COMMERCIAL PRACTICES

Improving Antenatal Care in LMICs

Fall 2021 | Concept Proposal

Meet the Team:

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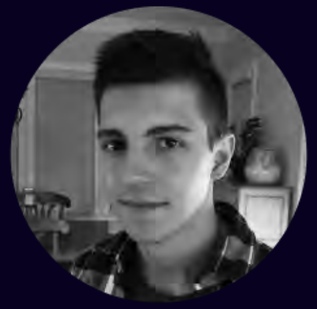

Matthew Johnson

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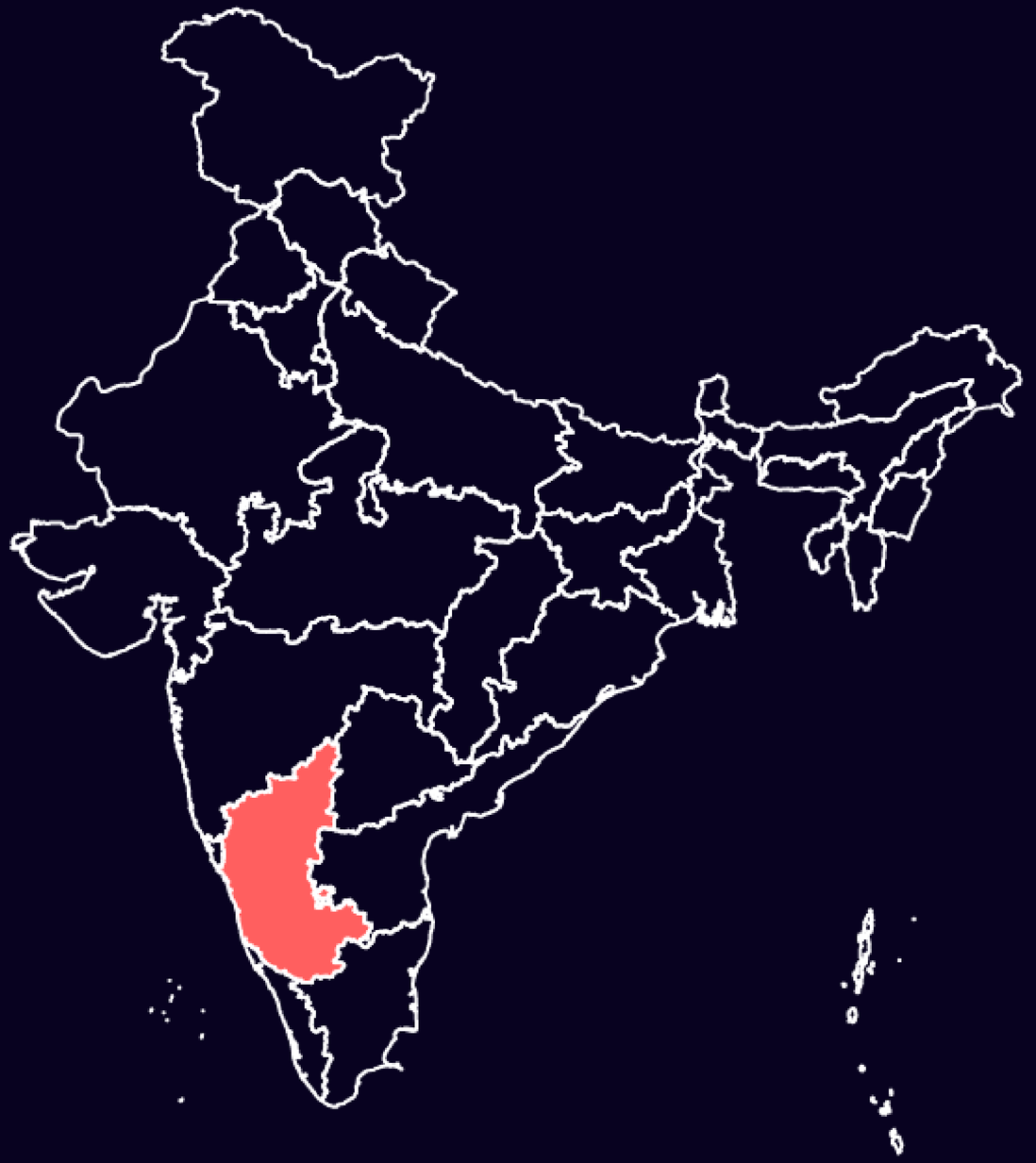
We Were Asked To...

