FIBOS
Advanced Optical Measurements

Optical Sensors

A fundamental shift in collecting data

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Executive Summary

FIBOS
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We give customers the data they need but cannot currently collect

First Application: Gas Turbine Engines

- **$1B market opportunity**

SDTC Project with General Electric ($7.3M)

- **>40% market share (gas turbine engines)**

Technology licensing program

- **Customers ready to launch in 2019**

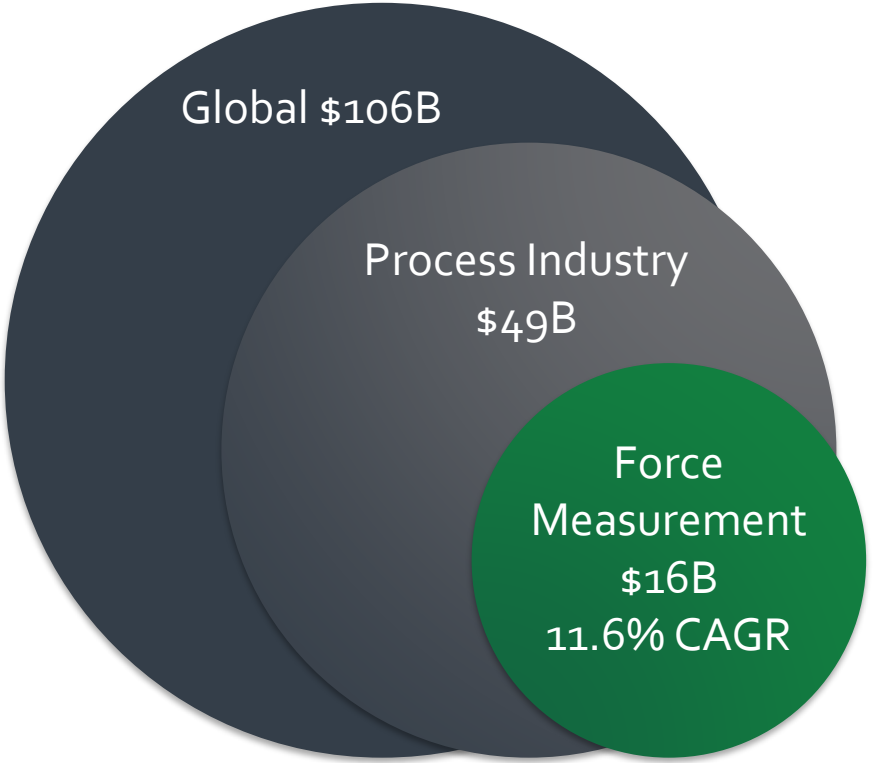
Global Annual Sensor Market

Our sensors will be used in **Force Measurement** applications, with a market size of

$16.37B

Measurements like:

- Temperature
- Pressure
- Vibration



Force measurement sensor market is large.

Today's market needs for data not met

	Electrical	Optical
Ultra-High Temperature (UHT)	✗	✓
Electro-Magnetic Radiation	✗	✓
Explosive Atmospheres	✗	✓

IP Protected

Fibos sensors can work where conventional technologies fail.

Develop the industry standard for optical sensors

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Foundational Technology Platform

Optical Gauge Amplifier (OGA) & Optical Gauge Sensor (OGS)

