

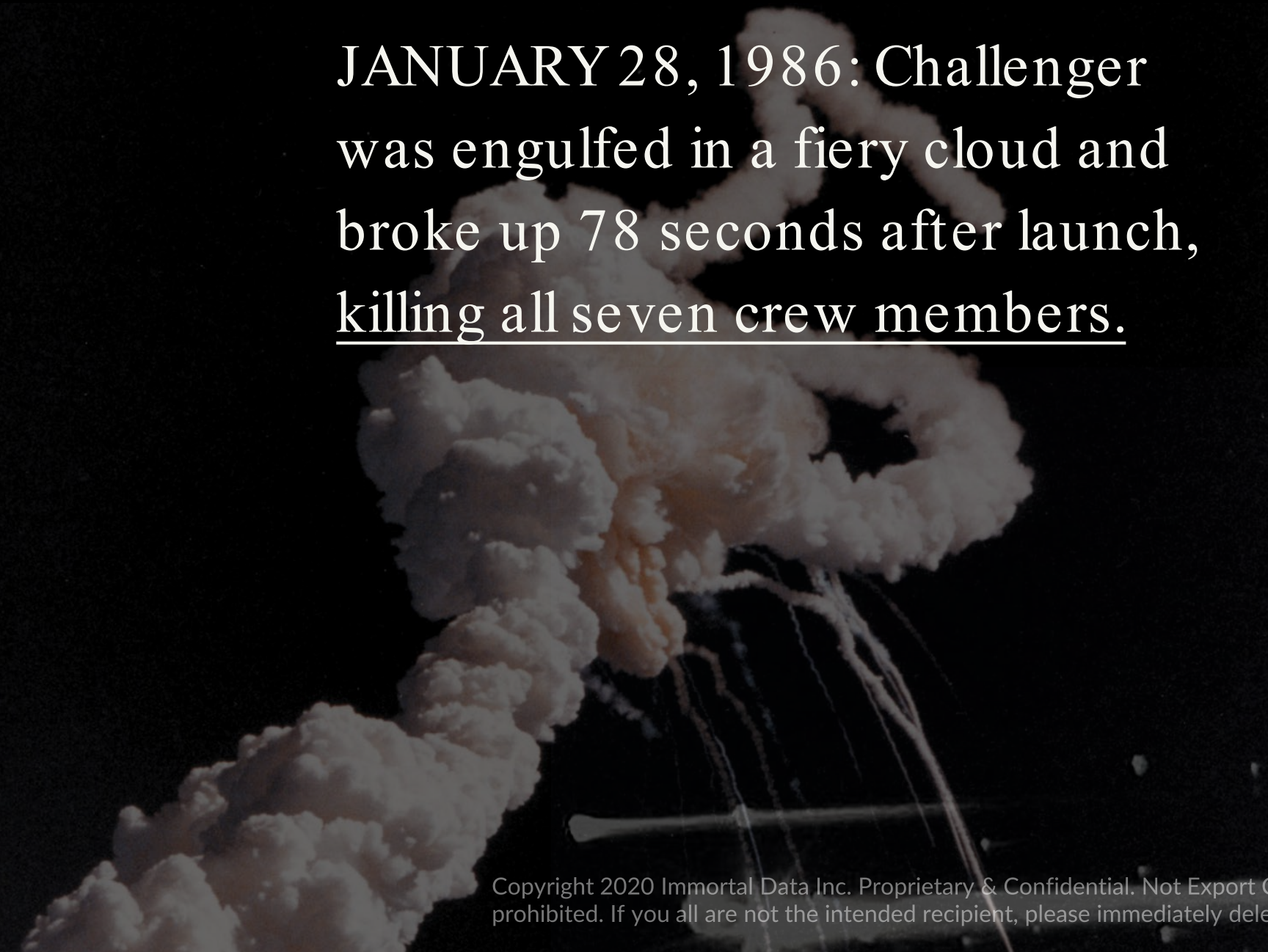
*Immortal Data is an affordable solution to the data collection and recovery demands of the burgeoning and budget-minded private space craft industry.*



