



CIPHER SKIN

PREDICTING FAILURE WITH AUTHENTIC DATA





VISION ///

COLLECTING DATA TO PREDICT FAILURE

Through unlimited access to complete, genuine data, Cipher Skin makes it possible to predict failure before it happens - at any time, on any object, from the human body to the built world.





VISION ///

A WORLD MADE OF CYLINDERS AND FLAT SURFACES

Cipher Skin wraps cylinders and surfaces in a sensor mesh to measure their movement and behavior.





VISION ///

Through the trillions of high-quality data points collected, Cipher Skin enables complex analyses to understand how the objects interact with their environment, thus predicting future failure.

One cylinder



Two cylinders



Three cylinders





PROBLEM ///

A BOOK WITH MISSING PAGES

Personal injuries, pipe leaks, bridge collapses - Failure happens everywhere, costing lives and billions of dollars every year.

Current technology can't predict failure.

It can measure some individual pieces of data but cannot capture a complete picture of an object and its behavior, in time and space, with extreme precision.

Like a book with missing pages, incomplete data makes it impossible to read an object's story and predict its future.





SOLUTION ///

WRITING THE COMPLETE STORY OF ANY OBJECT

Cipher Skin unveils the missing pages of the book, enabling us to read the story of any object, from start to finish.

By collecting meaningful and complete data, pinned simultaneously on the whole object and over a long period of time, Cipher Skin uncovers the interactions between the object's components, rather than just isolated parts.

Cipher Skin opens up infinite and exciting possibilities for machines to perform deep data analyses on any moving object.



CIPHER SKIN TECHNOLOGY ///

DIGITAL MIRROR™ REAL-TIME DATA VISUALIZATION

The trillions of data points collected from the Cipher Mesh are transmitted wirelessly to a software application that models movement in 3 dimensions and gives a real-time representation of the object.

Cipher Skin's unique dataset creates a Digital Mirror™ of the behavior of the monitored object, from the human body to the built word.





CIPHER SKIN TECHNOLOGY ///

CIPHER CLOUD DATA AGGREGATION

Cloud connection via API

All data transmitted from the Cipher Mesh is collected over time and managed in the Cipher Cloud.

Unique, complete database to predict failure

Through the rich datasets it generates, Cipher Skin enables analysis that leads to the prediction of structural and functional failure.



PRODUCTS ///

CIPHER SKIN SMART SLEEVE

The first product designed and manufactured by Cipher Skin is a smart sensor sleeve that enables the user to visualize, through the Digital Mirror™, 3D real-time movement and integrity of one cylinder.

Cipher Skin Knee BioSleeve
Training and Recovery

**Link to
Cipher Skin Knee BioSleeve promo**

Cipher Skin Pipe Sleeve
Pipe Monitoring and Breach Detection

**Link to
Cipher Skin Pipe Sleeve Demo**



MARKET POTENTIAL ///

MULTIPLE APPLICATIONS

By 2023, the total addressable market for a few Cipher Skin applications will exceed \$700 billion. The majority of this TAM lies in the life sciences, and the remainder existing in industrial monitoring.

Sample application areas

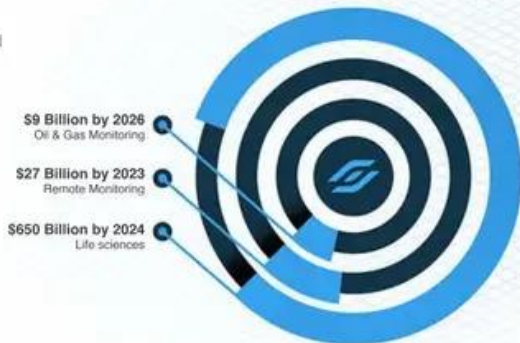
Bio

Athletics: training and recovery
Heat stroke prevention
Remote employee monitoring
Remote patient monitoring

Industrial

Pipe monitoring and breach detection
Stress test monitoring (pipes, tanks, etc.)

\$700 Billion
Market Size



WHY INVEST NOW ///



12 MONTHS

Full Commercialization of Cipher Skin's Sleeve

One cylinder



24 MONTHS

Full Commercialization of Cipher Skin's Leggings

Two cylinders



36 MONTHS

Full Commercialization of Cipher Skin's Tee-Shirt

Three cylinders

ENGINEERING & LEGAL

Software Development
Database Development

Full Stack Software Engineer
Back End Software Engineer
Software Engineer – Mobile iOS
Data Scientist
QA Engineer

Pilot Manufacturing
Material & Equipment Costs

University Research
Sponsorships

Patent filing
FCC Licensing

SALES & MARKETING

Sales Representatives
Customer Success Manager

Product Marketing
Development
Trade Shows

Series A Funds

Detailed Proforma

OPERATIONS

Costs of goods of operating
and supporting pilots

Office operations



APPENDIX ///

CUSTOMER-SPONSORED CO-DEVELOPMENT

SAMPLE APPLICATIONS

PRODUCTS DEVELOPED SO FAR

PIPE SLEEVE
KNEE AND ARM BIOSLEEVES
BIOHELMET

UPCOMING PRODUCTS

BIOLEGS
BIOSHIRT

CIPHER SKIN TEAM



CUSTOMER-SPONSORED CO-DEVELOPMENT /// CONVERTING EARLY PARTNERS INTO LONG-TERM CUSTOMERS

Over 90 days, Cipher Skin provides support to early customers in the application development and testing phase, with established milestones. We convert them into long-term customers through multi-year data subscription.

