

GERMAN-CANADIAN CENTRE FOR INNOVATION AND RESEARCH

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COMPANY PROFILES

Matchmaking Mission | November 2018 | Germany, Spain, the Czech Republic and the UK

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GEOSPATIAL TECHNOLOGY

Baseband Technologies Inc.

Company representative: Francis Yuen

Technology: GPS receiver technologies

Location: Calgary, Alberta, Canada

Website: www.basebandtech.com



COMPANY

We are the leading software-based low power GPS receiver research house. Our team consists of a team of highly qualified professionals that have decades of experience in the GPS space. While our core strength has traditionally been in advanced GPS algorithmic research and development, we are currently working to combine blockchain and GPS technologies for the next generation location-based applications.

Our customers are internationally-known consumer/industrial device and component manufacturers. Using our receiver technologies, location-based products can obtain rapid GPS position fixes using extremely low power. Our ultra low power technology is ideally suited for Wearables and Internet of Things (IoT) products that find standard GPS chipsets too power hungry.

INNOVATION/TECHNOLOGY

Our Ultra Low-Power GPS receiver technology adds geolocation function to small battery operated devices without impacting the battery life. Compared to standard GPS chipsets, our receiver consumes a fraction of the energy. We do this by utilizing two in-house developed patents to: (i) capture a position using as little as 2 milliseconds and (ii) predict satellite orbits using an advanced 28 Day Extended Ephemeris algorithm.

In terms of product life cycle, our current ultra low power GPS technology is in the Technology Demonstration stage where we have already attracted two well-known chip manufacturers and a few consumer/industrial electronics manufacturers to integrate our receiver into their products. We anticipate a worldwide product launch from one of these companies within the next 3 months and production will begin in Q2-2019.

Our next push is to add blockchain features to our ultra low power GPS technology to solve a critical location-based problem that can be used for multiple market segments.

MATCHMAKING OBJECTIVES

Despite the price of Bitcoin fell from its all-time high of ~\$20,000 to ~\$6,000 in August 2018, more money was raised through ICOs (Initial Coin Offering) in the first 6 months of 2018 than 2013-2017 combined. As of June 2018, an estimated \$6bn worth of ICOs has been raised.

As more countries are abandoning the 'wait and see' approach to ICO regulation and adopting pro-active policies, the USA is still in hot debates with some pushing for a more balanced approach while others pushing for classifying ICOs as securities.

Unlike the USA, European countries such as Switzerland have attracted many ICOs due to its favorable investor environment, clear financial regulations and a general friendliness toward cryptocurrencies. Furthermore, the current ICO funding boom is fueled by high liquidity, an economic recovery, and being a technological and financial innovation hot spot. Switzerland, Germany and Austria have seen billions of dollars' worth of ICO funding as a result.

In terms of the number of ICOs, EU comes first followed by North America then Asia. Although the EU does not have a unified regulation for token sales mechanism, it has been the most liberal and therefore 'ICO friendlier' region.

Our company has decades of experience in advance GPS research and development. We have created a cutting-edge concept using the latest technological achievements and proprietary GPS techniques that operates at the intersection of Internet of Things and blockchain. To realize our vision, we are looking for multiple partners to spearhead the development of an elegant blockchain architecture and then integrating our technology into different use cases. Our ultimate goal is to offer token sales in the form of an ICO in the near future which will likely be held in the EU due to its friendlier regulations. In particular, we are looking for multiple partners to participate in the following areas:

(1) Blockchain developers

- Blockchain architectural design
- Logistics & supply chain
- Personal identity
- Asset tracking
- Geolocation games

(2) MCU (microcontroller) manufacturers

- IoT (Internet of Things)
- Wearables
- Asset tracking

While we are interested in applying for the Alberta-Europe Technology Collaboration Fund to support the abovementioned location-based concept, due to the proprietary nature of our concept, we are not at liberty to disclose it in a public forum. Instead, we would be delighted to discuss our concept in a confidential manner.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

As a potential partner:

- You are a great software architect with a strong technical background in blockchain technologies. Your management and organizational skills translate ambitious problems and stakeholder requirements into a coherent and innovative technical concept supported by proof of concept code and followed by large-scale implementations. Your technical insight as well as entrepreneurial drive will help build the team to develop dAPPs, open source software, APIs and SKDs in a fast-paced environment.
- You constantly identify and evaluate emerging blockchain technologies, your role will be crucial to refine the team's blockchain strategy going forward.
- You should be motivated to solve a critical location-based problem that is massive and knowing full well that the reward for doing so is to become a global player to serve a trillion dollar market.
- You should be intellectually curious and be able to learn quickly to integrate multi-disciplinary fields. You know that working on cutting edge problems in a new field means constantly learning, staying fresh, and collecting insights and ideas from many different sources.
- You should be motivated not just by building status quo software, but by discovering new ideas and pushing the state of the art forward.
- You possess professional demeanor, excellent work ethic and outstanding communication skills to articulate complex ideas that could impact performance, security, or scalability in the future.
- You will lead and/or participate within a distributed team that spans across the globe in multiple time zones and cultures via video or online tools.

- You have a strong sense of ownership and passion to build quality products for massive scale in a collaborative and agile environment. Your strong desire to cultivate a developer culture that is transparent, supportive, and focused on delivery encourages a productive, healthy, happy and stimulated team.
- Your role as one of the technical evangelists will give occasional talks and/or writing articles to attract wider community interest as part of our ICO strategy.

YOU MUST HAVE:

- A deep understanding of ledgers, consensus methods, public/side/private blockchains and cryptocurrencies in general.
- Strong understanding of algorithms, data structures, cryptography and data security, and decentralized technologies.
- A deep understanding of cryptography principles of blockchain technologies, symmetric/asymmetric, public/private (PKI), hash functions and encryption/signatures etc..
- Built and released distributed applications on the Bitcoin, EOS, Ethereum or Hyperledger blockchain with a focus on scalability, maintainability, security and high performance.
- Designed, developed or supported decentralized, blockchain and cryptographic software solutions to connect the blockchain with the physical world.
- Hands-on experience in creating blockchain frameworks and business applications, including dApps, smart contracts and custom tokens.
- Deep understanding of mainstream consensus algorithm such as PoW, PoR, PoS, DPoS, PBFT, Paxos, Raft, smart contracts etc..
- Worked with development teams to ensure reliable transfer of technology.

NICE TO HAVE:

- Game theory, Artificial Intelligence & Machine Learning, theoretical computer science, security background.
- Hands-on experience with distributed storage such as IPFS, RDBMS and NoSQL etc..
- Experience with defining or evaluating token economic, ICO and airdrop models.
- Deployed product on cloud-base infrastructure, provided assistance to create test and deployment plans, product improvement and other project direction.
- Managed or maintained blockchain/cloud infrastructure.
- Strong coding skills with multiple computer languages including C, C++, JAVA, Python, Go and Solidity etc..
- Previous work contributing to open source blockchain projects.
- Experience working within a technology start up environment.
- UI & UX design.

BOREAL Laser Inc.

Company representative: John Tulip

Technology: Clean Technology, Laser Technology

Location: Edmonton, Alberta, Canada

Website: <http://www.boreal-laser.com/>



COMPANY

History: Boreal Laser was founded as a defense contractor in the early 1990's. The company has manufactured and sold trace gas sensors for industrial and environmental applications since 2000.

Products: Boreal Laser provides laser gas detection solutions for environmental, process monitoring, and safety applications. The company's systems monitor optical absorption of trace gases present in the laser beam and use this absorption to determine the concentration of these gases. One application of Boreal Laser systems is Greenhouse and atmospheric fugitive emission measurements. Laser systems are combined with beam scanners and stationed downwind of emitting sources such as leaky gas processing facilities or agricultural sites. Another application is line-of-sight safety perimeter monitoring of toxic and explosive facilities within refineries, chemical plants, and petrochemical processing facilities. Boreal Laser systems are used for in-situ cross-duct and extractive monitoring of atmospheric emissions and process gas streams. Boreal Laser manufactures mobile gas sensors for use on UAVs, helicopters and ground vehicles for applications such as pipeline leak detection. The company exports most of its production and has currently sold gas sensing systems to 49 countries.