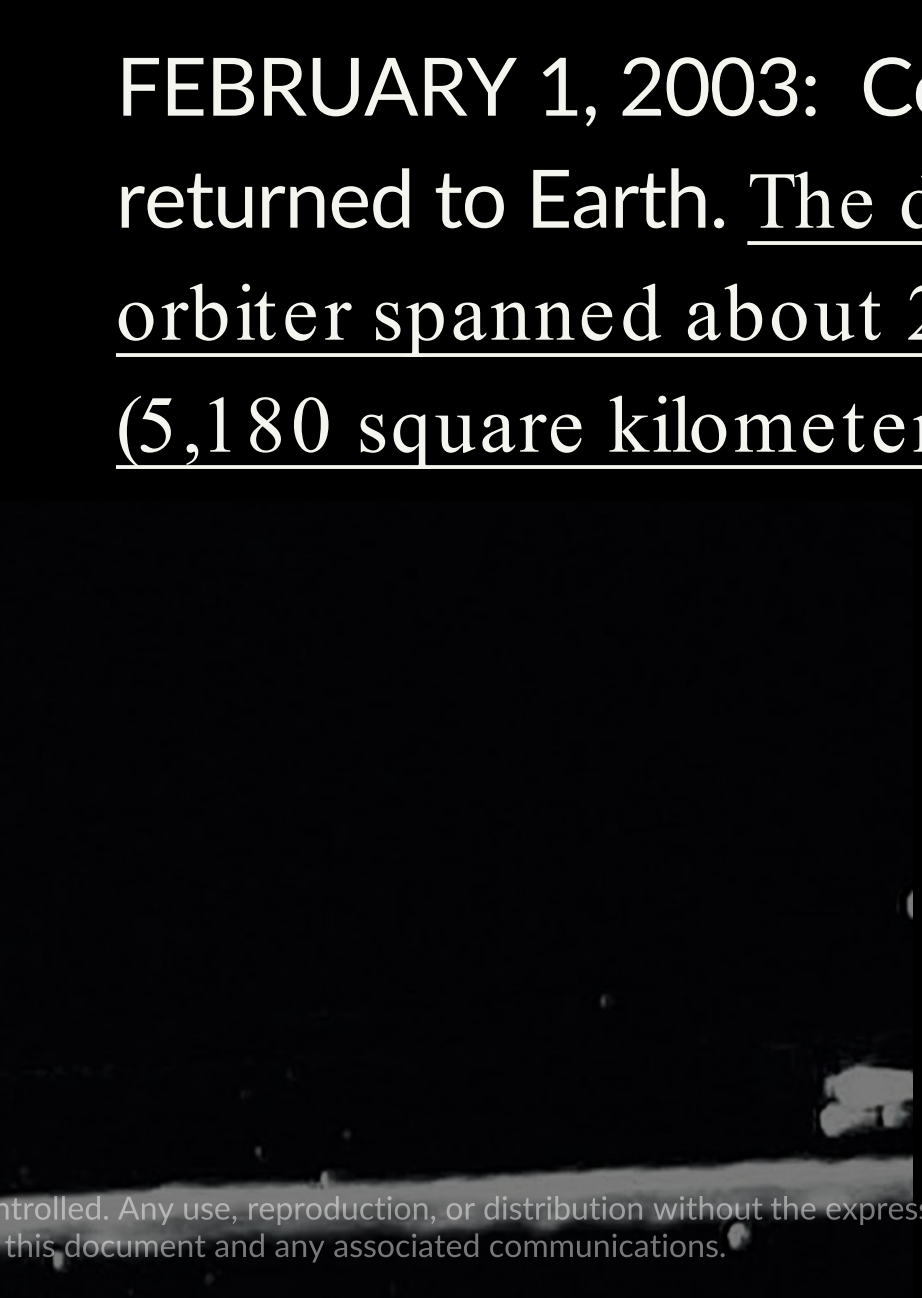
# Data Systems for Deep Space and Time

# The idea of Immortal Data was born from disaster

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JANUARY 28, 1986: Challenger was engulfed in a fiery cloud and broke up 78 seconds after launch, killing all seven crew members.



FEBRUARY 1, 2003: Columbia broke up as it returned to Earth. The disintegration of the orbiter spanned about 2,000 square miles (5,180 square kilometers) in east Texas alone.

# Timeline of Discovering the Cause of Space Accidents

5 months

- JANUARY 28, 1986: Challenger broke up 78 seconds after launch.
- APRIL 10, 1986: NASA announced the shuttle astronauts remains had been found.
- JUNE 9, 1986: The Rogers Commission submitted the official report to the president.

**\$414.7 Million US (2020 \$)**  
Cost of investigation

**\$7.5 Billion US (2020 \$)**  
Total cost. source: LA Times

8 months

- FEBRUARY 1, 2003: Columbia broke up as it returned to Earth.
- MARCH 19, 2003: An electronic box was found intact, containing vital information on the descent of the shuttle that was not sent down to Mission Control via telemetry. Shuttles do not have an on-board black box; telemetry provides this type of vital information to the ground command.
- APRIL 20: NY Times reported the 12-week search ended after divers and a remote-controlled submersible craft wrapped up a final weeklong video sweep of the site, located in about 87 feet of water.
- AUGUST 26: The Columbia Accident Investigation Board released its report.