Products

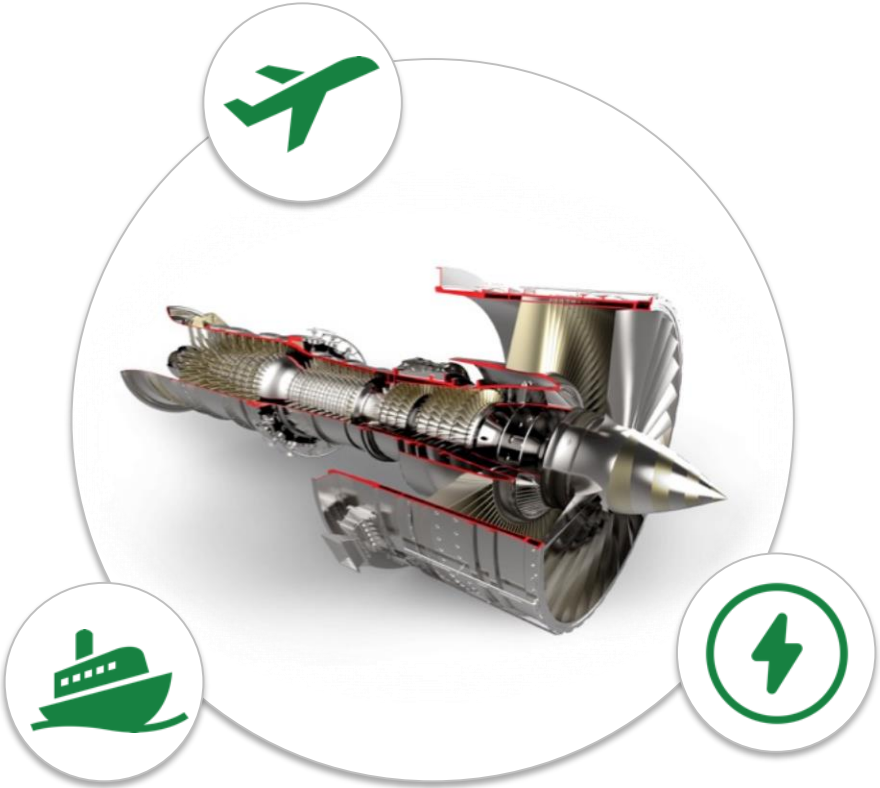
Industries

Aerospace | Automotive | Oil and Gas | Industrial

Core technology applicable across multiple industries.

Gas turbine engine key design initiatives

1. Lower Fuel Costs
2. Reduce Noise
3. Reduce Downtime



Fibos will help engine manufacturers achieve core goals.

What do the customers want?

Fuel Savings

$3.5M / Engine

GE estimates fuel savings through optimized engine control*

*Turbine Active Control, using dynamic combustion pressure measurements, enables a 1% reduction in fuel used.

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Solution?

Ultra-High Temperature Pressure Sensors

Fuel savings are enabled by combustion pressure measurements.

Fibos opportunity in gas turbine engines

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(brownfield)

RETROFIT 43,000 Operating Turbines (globally) * $20,000 Revenue/turbine = $860M total

(greenfield)

NEW PER YEAR 7,600 per year * $20,000 Revenue/turbine = $152M per year

Retrofit is bigger short term, new engines is long term. Growing market.