INNOVATION/TECHNOLOGY

Boreal Laser is currently developing mid-infrared laser trace gas sensing systems. These sensors enable non-contact sensitive detection of gaseous pollutants such as Acrolein. Boreal Laser is also developing miniature technology for mobile and point gas sensing applications.

MATCHMAKING OBJECTIVES

Our objective is to find a partner interested in collaborating with Boreal Laser to develop the following gas sensing applications.

1. Monitoring stack and duct emissions, e.g. for the ceramics industry
2. Safety perimeter monitoring, e.g. for H₂S emissions
3. Measuring greenhouse gas emissions
4. UAV gas sensing
5. Mid-infrared gas sensing

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

We would prefer a partner interested in either industrial gas sensing or atmospheric monitoring.

MRF Geosystems

Company representative: Jing Wang

Technology: Geospatial Information Technology, Online Maps, Indoor Positioning

Location: Calgary, Alberta, Canada

Website: www.mrf.com



COMPANY

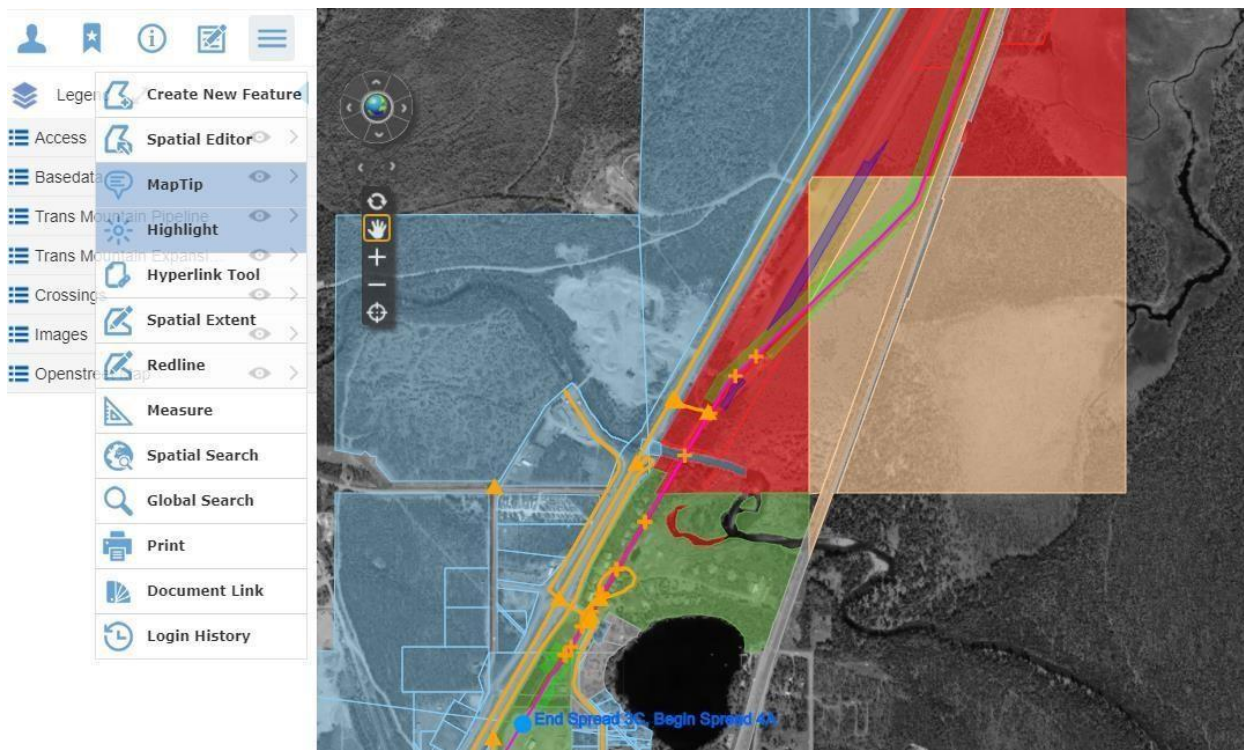
MRF is a professional GIS firm that specializes in enterprise GIS solutions, GIS software development, GIS data conversion, and GIS consulting services.