**\$564 Million US (2020 \$)**  
Cost of investigation

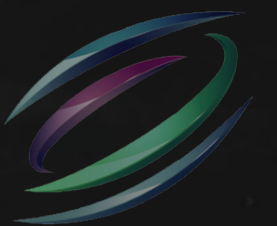
**\$8.46 Billion US (2020 \$)**  
Total cost. source: NASA



IMMORTAL DATA

- 1 Current practices to determine the cause of disasters rely on telemetry, debris mapping, and backward simulation to reconstruct events and determine cause and responsibility. There was no telemetry at the onset of the catastrophic breakup in the Columbia disaster case, so answers were tough to find and came late at a high cost.
- 2 Orbital assets damaged or destroyed by debris have no records of the event (predictive, real-time, or after impact), so neither cause nor liability can be ascertained.
- 3 Flight Recorders (aka Black Boxes) on aircraft are large and heavy and often are untraceable in hostile environments such as in the mountains or the sea, let alone in space.
- 4 Data transmission from a space vehicle to the ground during the last few crucial milliseconds before breakup is either unclear or insufficient.

# The Problem



Our CEO, Dale Amon, drew on his 30 years of experience designing data acquisition systems to ask the next question:

How can we build a **low-cost system** capable of identifying potential points of failure **before a space vehicle leaves the ground?** If an accident does happen, how to provide failure point data so the **breakdown's root cause is not repeated?**

# Our Solution

Reconfigurable distributed black-box modules:

- Cell phone sized
- Inter module communication

Mission-oriented sensors preserve and secure data including

- Voice from the cockpit
- Vehicle mechanics
- Skin materials
- Engine system health

GPS signal locator

- Guides rescue operators to the black box locations



- PATENT #: 9286738 USPTO  
DN/20150339867



# Our Solution

## LOW RISK



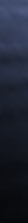
Statistically, at least one unit with all data up to time of breakup will survive.

## VERSATILE



Vendor agnostic interface to other hardware. Connects to anything.

## LOW COST



Low cost lightweight solutions for full orbital re-entry.



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# Advantages

## ON TIME WHEN IT MATTERS MOST

Our patented method of trading GPS fixes and velocities at onset and during the critical seconds of breakup enables swift initiation of search and rapid retrieval.

## CUSTOMIZABLE PARAMETERS FOR DATA SAMPLING AND STORAGE

Like a bespoke suit, our solution can be tailored to fit unique requirements for data speed, integrity, and security as well as price sensitivity.

## SLOW BURN PRESERVES EVIDENCE

Our distributed black boxes are small objects with extensive redundancy encased in rugged materials providing multiple layers of protection. Because of their low ballistic coefficient, during free-fall they slow down quickly, dissipate heat over a larger area and are likely to survive.

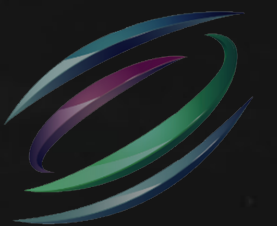


IMMORTAL DATA



- 1 Flight data is a tool for optimizing performance of existing systems and improving next generation systems; part of good engineering practice.
- 2 We expect insurers to offer preferential premium rates to customers who use our system, in line with existing practice in aviation, road transport, and maritime, as it leads to better outcomes in event case of accidents with potential for liability.
- 3 We anticipate regulators to make use of black boxes mandatory in the near future, in line with existing practice in aviation, maritime, and road transport. Regularizing space practice in line with other environments is already US policy; extending black box requirements would just be an implementation of that policy.

# Customer Benefits



# The Future Is Moving

An astronaut in a full space suit stands on a rocky, desolate landscape that resembles the surface of Mars. The background shows a hazy horizon under a dark sky.

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## ENTREPRENEURIAL SPACE IS RAPIDLY DEVELOPING

We are at the start of a disruptive transition in the use of and access to space. New entrepreneurial launch companies are developing and operating vehicles without the massive and expensive contractor bureaucracy of NASA and the military.

01

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## SPACE IS BECOMING AFFORDABLE

The result is a proliferation of companies and various new approaches to launch, offering radically reduced costs of placing payloads in orbit and shorter timelines to launch.

02

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## NEW AND NUMEROUS SPACE APPLICATIONS ARE EMERGING

These developments have in consequence spurred the emergence of whole new categories of entrepreneurial companies producing and operating small cheap satellites for both old and new applications, taking advantage of the “microsization” of computer technology.