Success to date

Sustainable Development Technology Canada (SDTC) Project with GE

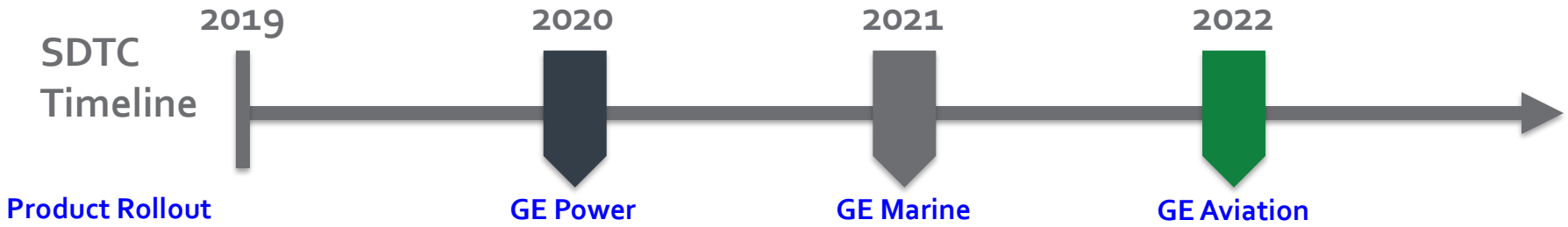
$7.3M project

1,000 hrs on-ground

50 hrs in-flight

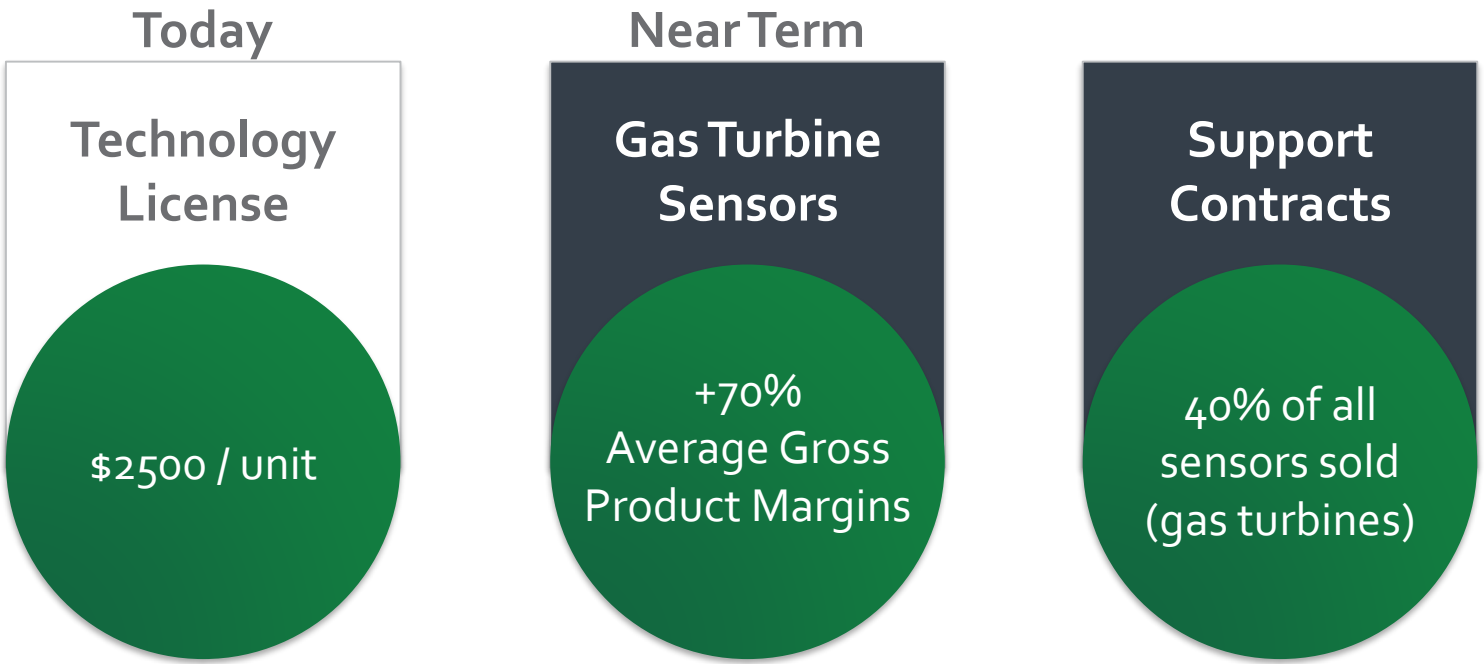
Ed Hoffman – Advanced Test Technology Leader at GE Aviation

"Fibos has a sensing technology that could offer value to our gas turbine engines, which is why we are supporting and contributing $2.9M CAD in-kind to demonstrate and evaluate the benefits of it."