MRF has been in operation since 1992, with its office based in Calgary, Alberta, Canada. MRF has developed a series of GIS/Mapping software products which include Mobile Apps, WebGIS servers and Cloud-Based Web Map. MRF has also developed many custom software products for our clients using our proprietary software components and/or other third-party software products. MRF has a very strong management team with an average professional

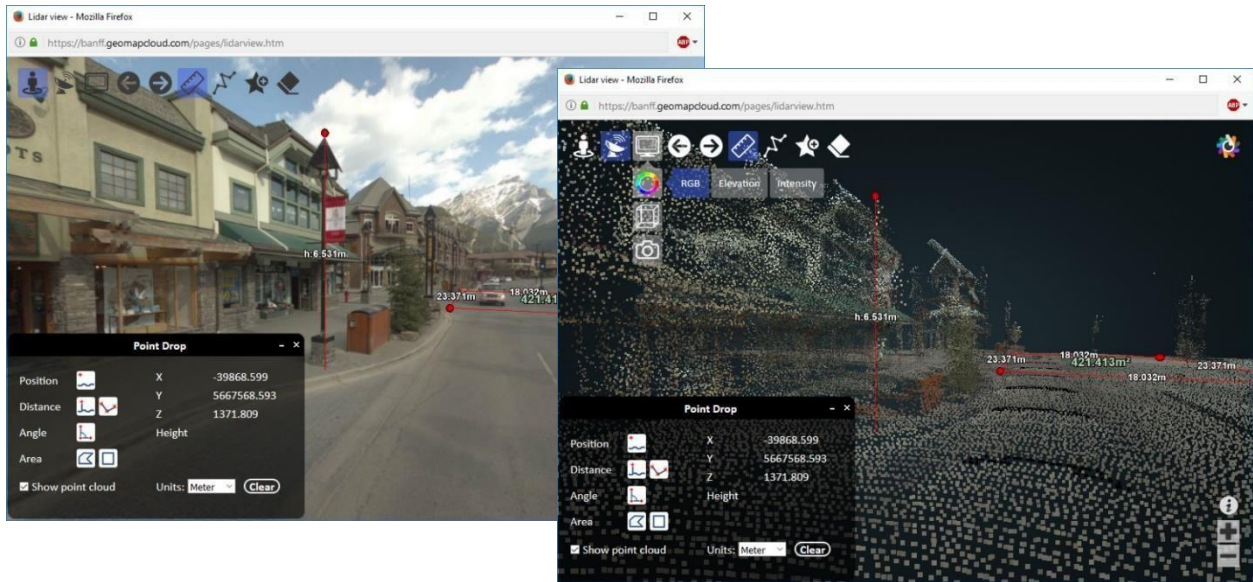
experience of 15 years. MRF's client bases include North America, Europe, and Asia. Our products provide industry-leading performance and functionality and have been licensed to more than 6,000 users in over 40 countries.

MRF has developed and successfully commercialized 8 GIS software products. Some of the MRF GIS products have been OEMed by large GIS vendors such as Intergraph Corporation and Safe Software Inc. Due to its technology leadership, MRF received the ASTech Award for Outstanding Commercial Achievement in 2013, was recognized as a TechRev Innovator in 2014 and was inducted into the Tecterra Hall of Fame in 2016 for the MRF HTML5 Map Server product.