03



IMMORTAL DATA

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**SATELLITES ARE GETTING SMALLER AND LESS COSTLY WHILE ACCOMPLISHING THEIR MISSION TASKS FASTER**

Satellites are becoming cheaper devices weighing a few hundred to a few pounds and performing tasks once done only by bus-sized satellites costing hundreds of millions. 04

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**EXISTING SYSTEMS THAT ACQUIRE, MONITOR, CONTROL, COLLECT, AGGREGATE, AND PRESERVE DATA ARE NOT UP TO THE CHALLENGES OF COMMERCIAL SPACE**

Both launch vehicles and payloads need data acquisition and control systems (DAQs), and ultimately flight data recorders (black boxes). 05

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Our analysis is based on public data, proprietary reports, and a wide range of personal experience in the field by our widely experienced team, much of which is covered by NDA or government restrictions and aggregated to comply with those limitations.

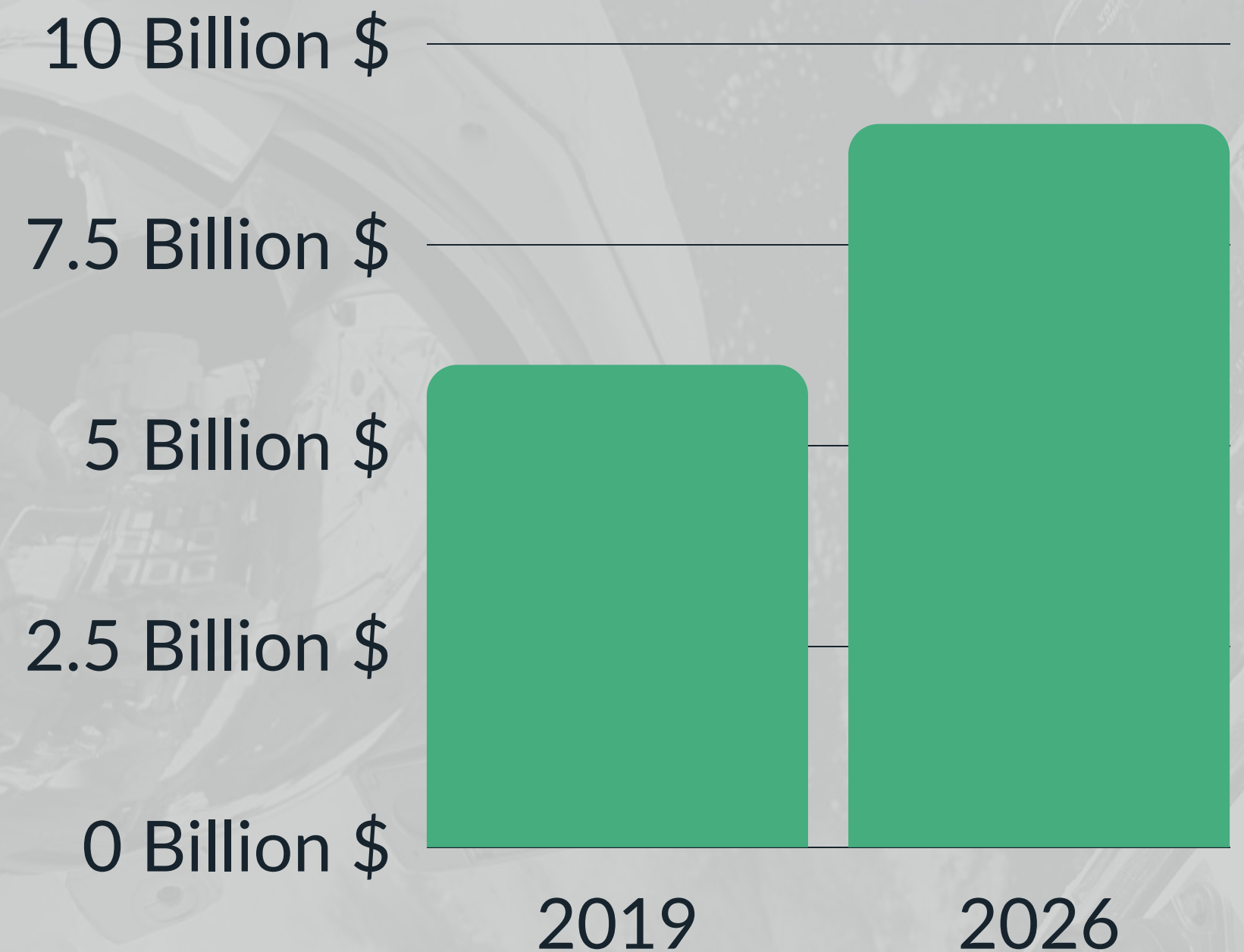
# The Future Is Moving



# Market Growth

The global new space market generated revenue of USD 6 Billion in 2019 and is projected to reach USD 9 Billion by 2026.

