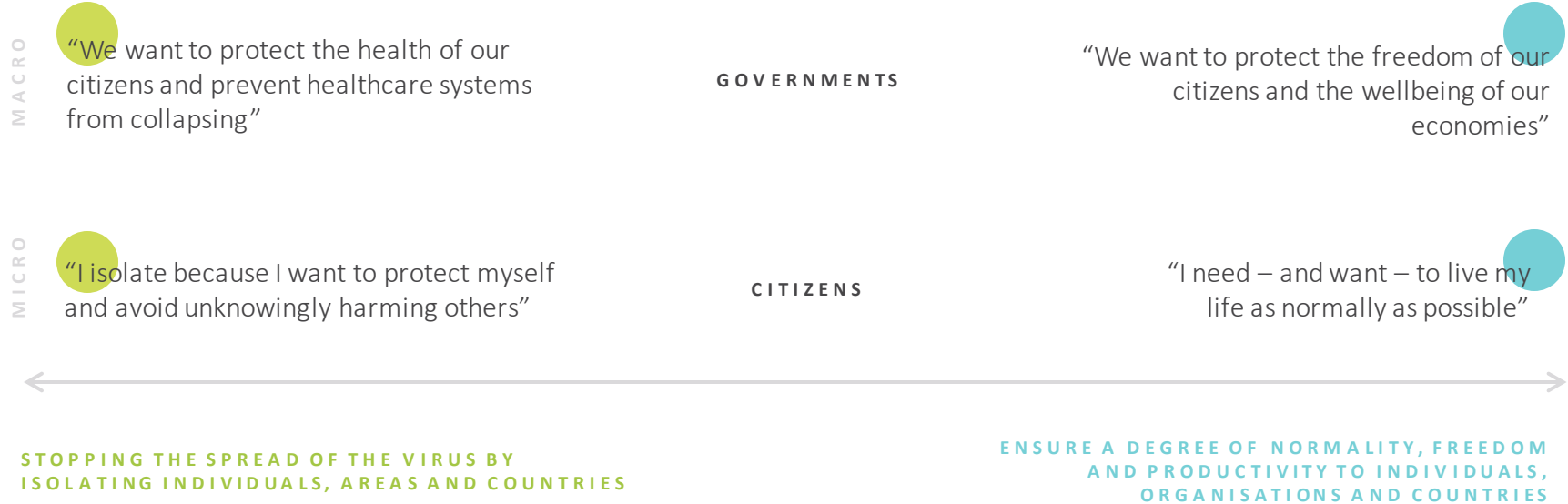|	
4	**STATE OF THE ART**

5	**EPAM**

COVID Resistance

THE APP

The COVID-19 Dilemma

COVID-19 has been forcing individuals, organizations and whole countries to navigate two opposing goals: contain the spread of the virus with stringent but effective measures of isolation, while trying to make life – and economies – continue as normal as possible, under the circumstances.

MACRO

"We want to protect the health of our citizens and prevent healthcare systems from collapsing"

GOVERNMENTS

"We want to protect the freedom of our citizens and the wellbeing of our economies"

MICRO

"I isolate because I want to protect myself and avoid unknowingly harming others"

CITIZENS

"I need – and want – to live my life as normally as possible"

STOPPING THE SPREAD OF THE VIRUS BY ISOLATING INDIVIDUALS, AREAS AND COUNTRIES

ENSURE A DEGREE OF NORMALITY, FREEDOM AND PRODUCTIVITY TO INDIVIDUALS, ORGANISATIONS AND COUNTRIES

The COVID-19 Dilemma

COVID-19 has been forcing individuals, organizations and whole countries to navigate two opposing goals: contain the spread of the virus with stringent but effective measures of isolation, while trying to make life – and economies – continue as normal as possible, under the circumstances.

MACRO

"We want to protect the health of our citizens and prevent healthcare systems from collapsing"

How to find the middle ground?

Is there a way to make sure that both goals are achieved?