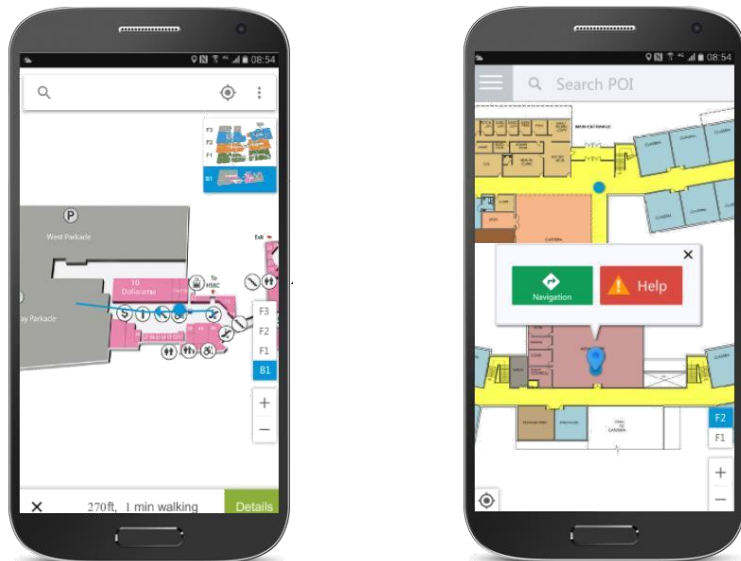
INNOVATION/TECHNOLOGY



MRF Web Map - Cloud WebGIS platform with extensions and mobile GIS client – in production. This technology allows enterprises which require a high degree of collaboration between team members. The MRF Mobile GIS is able to offer online/offline access to GIS data. MRF Mobile GIS and MRF Web can be synchronized on an as-needed basis to keep the entire team on the same page. This solution has been used for a major oil pipeline expansion project in Canada. It has also been used by many municipalities and engineering companies.



MRF StreetView – LiDAR + 360 degree image online viewer – in production. MRF has many urban customers using this solution to support GIS data capture, planning, and fire response.



MRF Indoor Map – Indoor map platform with the ability to support different indoor position technologies – prototype development. MRF has implemented this solution at a museum in Calgary.

MRF Indoor Augmented Reality – Visual Identification based indoor positioning – proof of concept.

MATCHMAKING OBJECTIVES

To find out the latest state of the EU Geo-spatial industry;

To build connections with EU Geo-spatial companies;

To find qualified partners in EU Geo-spatial industry;

To engage with potential partners;

To use MRF's Geo-spatial industry knowledge and platform to help customers in EU.

This will help MRF better position itself in the Global Geo-spatial industry; speed up MRF R&D and innovation projects.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

Looking for European companies with the technologies in geospatial or related areas:

- Advanced high speed HTML5 vector map engine to support high concurrent connections;
- High volume and low latency LoRaWAN based indoor positioning technology to support personnel tracking and asset tracking;
- Vision identification based indoor positioning engine;
- Indoor Augmented Reality software engine/hardware;
- Large-Scale outdoor scenes LiDAR rendering and modeling in Web Browsers;
- High resolution 360 degree video real time streaming solutions;

VisGrid Inc.

Company representative: Greg Angevine

Technology: Real Estate & Infrastructure Data Visualization

Location: Calgary, Alberta, Canada

Website: <http://www.visgrid.com/>

COMPANY

VisGrid leverages open source 3D mapping software and recent advances in reality mesh technologies to visualize data in context to real property and infrastructure. In partnership with industry participants such as brokers and owners, VisGrid develops applications that articulate real estate market changes, new development and related infrastructure activities. VisGrid's activities are primarily focused on dense urban areas in North America.

INNOVATION/TECHNOLOGY

Advances in web-based virtual globe software such as Google Earth over the past decade have allowed for the development of applications that can vividly articulate 3D buildings and related property data. The cost of highquality aerial-based lenses has decreased in recent years which enables high quality terrain processing and the creation of reality mesh content using traditional photogrammetry techniques and distributed computing.

VisGrid combines these tech advances into tailored solutions for real estate industry participants who have a keen interest in understanding market data and want high quality 3D textured buildings. Imagine Google Earth customized for the real estate and infrastructure industries.