\*According to the NewSpace Market Study conducted by Global Market Estimates



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High levels of private funding, advances in technology, and growing public-sector interest in the space industry are just a few of the major factors expected to propel the market growth during the forecast period.

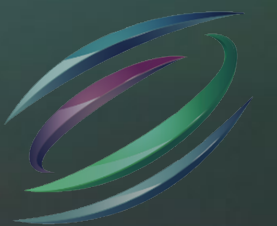
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The growing development of reusable space launch vehicles and air-launched space launch vehicles are also driving the market growth.

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This data is from the New Space Market Study conducted by Global Market Estimates.

# Market Growth



## SUBORBITAL RESEARCH & SMALL SATELLITE LAUNCHES

Initial market. Avg. IDI price \$50K to \$100K.

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## GROUND TEST/ RESEARCH

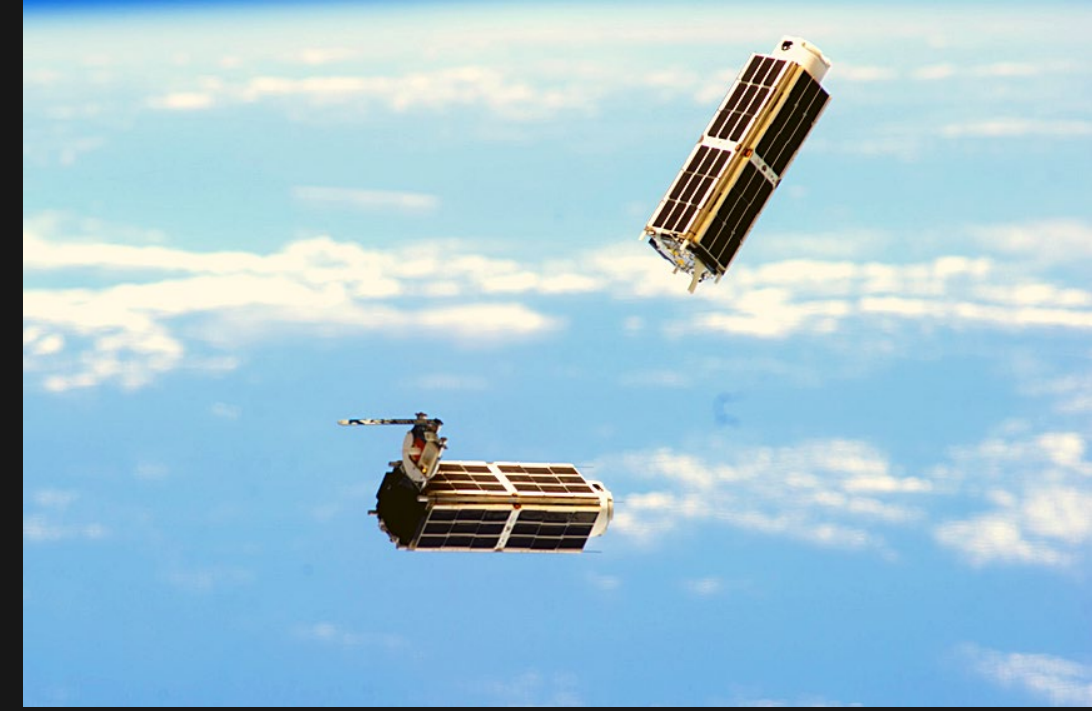
Early target. Micro-DAQ family is customizable. USRA (University Space Research Association) membership about 80 in the US. Each a potential customer, avg. 3 relevant experimenters per institution per year. Average experiment's price from IDI \$20K.

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## PRIVATE SPACE MARKET

Principal Target. Private, entrepreneurial space launch vehicles, satellites, and other space activities, both in space and pre-launch development testing on Earth.

Immortal  
Data  
Market

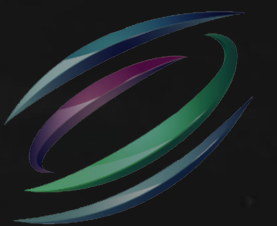


1 Immortal Data is developing three initial 'minimum viable products': The microDaq, Shipslog, and ShipsStore black-box modules. The Immortal ShipsDAQ™ low cost data acquisition module, referred to as the *microDAQ* due to its small mass and volume. The Immortal Shipslog™ Data Logger is a vendor agnostic unit that collects and consolidates data from multiple data acquisition systems, including the Immortal ShipsDAQ™. The Immortal Distributed Black Box™ consists of multiple Immortal Shipstore™ modules. Immortal Shipstore™ modules store and trade data with each other

2 Off the shelf hardware often is used as the foundation of our design. Sensor interface hardware also is offered, both internally designed or off-the-shelf from other commercial entities. If justified, specialized units are built and matched with our bundled software.