- Create an integrated digital backbone with AI-enabled decision-making support to guide pregnancy care in secondary regional care centers

- Design specific tools for risk assessment, monitoring, and decision-making in antenatal and intrapartum care

Karnataka, India



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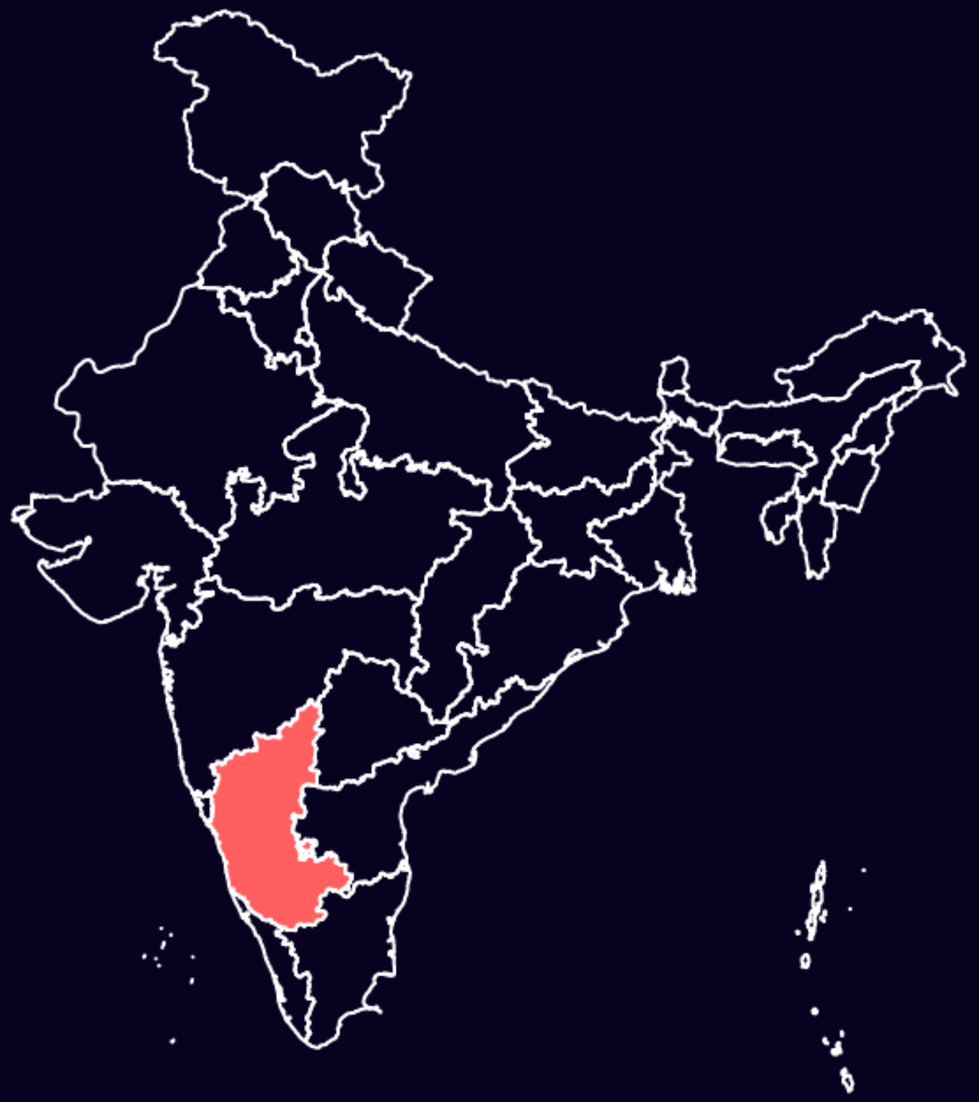
Why Karnataka?