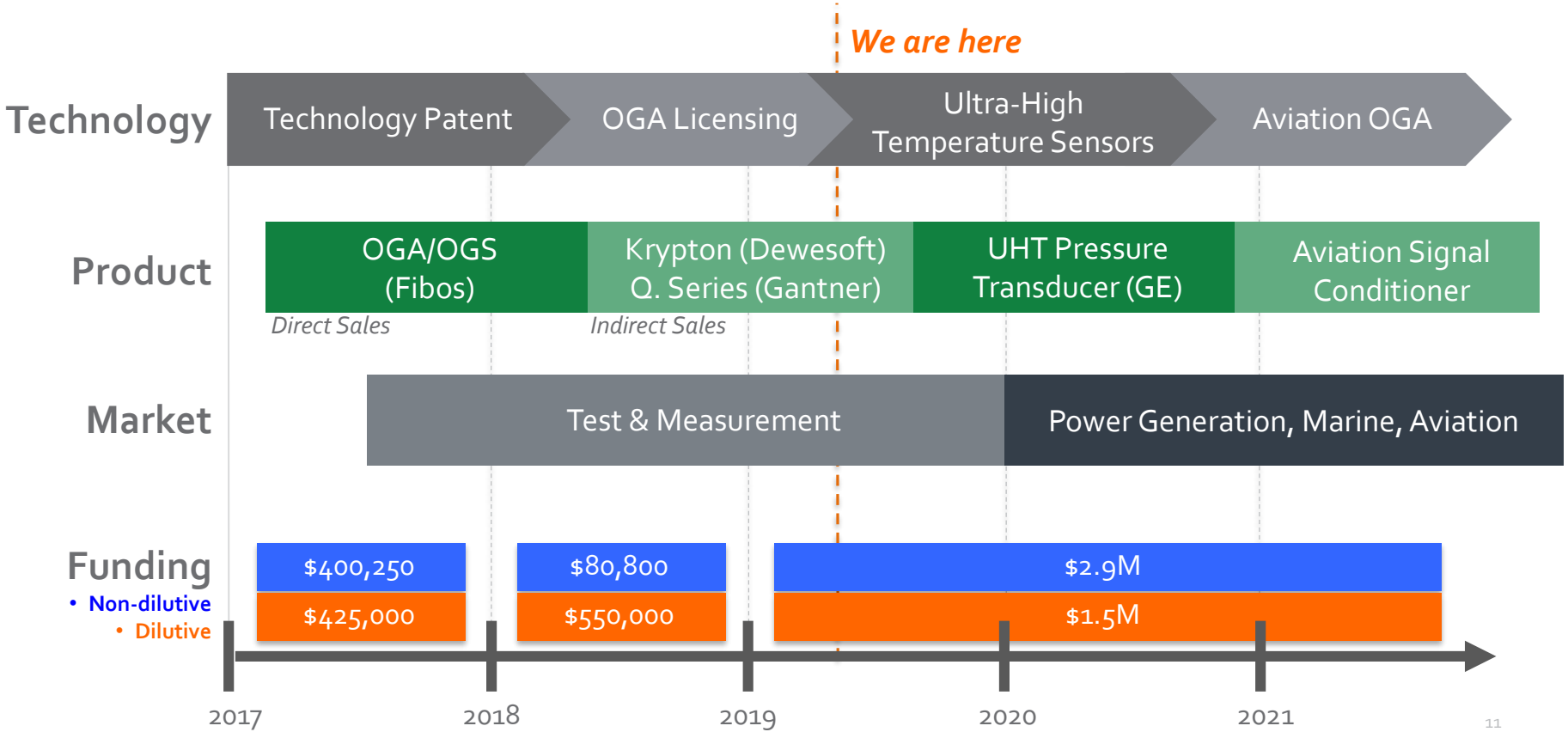
Fibos has undergone stringent due diligence via SDTC.