3 Be the first to market with a spacecraft black box. This will likely be mandatory in the near future, and we have a patented solution.

# Strategy



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# IDI Market Expansion Strategy

- Market Challenge: To Establish Itself In Markets With Low Barriers While Building Credibility and Resources to Enter Markets With Higher Barriers
- IDI is entering the marketplace at a unique moment: The Proliferation and Expansion of Entrepreneurial Launch and Satellite Companies
- These Companies Need Affordable DAQ and Black Box Solutions: Legacy Suppliers are Not Prepared to Meet This Need
- Regulatory Requirements Not Yet Established In Space: IDI Has Opportunity to Shape Them To Suit Its Situation
- By Establishing Itself in These New Markets IDI Will Then Proceed to Enter More Established Marketplaces: Aviation, Maritime, Land Transport; Ultimately, Other Industrial Areas
- Pace and Direction Will Be Dictated by Market Events and Opportunities: E.g., Identification of Established Partners in Other Arenas



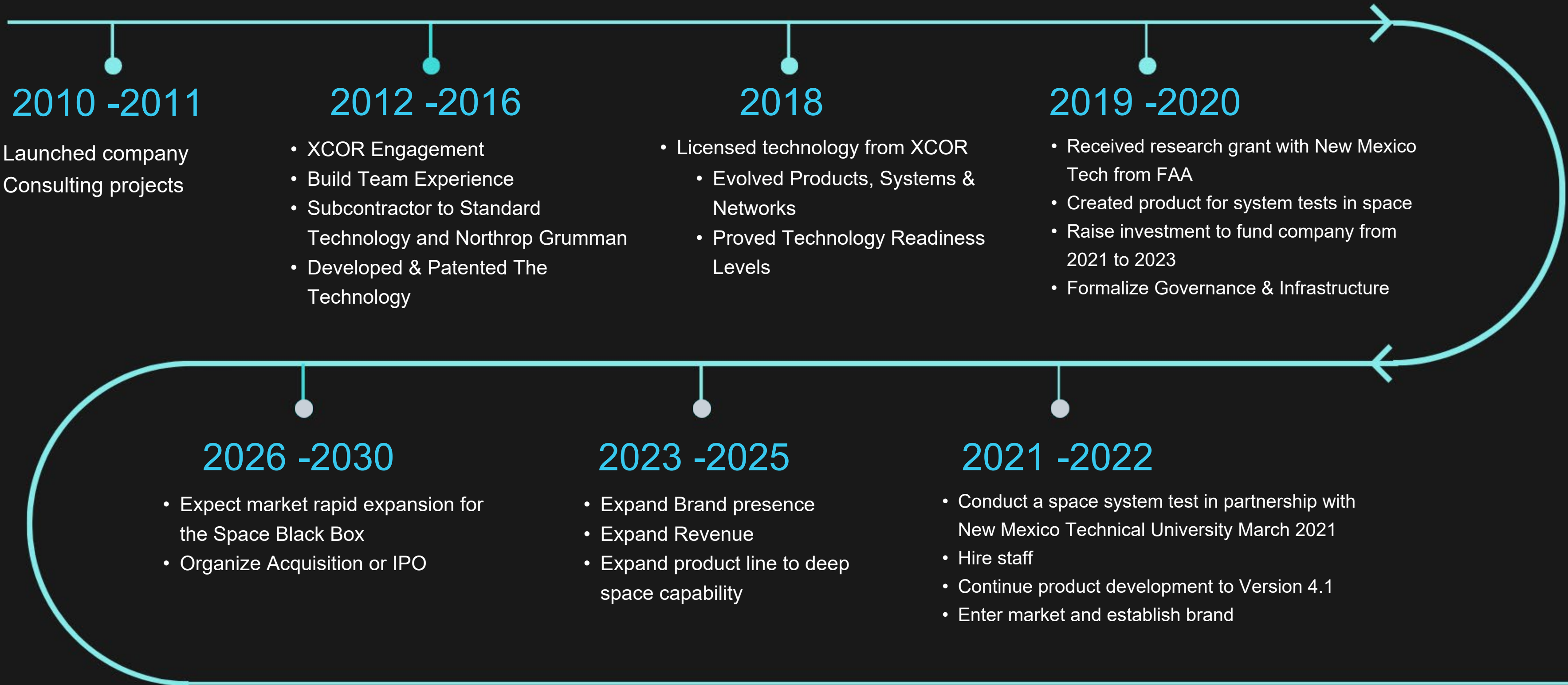
# Traction

- 1 In Mojave, XCOR conducted four years of tests on the 5K18 engine and the original system models of Immortal Data's Distributed Black Box.
- 2 Immortal Data's ShipsStore modules were baselined for the flight test black boxes on the Lynx Spaceplane.
- 3 Exos Aerospace and Immortal Data collaborated on an experimental ground control system.
- 4 Immortal Data consults with the Las Cruces Airport on spaceport related matters.
- 5 We are working with New Mexico Tech on an FAA/AST grant towards a 2021 Q1/Q2 suborbital flight test.
- 6 We have an excellent relationship with FAA/AST and many of the commercial space startup companies. Our team has been in New Space from the beginning.