MATCHMAKING OBJECTIVES

VisGrid is seeking connections with large property owners, managers and brokerage firms across Europe who are already looking to innovate with their existing mapping and property analytics initiatives. It is important that we find firms that already manage high quality datasets and can interact with data-driven visualization technologies in a sophisticated manner. This requires existing databases, business workflows that maintain datasets with orthodox business rules and business users who are seeking to differentiate themselves from the competition.

High quality 3D data visualization of the varied assortment of key real estate industry parameters is also resource intensive and requires finding partner willing to commit the time, effort and energy to producing effective solutions.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

- Large commercial property managers, owners and developers -Finance firms in the CRE space
- Real estate data companies
- Real estate marketing companies (ImmobilienScout)
- Commercial / residential real estate brokerages

ZeroKey Inc.

Company representative: Matthew Lowe and TBD

Technology: ICT (AR/VR solutions)

Location: Calgary, Alberta, Canada

Website: <http://zerokey.com/>



COMPANY

ZeroKey bridges the gap between the digital world and the real world, enabling AR/VR solutions for everyday use cases. We have developed a breakthrough and patented technology that enables very high accuracy (1mm) and lowcost spatial position tracking for virtual reality (VR) and augmented reality (AR) applications. We are commercializing this technology as a turn-key solution for mobile AR/VR products. This exciting gateway technology is a major breakthrough that opens the door for a whole ecosystem of innovative products and secondary technologies not possible before!

In addition to a full complement of in-house rapid prototyping capabilities, ZeroKey comprises top-experts in the field of Geomatics and electronics design. Leveraging this R&D capability, we have designed, built, manufactured and sold into market, an industry-leading positioning technology which is driving solutions for some of the world's largest tech companies. These tech giants turn to ZeroKey for our expertise and innovative technology despite having their own internal teams that operate with budgets several orders of magnitude larger.

INNOVATION/TECHNOLOGY

For augmented reality and virtual reality to work you need digital information about where physical objects are located in 3D space. Most mobile VR products in the market today, such as the Samsung GearVR, only track the orientation of the user's head. In other words, the user can look around the virtual environment by turning their head but cannot walk, touch, or pickup objects naturally as they do in the real world. Our patented Big Room technology provides this missing "walk, touch, and interact" capability.

Big Room technology offers a generalized positioning solution for everyday scenarios. Whether you're shopping at a store, travelling at the airport, or working on a project around the house, ZeroKey can provide high accuracy positioning to enable AR/VR solutions in these challenging environments.

The primary innovation offered by Big Room technology is the size and portability of its tracking sensors. Current competing systems require fixed base stations and large tracked sensors over 11cm in diameter. ZeroKey delivers the ultimate in portability with sensors at a fraction of the size (2.5cm and below). This capability opens the door for countless products, use cases and applications that are simply not possible with incumbent technology, such as tracked wearables, IoT devices, personnel trackers, asset trackers, etc.

Big Room's ability to expand the indoor coverage of a system to extremely large areas is a major competitive edge. This is as simple as adding more sensors, which is akin to adding more "GPS satellites" in the sky. Today's incumbent technologies have great difficulty in achieving the same functionality and are currently limited to room sizes of less

than 3.5m x 3.5m. While such rooms may be suitable for home entertainment, other applications such as arcades, commercial workspaces, training facilities, etc. require much larger areas. This is a significant gap in the state-of-the-art that Big Room can handily address.

MATCHMAKING OBJECTIVES

We want to accomplish strategic partnerships with companies in three areas:

1. Building AR/VR content with support for our hardware platform -- including content for training, productivity & entertainment applications.
2. Deployment of our AR/VR tech in unique and challenging applications, such as automation, manufacturing, and supply chain logistics.
3. Integration of our fundamental technology with accessory AR/VR devices.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

We prefer to work with companies that have established market positions with differentiated technology. Ideal partners include ICT hardware companies and AR/VR content companies.