"We want to protect the freedom of our citizens and the wellbeing of our economies"

MICRO

"I isolate because I want to protect myself and avoid unknowingly harming others"

"I need – and want – to live my life as normally as possible"

STOPPING THE SPREAD OF THE VIRUS BY ISOLATING INDIVIDUALS, AREAS AND COUNTRIES

ENSURE A DEGREE OF NORMALITY, FREEDOM AND PRODUCTIVITY TO INDIVIDUALS, ORGANISATIONS AND COUNTRIES

Our solution

COVID Resistance: A mobile app that uncovers what's invisible.
It tracks possible transmissions as they happen, in a secure and controlled way - providing timely and personalized guidance for the public.

COVID-19 spreads in ways that are invisible and hard to track. That's why the app mimics the behavior of the virus by mirroring its transmission and creating a tangible mark that is stored in each user's device, and only accessed in case they turn out to be positive.

To make this work, as many people as possible need to download and use the app.

Contact Registered!
Max: 2 meters, Min: 15 minutes

Possible virus transmission

Bluetooth token exchange

Why Bluetooth?
- High position accuracy
- It works indoors
- No need to store geolocation data centrally
- Full privacy is ensured

Features for different users

GENERAL PUBLIC

It helps us to live our lives with a **sense of reassurance** that our actions are not harming ourselves, or others, in a way that is secure and doesn't infringe our privacy.

Early Risk warnings about exposure to infected or potentially infected individuals

Personal Health Status overview with recommendations

Central Access Point for the latest news, rules, guidelines and fine granular statistics from credible sources

HEALTH WORKERS

It helps us **control** the situation, giving us a secure way to flag infections and saving us time and effort that could be used on other more important tasks.

Immediate flagging of infected or potentially infected individuals

Register patient status and deliver recommendation

Central Access point for the latest news, rules, guidelines and fine granular statistics

AUTHORITIES

It helps us **communicate** a sense of purpose and empowerment to the public, **raising the urgency** needed among the public and **speeding up decision-making**.

Issue and update relevant news, guidelines and rules

Communicate geofencing high risk clusters and cells

The reason why

COVID Resistance was born from the conviction that the way out of today's situation relies on the collaboration and self-determination of everyone.

The news shows that **people want to be empowered** to protect each other. They want to do their part in a way that is **conscious and collaborative** – not enforced or tracked without their consent.

That's why we see COVID Resistance as a crowd movement, not a solution that is imposed from above but one that relies on mass adoption: a new collaboration platform.

We've had the technology for 20 years. The missing element is the people.

We want to be part of it. With all the people who want to join in.

COVID Resistance was designed following the World Health Organization "Operational planning guidelines to support country preparedness and response", focusing on Risk communication and community engagement as well as Infection prevention and control.

USE CASES

Bringing COVID Resistance to life

Jorge

Martha

Dr. Smith

Bringing COVID Resistance to life

1.
Jorge and Martha both discover the COVID Resistance app
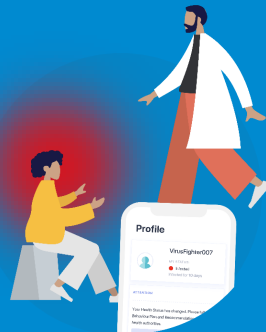
2.
They download and activate the app

3.
The app monitors their location and helps them safely navigate their daily lives

4.
Martha falls ill and tests positive

5.
Jorge is notified that he may have been infected as he has been in contact with Martha

Jorge and Martha both discover the COVID Resistance app

COVID Resistance App is now available

We finally have the power to fight COVID-19 – as citizens

Martha sees a sponsored post on Instagram, while Jorge reads an article about it online.

WHO DOES WHAT?

People know about the service and its benefits.

Authorities promote the app.

WHY SHOULD PEOPLE DOWNLOAD THE APP?

We clearly communicate the benefits of the app:
- Empowerment to act and actively prevent the spread of the virus
- Effortless interaction
- Full privacy of data
- Easy access to reliable and up-to-date news, guidelines and rules

OUR TONE OF VOICE

We use a reassuring balance between the **use of scientific terms** (credibility) and **down-to-earth language** (relatability) to inform people in an engaging way.

HOW DO WE REACH OUR AUDIENCE?