# Immortal Data (A New Space Pioneer)

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- 2 Immortal Data's ShipsStore modules were baselined for the flight test black boxes on the Lynx Spaceplane. Immortal Data then patented the technology.
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# Immortal Data Timeline



## 2010 -2011

- Launched company
- Consulting projects

## 2012 -2016

- XCOR Engagement
- Build Team Experience
- Subcontractor to Standard Technology and Northrop Grumman
- Developed & Patented The Technology

## 2018

- Licensed technology from XCOR
  - Evolved Products, Systems & Networks
  - Proved Technology Readiness Levels

## 2019 -2020

- Received research grant with New Mexico Tech from FAA
- Created product for system tests in space
- Raise investment to fund company from 2021 to 2023
- Formalize Governance & Infrastructure

## 2026 -2030

- Expect market rapid expansion for the Space Black Box
- Organize Acquisition or IPO

## 2023 -2025

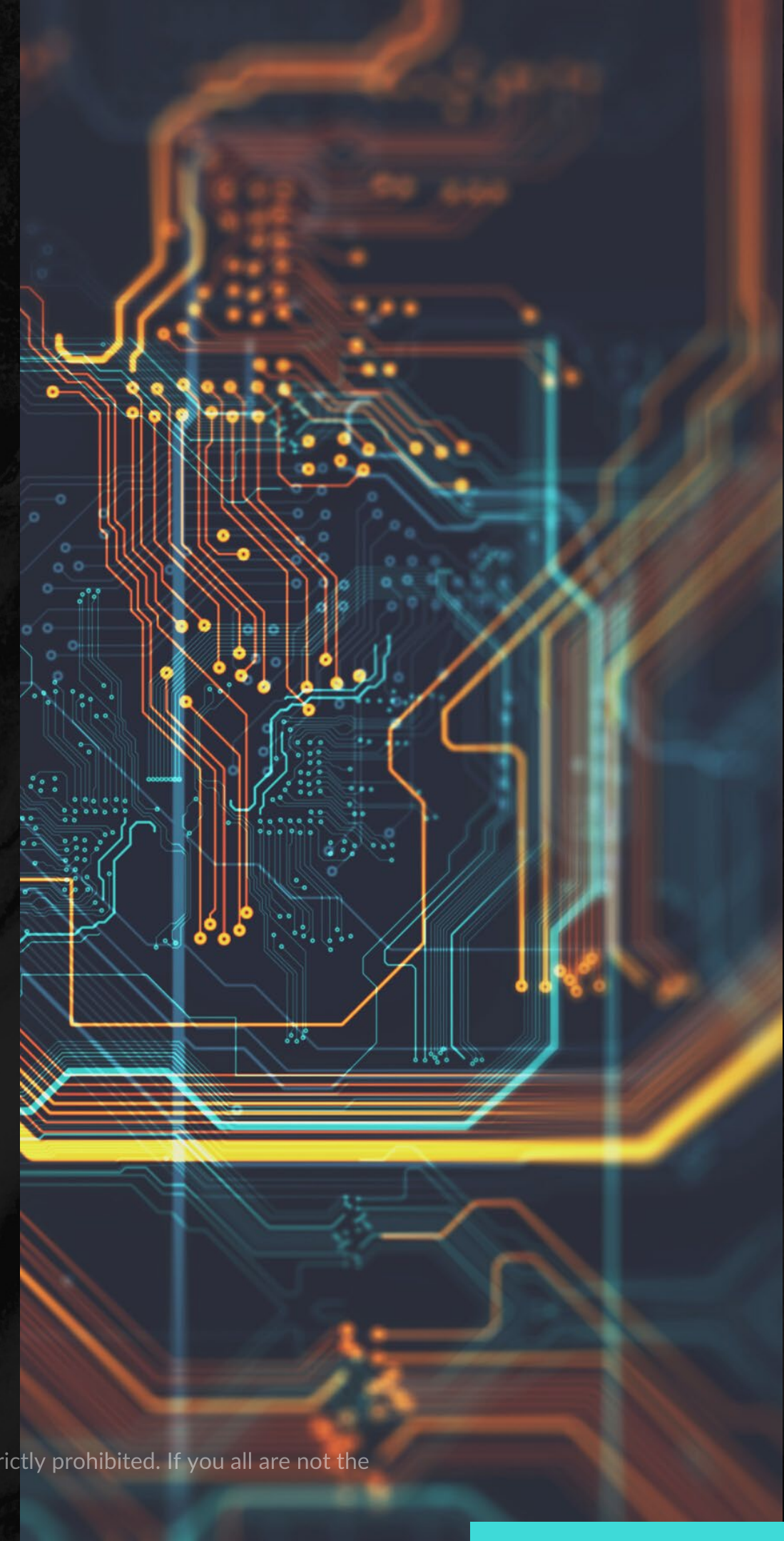
- Expand Brand presence
- Expand Revenue
- Expand product line to deep space capability