- Access to internet
- Existing antenatal care
- High maternal mortality rate
- Initiative to improve infrastructure



Target User:

Graduate Nurses & Midwives

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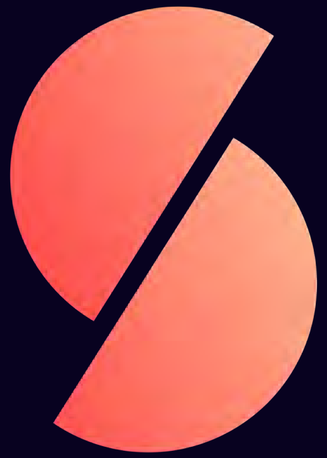

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Antenatal Kit

01 Kit

02 Wearable Device

03 Color Constant

04 Samsung Tablet & App

05 AI Component

06 Sanitation Supplies

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100 strips
14
COMPREHENSIVE
URINALYSIS
100 strips
HCG
AccuMed
One Step Pregnancy Urine Test Strip
CLEANING SPRAY
CLEANING CLOTH . CLEANING CLOTH .
DISPOSABLE
GLOVES
BLUE VINYL
100 COUNT

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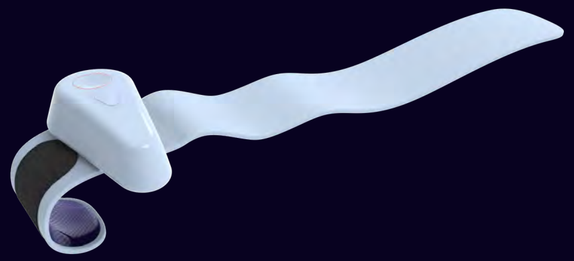
How it Works:

Kit Diagram:



Wearable Device

Color Constant

Samsung Tablet

Tests: Non-invasive

01

Gestational Age

02

Glucose

03

Infection

04

Blood-Oxygen

05

Blood Pressure

Gestational Age:

Technology:

Determine gestational age through a human chorionic gonadotropin (HCG) urine test within the First Trimester

How it Works:

01 Patient urinates into collection cup

02 Strip soaks in urine and changes colors according to a gradient scale

03 Tablet takes photo of strip on top of the color constant background

04 AI analyzes image determines gestational age

05 App reports results

Glucose:

Technology:

Measure glucose levels through urine test

How it Works:

01 Patient urinates into collection cup

02 Strip soaks in urine and changes colors according to a gradient scale

03 Tablet takes photo of strip on top of the color constant background

04 AI analyzes image determines glucose levels

05 App reports results

Infection:

Technology:

Measure possible infection through urine testing

How it Works:

01 Patient urinates into collection cup

02 Strip reacts and changes colors according to a gradient scale

03 Tablet takes photo of strips on top of the color constant background

04 AI analyzes image

05 App reports results

Blood-Oxygen:

Technology:

Measure blood oxygen levels through wearable device

How it Works:

01 Graduate nurse activates reading with button

02 Device releases red and infrared LED light

03 Photoelectric sensor reads amount of light absorbed

04 AI calculates blood oxygen percentage

05 App displays readings

Blood Pressure:

Technology:

Take BP readings with
monitor on wrist

How it Works:

01 Graduate nurse activates reading with button

02 Patient elevates arm

03 Arm band inflates

04 Blood pressure is read

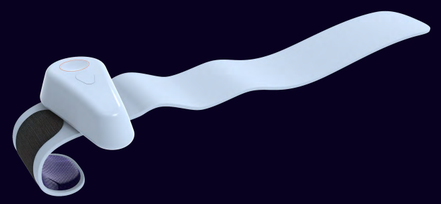
05 AI reads and analyzes data

06 App displays readings

Kit Diagram:

Wearable Device

1. Blood Pressure
2. Blood Oxygen



Color Constant:

1. Gestational Age
2. Glucose
3. Infection

Samsung Tablet

The Case

High-Density Foam
with Hardshell Plastic

Protected Hinge

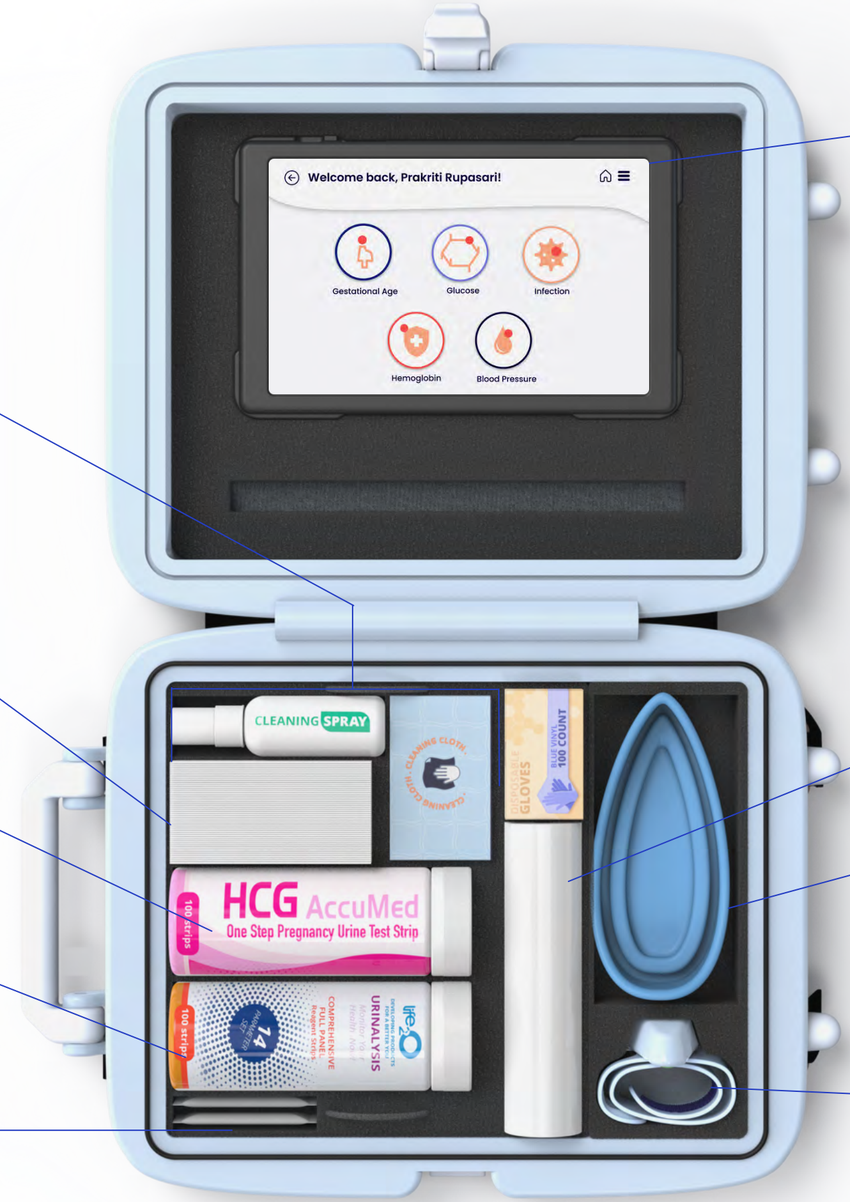
Heavy-Duty Handle

Removable and
Adjustable
Backpack Straps

Lockable Clip

Feet Pegs

100 strips
URINALYSIS
14
HCG ACCUMED
One Step Pregnancy Urine Test Strip
100 strips
CLEANING STRIP
CLEANING CLOTH . CLEANING CLOTH .
DISPOSABLE
GLOVES
BLUE VINYL
100 COUNT
Welcome back, Prakriti Rupasari!
Gestational Age
Hemoglobin
Glucose
Blood Pressure
Infection