To ensure we reach as wide an audience as possible, we recommend using both traditional and digital channels – and promotion from both public figures such as the authorities and **influencers.**
The service should be available **on official platforms** (e.g. Swiss Ministry of Health)

- Newspapers, TV commercials, government websites
- Social networks (Facebook, Twitter, Instagram), influencers' accounts

They download and activate the app
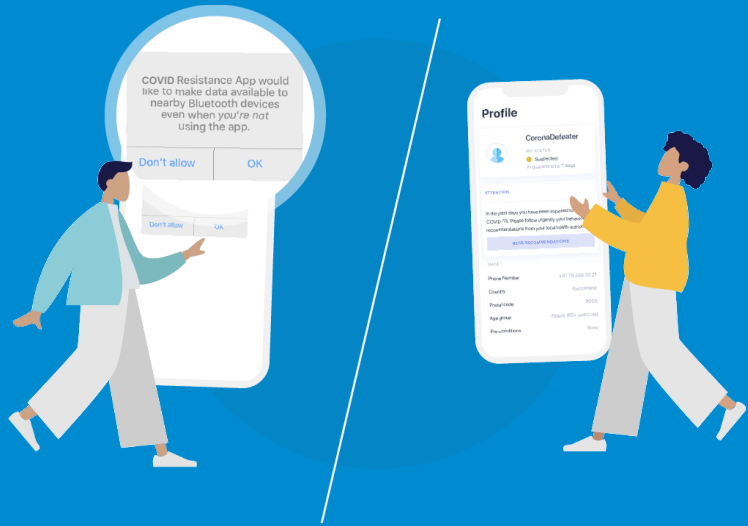
They both decide to download the app. They don't need to register: the app will automatically create a security token. Bluetooth is switched on and kept on to allow the app to work properly.

People download the app. No registration is needed but they can add additional information, such as age, postal code and phone number. If they are compliant with the authorities' requirements and they follow the guidelines they are flagged as "healthy".

HOW DOES IT WORK?

Once someone accesses the app, their phone obtains an encrypted ID Security Token which is exchanged with other users. The user doesn't need to provide any personal data to the system.

Token generated to anonymized user

WHAT HAPPENS TO PERSONAL DATA?

Privacy is paramount. Users are **anonymous within the system**. Personal data on the phone is encrypted and accessible only when needed.

Since the App is monitoring their status, they can lead a safer day-to-day life.

They don't need to keep track of all the people that they meet because the app takes care of that, and in the case of an emergency, it proactively notifies them. When they want to be updated on the current situation of the virus spread they can access the app and easily read the news.

WHO DOES WHAT?

Users lead a safer daily life and get notifications when entering or exiting the geo-fenced areas, as well as official information from authorities.

HOW DOES IT WORK?

With the Bluetooth signal on, any contact that meets the criteria (< 2-meter distance, > 15 minutes) will be recorded locally on the users' phones in the form of tokens.

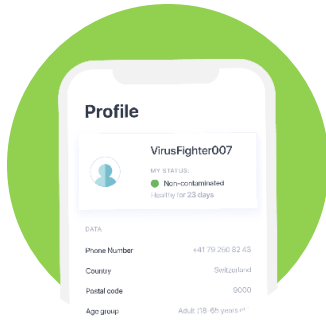Contact Criteria Met →Token Exchanged
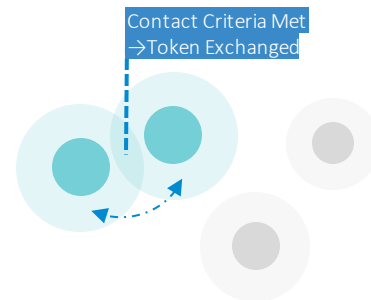
DOES THAT MEAN USERS NEED TO MAKE SURE THEY CONNECT TO EVERYONE THEY MEET?

No, the app automatically does that for them, **recording all encounters with other users seamlessly and effortlessly -** without any exchange of personal information.
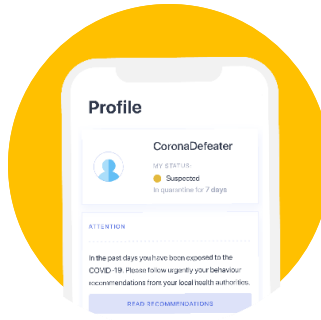
User Status