## 2021 -2022

- Conduct a space system test in partnership with New Mexico Technical University March 2021
- Hire staff
- Continue product development to Version 4.1
- Enter market and establish brand

# We are seeking

- To raise \$10 Million, possibly through multiple investments over time
- Selling common stock



## Corporate Management Team

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DALE M. AMON

President/ CEO

Member, Board of Directors

Senior Engineer at XCOR Aerospace responsible for the Lynx Spaceplane data systems, with a BSEE and graduate work with Nobel Laureate Dr. Herbert Simon at CMU.



SUNIL AHUJA

VP Operations/ COO

Member, Board of Directors

Brings 35 years of line management, consulting, and experience with a variety of firms, from startups to Fortune 500 companies, in multiple functions. He has a B. Tech in EE with an MBA from CMU.



ARLENE M. DODDS

VP Business Development/ CMO

Member, Board of Directors

Business development expert, responsible for securing strategic opportunities as large as \$2.5B. She holds an Active Top-Secret clearance and an Entry on Duty (DHS).



## Corporate Management Team

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DR. CLIFFORD A MARTIN  
Board of Directors, Chairman

Co-founder and Chief Laser Scientist at Taunton Technology Inc., where he invented novel laser detectors. He holds a Ph.D. in Physics from Pennsylvania State University.



JAMES C BENNETT  
Chief Regulatory Officer (CRO)

Currently a consultant on commercial space flight and applications. He is a Space Fellow of the Economic Policy Centre, London. He co-founded two private launch ventures, Starstruck, Inc., and American Rocket Company (AMROC).



WARREN "SCOTT" MASSEY  
Chief Security Officer (CSO)

Holds a Security Clearance and is certified to hold Clearances for corporate employees. Holds an MA in Computer Resources and Information Management from Webster University.



## Corporate Management Team

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JAMES A. WOLFF, ESQ.  
Chief Visionary Officer (CVO)

An experienced corporate attorney and entrepreneur with a portfolio of commercial space and technology companies, he received his undergraduate degree from Johns Hopkins University and his Juris Doctorate from New York Law School.

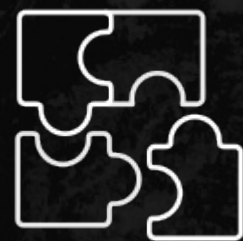


ANITA GALE  
Chief Technical Officer (CTO)

She has 40 years of experience with The Boeing Company on the Space Shuttle and Commercial Crew programs. She holds a BS and an MS in Aeronautics & Astronautics from the University of Washington.



# Why Us?



Complete set of skills, from space electronics engineering to business and marketing management and legal.



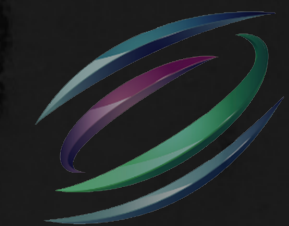
Strong, experienced management and engineering team that understands space challenges.



Over 30 years of experience with space data technologies, including leveraging former members of the XCOR electronics team who developed the original system designs and tested the fabricated modules.



Our team and their networks include senior executives and accomplished engineers in the space industry.

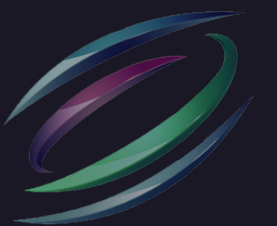






Let's accelerate our multiplanetary future, together.

**Immortal Data** is the first and only company to design reconfigurable distributed black-box modules, each the size of a cell phone, to communicate among one another and preserve and secure data including voice from the cockpit, vehicle mechanics, skin materials, and engine system health via mission-oriented sensors until rescue operators respond to the onboard GPS signal and complete rescue and recovery operations.



# Be part of the grand adventure.

*Contact :*

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PHONE NUMBER

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**IMMORTAL DATA**

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