Purchase of Cipher Skin's Product Package

The customer purchases Cipher Skin's product package:

- Customized data delivery vehicle for the customer's application
- Digital Mirror™ Software Application (data visualization - iOS - iPad)
- Data storage and unlimited access to the Cipher Cloud

Product Testing and Feedback

During the testing phase, Cipher Skin provides:

- Periodic software updates
- Customer Support
- Technical Support

Multi-year Customer Partnership

Upon successful product testing, the customer converts to a multi-year contract:

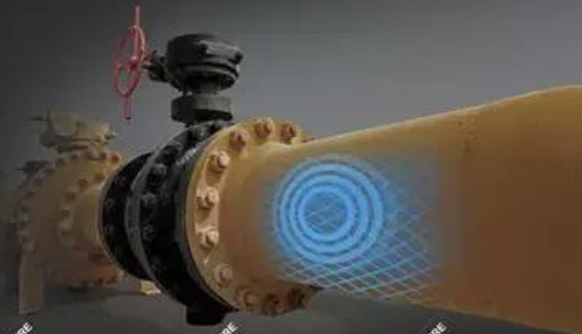
- Aggregation and management of the customer's data
- Access to Cipher Cloud anonymized database
- Access to insights and predictive analytics

SAMPLE APPLICATIONS ///

PIPELINE MONITORING

There are hundreds of pipeline breaches every year, costing billions of dollars in maintenance and damages. What if you could detect them in real time and prevent them from happening?

Multiple data points from Cipher Skin sensors, taken continuously and pegged to a common timeline, allow for the prediction of the next section of pipe to fail.



TEMPERATURE
STRAIN
MOISTURE
VIBRATION
LIGHT

0.00.01

TEMPERATURE
STRAIN
MOISTURE
VIBRATION
LIGHT

0.00.02

TEMPERATURE
STRAIN
MOISTURE
VIBRATION
LIGHT

0.00.03

TEMPERATURE
STRAIN
MOISTURE
VIBRATION
LIGHT

0.00.04

TEMPERATURE
STRAIN
MOISTURE
VIBRATION
LIGHT

0.00.05



SAMPLE APPLICATIONS ///

ATHLETICS

Next-Level Performance Training

Through its patented sensor network, Cipher Skin is able to capture a complex series of data points well beyond simple movement. Cipher Skin helps create a holistic picture of athletic performance, allowing elite athletes to take their game to the next level.

Sample Sensor Measurements

BODY POSITION

HEART RATE

RESPIRATION RATE

12-LEAD EKG

CUTANEOUS GLUCOSE

GALVANIZATION

CUTANEOUS CONDUCTIVITY THRESHOLD

SUPERFICIAL NERVE CONDUCTIVITY

TEMPERATURE THRESHOLD

SWEAT CONTENT

ELECTROMYOGRAPHY

AND MORE





SAMPLE APPLICATIONS ///

REMOTE EMPLOYEE MONITORING

Workplace Compliance

Cipher Skin helps monitor employees for healthy practices including compliance with regulations and policies, and can help avoid injury and liability.

Sample Sensor Measurements

BODY POSITION

HEART RATE

RESPIRATION RATE

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AND MORE



SAMPLE APPLICATIONS ///

REMOTE PATIENT MONITORING

Improved Patient Compliance

Cipher Skin garments can serve as a multi-sensor monitor, providing remote caregivers and practitioners with a holistic picture of health developments, the effectiveness of a course of treatment and patient compliance.

Sample Sensor Measurements

BODY POSITION

HEART RATE

RESPIRATION RATE

12-LEAD EKG

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PRODUCTS ///

CIPHER SKIN PIPE SLEEVE

Deployed around the pipe, Cipher Skin's sensor mesh detects stress, strain, distortion and vibration. With easily integrated sub-sensors, it can track acoustics, temperature, moisture or light.

Cipher Skin's pipe sleeve continuously measures all forces that act along the full extent of the pipeline – so that you can detect, locate, classify and predict any threats before they happen.

PIPELINE

COMMUNICATION
INTERFACE

CIPHER SKIN
MESH

PIPELINE ACCESS
PORT

SOLAR PANEL

PANEL LINK

PRODUCTS ///

CIPHER SKIN KNEE BIOSLEEVE

Recover Smarter

Cipher Skin Knee BioSleeve is specifically designed to help athletes and trainers in the return-to-play process.

It enables athletes to avoid future injuries and enhance their performance in the long run, by achieving the most efficient and effective recovery.