HEALTHY

Profile

VirusFighter007

MY STATUS:
● Non-contaminated
Healthy for 23 days

DATA
Phone Number   +41 79 260 82 45
Country   Switzerland
Postal code   9000
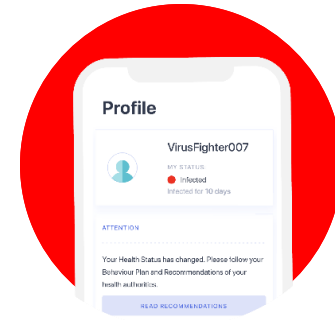Age group   Adult (18 -65 years r)

- Self-quarantine in hours
- Minimal exposure to densified areas
- Following self-determined trajectories routines (home-workplace, home-school)
- Not getting into hot zones

SUSPECTED

Profile

CoronaDefeater

MY STATUS:
● Suspected
In quarantine for 7 days

ATTENTION
In the past days you have been exposed to the COVID-19. Please follow urgently your behaviour recommendations from your local health authorities.

READ RECOMMENDATIONS

- Self-quarantine in days
- Regularly open the Health Authorities Recommendations

INFECTED

Profile

VirusFighter007

MY STATUS:
● Infected
Infected for 10 days

ATTENTION
Your Health Status has changed. Please follow your Behaviour Plan and Recommendations of your health authorities.
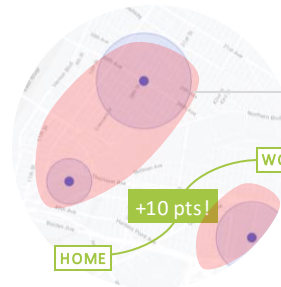
READ RECOMMENDATIONS

- Self-quarantine in days

Why not motivate healthy users to keep this status by turning it into a game?
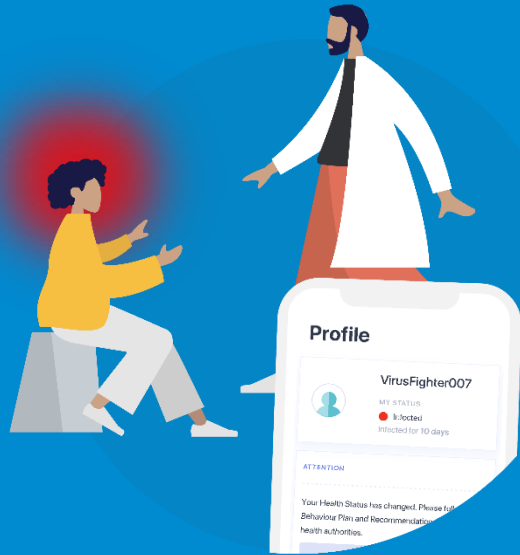
Badges and points discourage them from moving out of geo-fenced areas or entering hot zones.

Hot zones

WORK

Self-determined essential journeys

+10 pts!

HOME

# Martha falls ill and is diagnosed with COVID-19

Ill users report their condition to their doctors.

Doctors get in contact with patients and flag them as **"suspected".** If patients test positive for COVID-19, they are flagged as **"infected"** by their doctors.

HOW DOES IT WORK?

Doctors sign up to the app and send a request to the user asking for their consent to be flagged. Ill users open the app and provide consent for their token to be flagged as "infected".

Alert users at risk

Contact Tracing

Consent Received
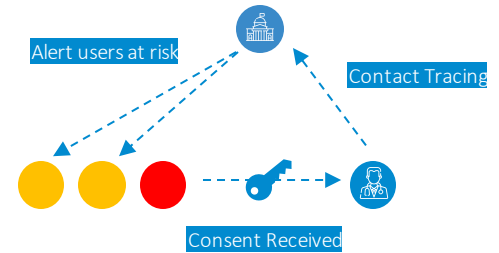
SO EVERYONE FINDS OUT WHO THE "INFECTED" USER IS?

The consent request is sent directly to the encrypted token of the ill citizen's smartphone, and the consent provides that the token gets flagged as infected. **No personal data is transferred** to the cloud, so the token can't be traced back to the citizen.

Profile

VirusFighter007

MY STATUS
● Infected
Infected for 10 days

ATTENTION

Your Health Status has changed. Please ful...
Behaviour Plan and Recommendation...
health authorities.