Immediate Revenue Streams

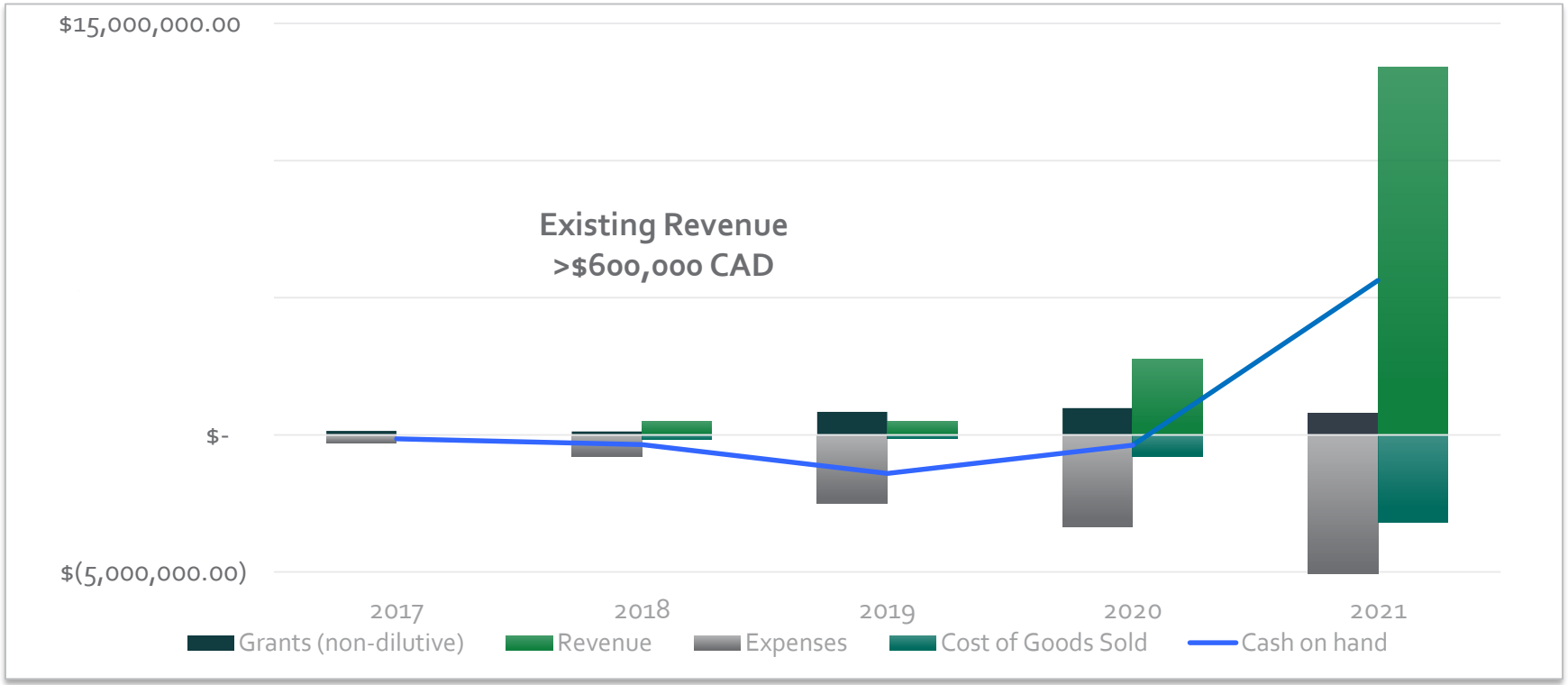


Sticky product. Our solution is **integral** within new products.

Fibos Journey



Growth forecast



Fibos will raise $1.5M CAD to accelerate licensing and high margin products.

Competition

	FIBOS	OXSENSIS	Honeywell
Technology	Optical	Optical	Electrical
Harsh Environments	✓	✓	✗
Performance	✓	✗	✓
Product Integration	✓	✗	✓
Solution Cost	$20,000	$20,000	$15,000

Fibos outperforms competitors in harsh environments.

Founding Team

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Nicholas Burgwin
(Founder & CEO)
Electrical/Optical Engineer

Jakub Brelski
(Hardware Lead)
Electrical Engineer

Michael Bakaic
(Founder & CTO)
Mechanical Engineer

Chanel Parris
(Software Lead)
Mechatronics Engineer

Awesome team.

Intellectual Property Summary

Official No.	Title	Patent Status	Country	Owner	Licensed by Fibos?
3008104	OPTICAL SENSOR HAVING PI-PHASE SHIFTED BRAGG GRATING AND OPTICAL SENSING SYSTEM USING SAME	Pending	Canada	Fibos	N/A
PCT/CA2018/050781	OPTICAL SENSOR HAVING PI-PHASE SHIFTED BRAGG GRATING AND OPTICAL SENSING SYSTEM USING SAME	Pending	Patent Cooperation Treaty	Fibos	N/A
15/935819 or US2018372566A1	OPTICAL SENSOR HAVING PI-PHASE SHIFTED BRAGG GRATING AND OPTICAL SENSING SYSTEM USING SAME	Pending, Public	United States	Fibos	N/A
62/525476	OPTICAL SENSOR HAVING PI-PHASE SHIFTED BRAGG GRATING AND OPTICAL SENSING SYSTEM USING SAME	Expired at end of life	United States	Fibos	N/A
62/689894	Phase-shifted fiber Bragg grating sensor and Method for Producing Same	Pending	United States	National Research Council of Canada	Seeking Exclusivity
	UHT Pressure Transducer	To be filed March 2019	United States, Canada	Fibos	N/A
6993221 and 7031571	Bragg Grating and Method of Producing a Bragg Grating Using an Ultrafast Laser	Issued	United States	National Research Council of Canada	Yes
2436499 and 2461368	Bragg Grating and Method of Producing a Bragg Grating Using an Ultrafast Laser	Issued	Canada	National Research Council of Canada	Yes
1460459 and 1462831	Bragg Grating and Method of Producing a Bragg Grating Using an Ultrafast Laser	Issued	United Kingdom, France, Germany	National Research Council of Canada	Yes
15/325,247	Forming an Optical Grating With an Apparatus Providing an Adjustable Interference Pattern	Pending	United States	National Research Council of Canada	Yes
2954734	Forming an Optical Grating With an Apparatus Providing an Adjustable Interference Pattern	Pending	Canada	National Research Council of Canada	Yes
15818425.9	Forming an Optical Grating With an Apparatus Providing an Adjustable Interference Pattern	Pending	Europe	National Research Council of Canada	Yes
2015800375518	Forming an Optical Grating With an Apparatus Providing an Adjustable Interference Pattern	Pending	China	National Research Council of Canada	Yes