Tablet

Cleaning Supplies

Test Strip Scanning Backplates

Gestational Age Test Strips

Multi-Infection Test Strips

Silica Gel Packets

Urine Receptacle Liners

Collapsible Urine Receptacle

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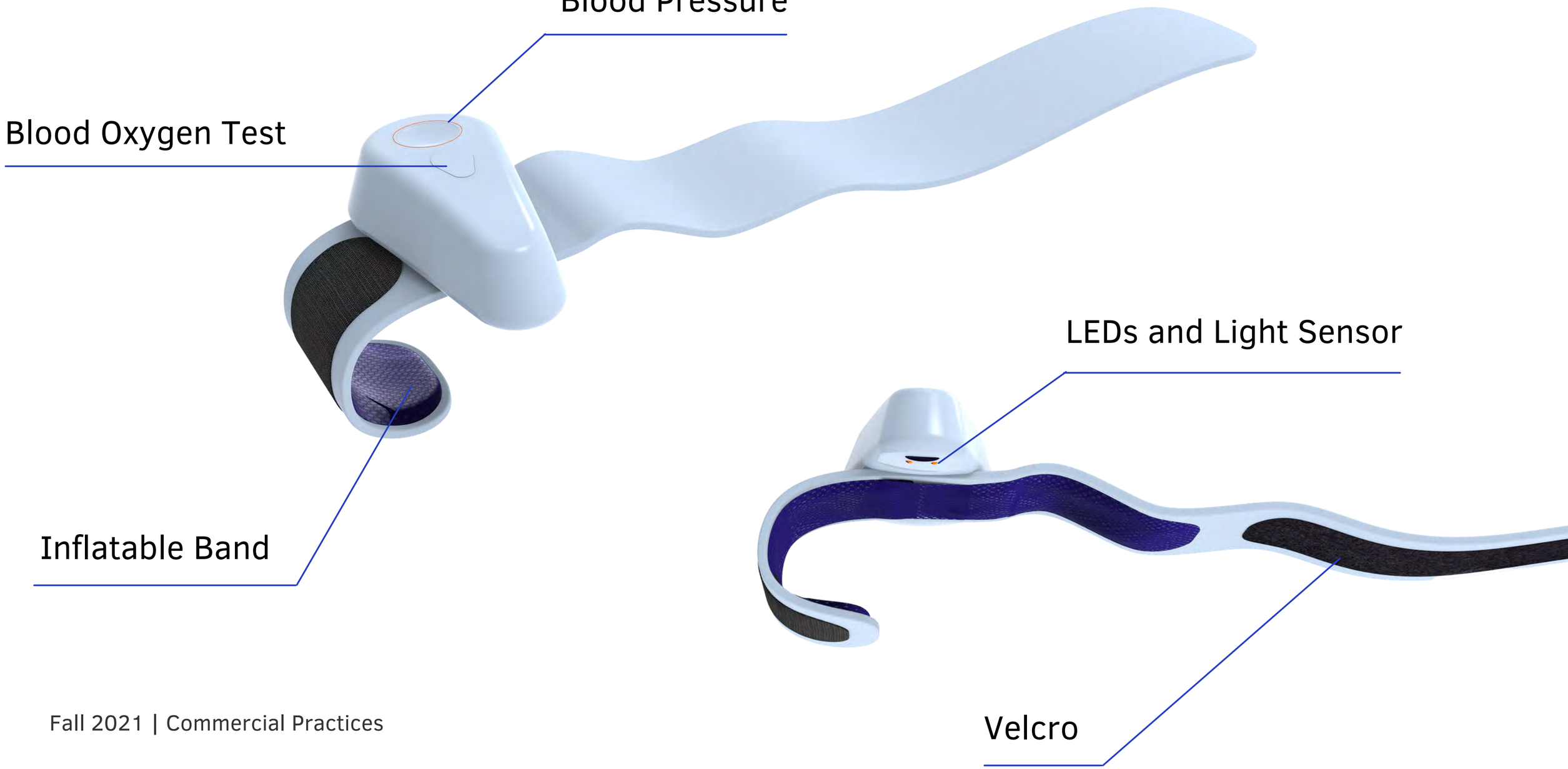
The Wearable


Blood Pressure
Blood Oxygen Test
Inflatable Band
LEDs and Light Sensor
Velcro

Charging:

3 Types of Power:

01

Rechargeable Lithium Ion Batteries

02

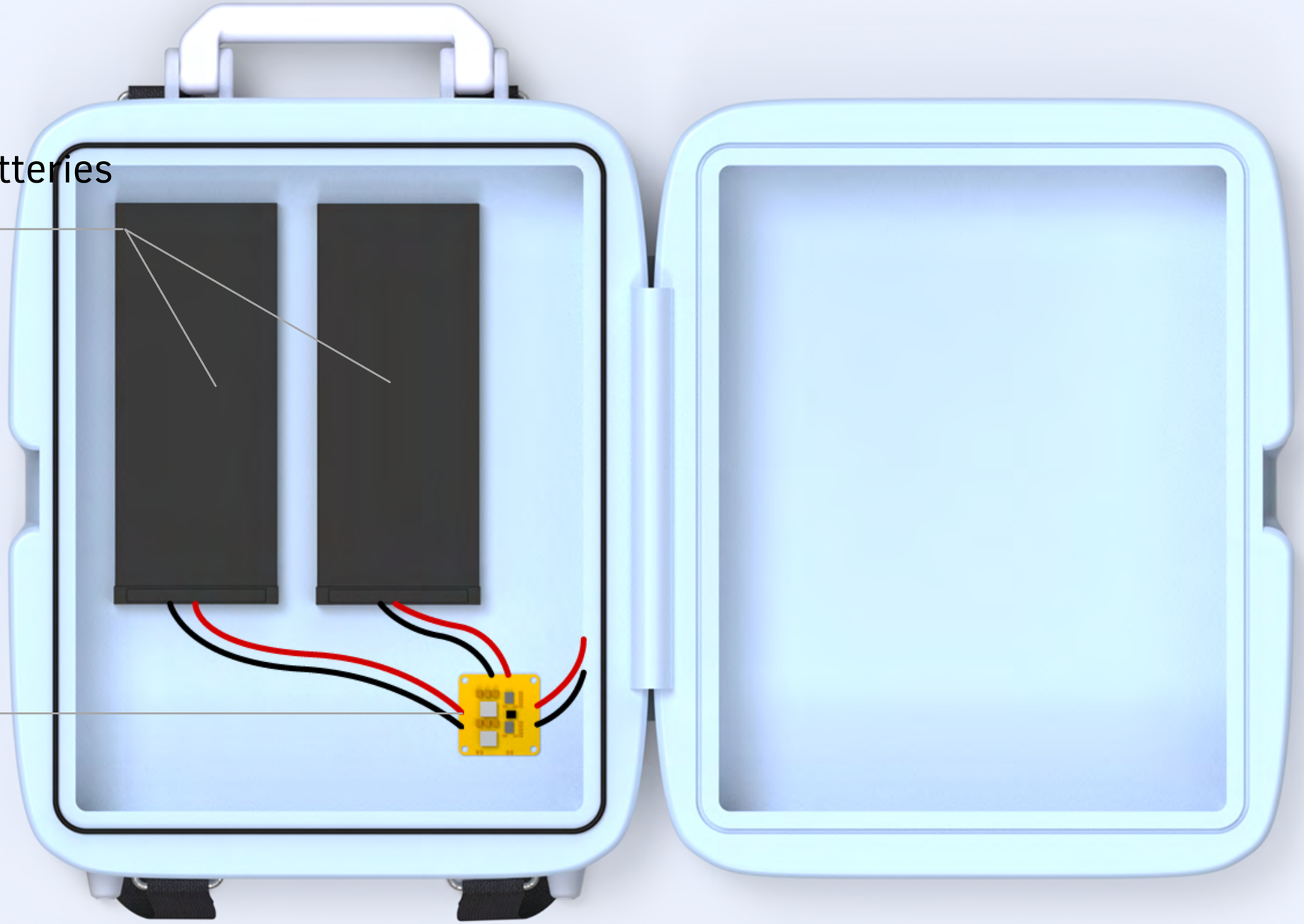
Solar power: Built into top of the case

03

Tablet case charges from connection points inside of the kit

Rechargeable Lithium Ion Batteries

Power Distributor



Solar Panels