Martha starts feeling bad and having symptoms typical of coronavirus. She contacts her doctor and she is flagged as **"suspected".** She then tests positive for COVID-19 and Dr. Smith flags her condition as **"infected".**

Jorge is notified that he may have been infected as he has been in contact with Martha

COVID RESISTANCE   now

ATTENTION! Your Health Status has changed.
Please follow your Behaviour Plan and
Recommendations of your health authorities.

Profile

CoronaDefeater

MY STATUS:
🟡 Suspected
In quarantine for 7 days

ATTENTION

In the past days you have been exposed to the
COVID-19. Please follow urgently your behaviour
recommendations from your local...

Unfortunately, Jorge spent more than 15 minutes with Martha in the previous 15 days. That's why he receives a notification warning him about the possibility of having been infected and is flagged as **"suspected"**.

WHO DOES WHAT?

Users who were within two metres of anyone flagged as infected for more than 15 minutes are notified that they might also be infected. They are sent best practices to follow and flagged as **"suspected".**

HOW DOES IT WORK?

Once a user ID is flagged as "infected" the system searches for collected tokens that were registered as being closer than 2 meters to the infected user for more than 15 minutes.

Contact Risk #1

Contact Risk #2
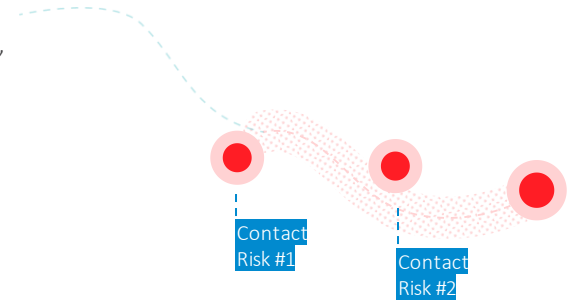
NO NEED TO PANIC!

Communication sent out to the user, from the notification to the recommendations, gradually introduces them to the possibility of having been infected, with a reassuring and calming tone of voice. They are immediately given access to tailored, personalized guidelines and recommendations issued by the Health Authorities based on their location and age group.

FUTURE SCENARIOS

Future scenarios

Imagine a near-term future where everyone around the world is using COVID Resistance... What could life be like?

Healthy people with "healthy"
status for at least 15 days might...

- attend social gatherings safely
- move around the cities (avoiding hot-zones)
- travel to other countries
- support economy and tourism

...and get support by the app to reduce the possibility of being infected, unburdening the healthcare system.

Welcome to Fiji!

This is only the beginning of our movement.
It's time to make this real and put it in the hands of people.
The more people who use COVID Resistance, the quicker we can fight COVID-19, and gradually let the public move safely and freely again.
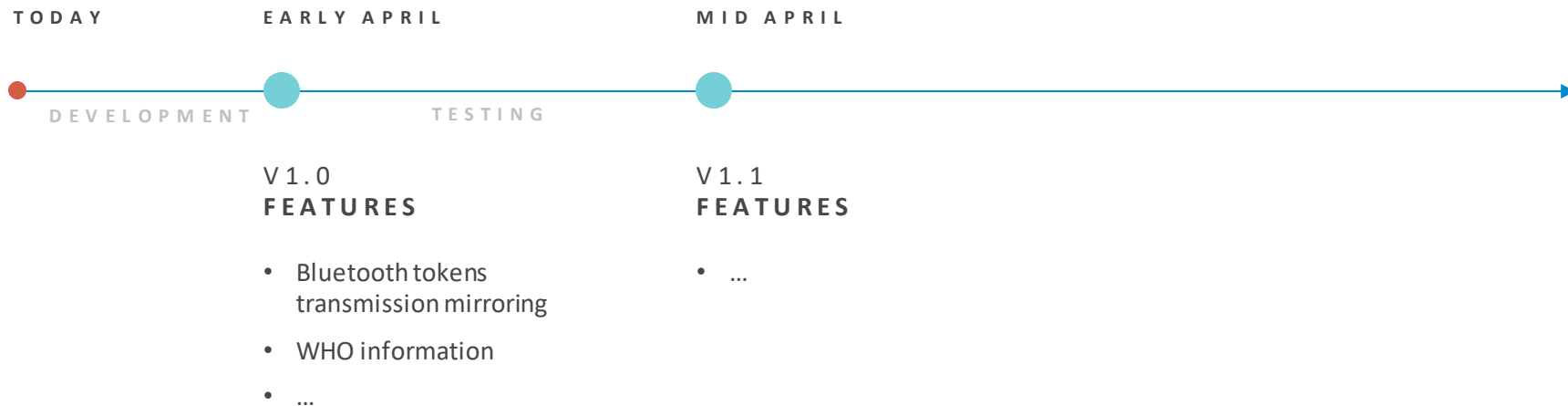
STATE OF THE ART

Timeline

What is the Availability Status of COVID Resistance?