Join us on our journey

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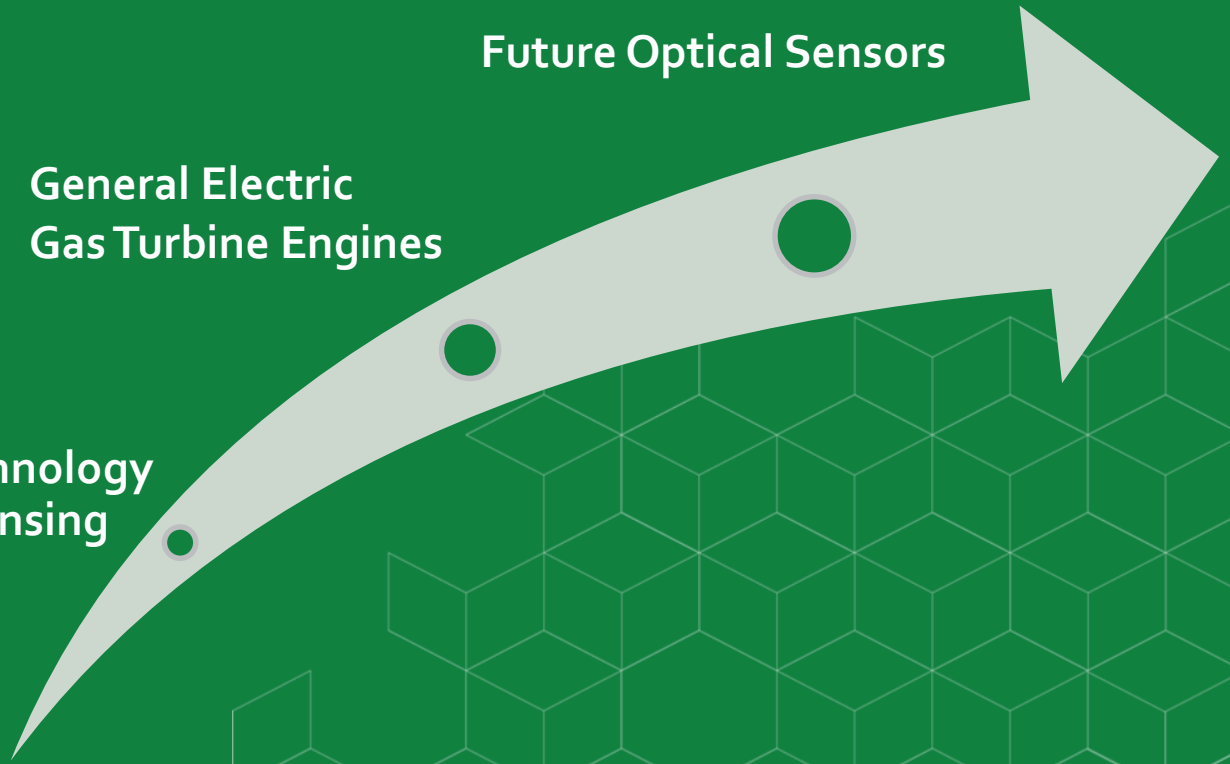

Raising now a total of $1.5M CAD.

Thank you!

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