Key Measurements

Range of motion
Joint angular velocity
Force production
Swelling

Benefits

Monitor real-time movement quality of the knee
Identify progression and regression
Track progress over time
See the impact of your recovery plan and optimize it
Make informed decisions for faster results
Reach performance goals more efficiently and safely
Objectively validate return to play

PRODUCTS ///

CIPHER SKIN ARM BIOSLEEVE

Train Smarter

Combining real-time 3D motion tracking with vital biosignals measurement, Cipher Skin Arm BioSleeve enables athletes to perform the most effective and efficient movement, and achieve their highest potential.



Key Measurements

- Range of motion
- Joint angular velocity
- Force production
- Swelling
- Heart Rate
- O₂ saturation

Benefits

- Monitor real-time movement quality
- Track progress over time
- Identify progression and regression
- Build optimized training program
- Make informed decisions for faster results
- Prevent injuries from body over-use
- Achieve athlete's highest potential

PRODUCTS ///

CIPHER SKIN BIOHELMET

Cipher Skin BioHelmet is a passive monitoring device that prevents thermal injuries by detecting deviations from a predetermined temperature range of the athlete and notifying them in real time with a light signal.

Benefits

- Full protection of the athlete from hyperthermia and hypothermia
- Real-time monitoring of temporal temperature deviation
- Quick and easy installation on the hard hat
- No noticeable difference in wearability for the wearer



UPCOMING PRODUCTS ///

CIPHER SKIN BIOLEGS

Cipher Skin BioLegs are smart leggings that enable the wearer to visualize real-time movement of their legs in three dimensions, providing them with key measurements such as range of motion and joint velocity, as well as critical vital signs.

By simultaneously monitoring real-time motion quality of the lower body as well as essential biosignals, Cipher Skin BioLegs help the users perform *the* perfect movement and ultimately reach their highest potential.

With BioLegs, they can track progress over time, identify progression and regression, and build an optimized training program that will allow them to achieve faster and higher results while preventing injury from body over-use.



UPCOMING PRODUCTS ///

CIPHER SKIN BIOSHIRT

Cipher Skin BioShirt is a smart tee-shirt that enable the user to visualize real-time movement of the upper body as well as critical vital signs.

It provides remote caregivers and practitioners with a holistic picture of health developments, and allows them to track the effectiveness of a course of treatment.

Key measurements

BODY POSITION

HEART RATE

RESPIRATION RATE 12-

LEAD EKG

CUTANEOUS GLUCOSE

GALVANIZATION

CUTANEOUS CONDUCTIVITY THRESHOLD

SUPERFICIAL NERVE CONDUCTIVITY

TEMPERATURE THRESHOLD

SWEAT CONTENT

ELECTROMYOGRAPHY

AND MORE



FOUNDERS ///

CIPHER SKIN

- 🕒 Date of founding: August 2017
- 💰 Seed Round: \$1.35M
- 👥 20 employees
- ✔️ 9 granted US patents
- 📞 18+ patents pending



Phillip Bogdanovich

Former USMC Recon Corpsman (medic)
Former Tactical Medical Chief for the Department of State
Harvard Business School
Founded two prior technology startups and took them to several million dollars in revenue.



Dr Shaka Bahadu

Weill Cornell Medical College MD
Stanford Graduate School of Business MBA
Healthcare operations expert, clinical informaticist
and business generalist for two digital health
(Y Combinator) startups (pre- and post-Series A).



TEAM ///



Dr James Heathers
Chief Scientific Officer

Ph.D. on heart rate variability from The University of Sydney.
Research Scientist at the Northeastern University focused on processing and interpreting biosignal data from wearable monitors.
Expert in physiology, biosignal methodology, signal analysis, and



Yasmin Mounajed
VP of Marketing

Growth marketer with experience in Technology and SaaS Businesses.
Masters in Global Marketing from the University of London.
Led multiple award-winning campaigns.
Managed a diverse portfolio of brands targeting the Americas, APAC, and EMEA.



Dr Guido Globerto
Head of Engineering

Expert in wearable technology and a leader in the industry.
Master's Degree in Telecommunication Engineering (Polytechnic of Turin, Italy)
Master's Degree in Electrical Engineering (University of Minnesota)
Doctorate in Computer Science (University of Minnesota)



TEAM ///



Tim Gouin
Mechanical Engineer

Master's Degree in Sports Engineering from Sheffield Hallam University.
Bachelor's Degree in Mechanical Engineering from the University of Colorado – Boulder.
Pursued studies and work that involve quantifying and advancing human performance.



Claire Apuan
Mechanical Engineer

Bachelor of Engineering in Biomedical Engineering from the Thayer School of Engineering at Dartmouth College.
Bachelor of Arts in Engineering Sciences from Dartmouth College.
Previous experience innovating various medical devices including inflatable penile implants and robotic surgical systems.



Rachel Hoeffner
Business Operations Manager

Held positions as an executive assistant and office manager for law firms and tech companies.
Spent a majority of her career path helping others organize their work life with various levels of execs.
Educational background in music and business from Kansas Wesleyan University