We're working on the first release of the app.
Our target delivery date is ASAP. Maximal 3 Weeks.

TODAY   **EARLY APRIL**   **MID APRIL**

DEVELOPMENT   TESTING

V 1.0 FEATURES

- Bluetooth tokens transmission mirroring
- WHO information
- ...

V 1.1 FEATURES

- ...

COVID Resistance – Design Principles

Functional

- Privacy by design - principle

- 0 knowledge – from users

- 4-eyes principle (Health Professional and User)

- Minimalistic and yet high functionally design

- Addressing the needs of different Age Groups

- Design thinking for the young population, gamification approach (not yet in the MVP)

- Design for stand alone and rapid intervention (minimal configuration – Health Status)

- Multi language capability designed

Technical

- Bluetooth approach

- Battery Optimized for minimal consumption

- Backend Lightweight

- Micro-services architecture

- Fast and easy development approach with known tech, with available development skills.

- Serverless architecture with a heavy mobile footprint.

- Highly secure. Highly scalable. Prepare for hackers, as well as big data and huge transaction throughput.

- Solution will be open sourced at MVP, and future version timelines. All technical and procedural care should be made to support these releases.

- Based on Bluetooth (Future version: Geolocation and WiFi/Cell locational use possibly by choice of user). Bluetooth (BT) with low battery usage. BT Cross-platform communications.

- Does not use geolocation

- Allows for maximal data privacy implementations

Q&A

What do the Health Authorities or the Government need to enable COVID Resistance?
EPAM can provide the first installation, while the (minimal) required backend infrastructure will be managed by the technical team of national authorities. COVID Resistance uses **Open Source technology** and **no third-party licenses** are required.

What are the technical requirements for the APP?
Device must have **Bluetooth** capabilities.

What kind of Data does the application requires?
The Application **doesn't require neither stores any Private Identification Data.**

What is the cost of COVID Resistance?
COVID Resistance is **free of cost** for the users and for the Governments or Health Authorities. Standard and as-is features apply. Doesn't include future maintenance services. Intellectual Property is expected to be credited to EPAM.

What languages does COVID Resistance support?
The App **supports Multilanguage utilization**. Local translation must be provided on top.

What are the Impact Indicators of the app?
Reduced transmission, increased awareness, better self-determination of behaviors.

PLEASE CONTACT US TO KNOW MORE ABOUT THIS ONGOING INITIATIVE!
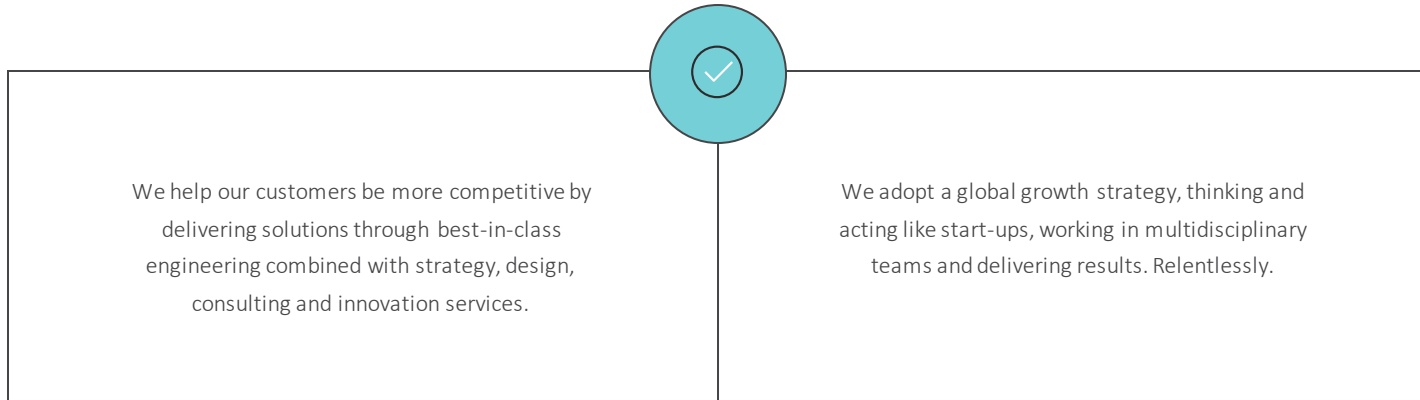
HEIKO_SUNDERMANN@EPAM.COM

+41 79 137 75 10

YOU CAN HAVE A SNEAK PEEK AT THE PROTOTYPE HERE!

POWERED BY EPAM

WHO IS EPAM?

We are EPAM

WE ARE CONSULTANTS, DESIGNERS, ARCHITECTS AND ENGINEERS WHO ENABLE OUR CUSTOMERS TO BE COMPETITIVE AND DISRUPTIVE IN THE MARKETPLACE THROUGH INNOVATIVE TECHNOLOGY SOLUTIONS WHILE HELPING THEM TO NAVIGATE SUCCESSFULLY THROUGH MULTIPLE WAVES OF TECHNOLOGY CHANGE.

We help our customers be more competitive by delivering solutions through best-in-class engineering combined with strategy, design, consulting and innovation services.

We adopt a global growth strategy, thinking and acting like start-ups, working in multidisciplinary teams and delivering results. Relentlessly.

EPAM Fast Facts

FOUNDED IN
1993
U.S. HEADQUARTERED
PUBLIC COMPANY
(NYSE:EPAM)
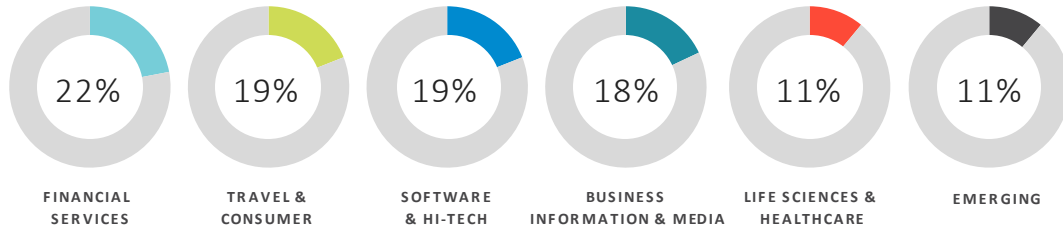
FY 2019 REVENUE
$2.29B

REVENUE
Q4 2019

$633M

FY 2020 REVENUE GUIDANCE*

TO EXCEED **22%** GROWTH IN BOTH GAAP & CONSTANT CURRENCY

36
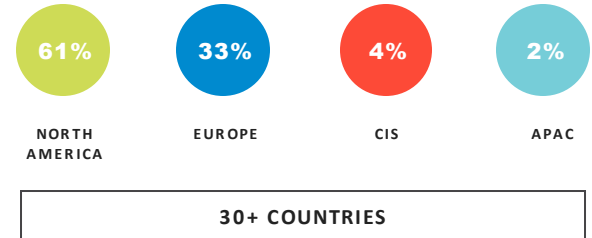CONSECUTIVE QUARTERS OF

20+%
YOY ORGANIC REVENUE GROWTH

FY 2019 REVENUE BY GEOGRAPHY

61%	33%	4%	2%
NORTH AMERICA	EUROPE	CIS	APAC

30+ COUNTRIES

WHAT WE DO

CONSULT	DESIGN
ENGINEER	OPERATE

OPTIMIZE

32,600 Engineers, Designers and Consultants
36,700 EPAMers

FY 2019 REVENUE BY INDUSTRY VERTICAL

22%	19%	19%	18%	11%	11%
FINANCIAL SERVICES	TRAVEL & CONSUMER	SOFTWARE & HI-TECH	BUSINESS INFORMATION & MEDIA	LIFE SCIENCES & HEALTHCARE	EMERGING

*As of Q4 and FY 2019 Earnings Release

THANK YOU!