HEALTH & BIOTECHNOLOGY

Innovative Trauma Care

Company representative: Dr. Ian Atkinson

Technology: Health

Location: Edmonton, Alberta, Canada

Website: <https://www.innovativetraumacare.com/>



COMPANY

iTraumaCare is an Edmonton-based medical device company focused on hemorrhage control and point of injury solutions to treat trauma victims. iTraumaCare's first product is the iTClamp®, a temporary wound clamping device to control bleeding within seconds of a traumatic injury. It controls bleeding by sealing the skin, to create a temporary pool of blood under pressure and secure the wound until surgical repair can be executed. It addresses needs identified by front-line users for point-of-injury hemorrhage control - The device is portable, lightweight, intuitive, and can be rapidly applied in the pre-hospital in high stress situations. The product currently has clearance from Health Canada CMDCAS, the US FDA, EU CE marking, and TGA (Australian) clearance. 3 Patents in national phase are under review for the wound clamp. To date, only a limited amount of clinical data (280 cases published) are available to support the use of the iTClamp®. This is complicated by the fact that randomized control trials are unethical in trauma.

To demonstrate strong technological advantage and health benefit in trauma, iTraumaCare needs to develop a new product class to solidify its position as a world leader in trauma, not only a single product company.

INNOVATION/TECHNOLOGY

As an alternative to hemostatic bandages, iTraumaCare is developing a medical hemostatic glove adapted to tightly conform over a donned medical barrier glove. The External Hemostatic Gloves for Hemorrhage Control (or Hemostatic Glove) device is designed for use in a field (or surgical) environment that provides a means to combine the advantages of applying a hemostatic dressing with the simplicity of applying traditional manual pressure via a gloved hand. The Hemostatic Glove would be a fabric glove or finger cot, the fibres of which would be impregnated with adsorbed hemostatic agents. The hemostatic agents accelerate clotting and staunch bleeding to a wound to

reduce blood loss concurrent with manual pressure. Beyond simple gauze gloves, these gloves actively accelerate clotting.

Several hemostatic dressings have been developed that accelerate the production of a stable clot through chemistry, affecting the clotting cascade. Hemostatic dressings have their disadvantages:

- Slow to Unroll and Apply: It takes significant time and skill to administer, and are cumbersome in rolls or z-folds. It is difficult to unroll and pack the wound while maintaining constant manual pressure directly on the vessel.
- Flexibility: Certain bandages can be difficult to press into small wound tracts without crumbling or breaking, losing their structural integrity.

Primary design objectives of the Hemostatic Glove:

- Rapid application – Can be applied to the wound in only a few seconds.
- Targeted – Places the hemostatic agent where the hands/digits are providing pressure, making pressure more effective with minimal diffusion of pressure caused by multiple layers of bandage.
- Effective - For management of difficult to control bleeding, external/internal to the skin – Compact, light, and durable - small cube of light materials.
- Easy to use under stress - No fine motor skills required while donning a glove or placing digital pressure to the wound site.
- Minimal training – Donning a second glove is simple. Applying pressure with the glove is a repeat of the same actions trained/used to apply digital pressure to the wound.

Caregivers apply the External Hemostatic Glove based on woven or non-woven gloves with adsorbed hemostatic agent. For smaller wounds, finger cots are used onto a single finger to provide targeted digital pressure to a small wound; For larger wounds, gloves are used to provide targeted digital pressure through multiple fingers, the palm, and the back of the hand (opisthenar surface).

Maturity: TRL 4

MATCHMAKING OBJECTIVES

Partners are of interest in the following areas:

1. To enable the hemostasis function of the glove, a protected hemostatic agent is required. Being that the IP and regulatory burden for hemostatic agents is quite involved, it would be of interest for iTraumaCare to have a partner that has previously worked with, has regulatory clearance with and has IP associated with one or more hemostatic agents.
2. As a complement to the hemostasis function of the glove material, additional pharmacologically and biologically active agents could be adsorbed to the glove, including but not limited to, antifibrinolytics, styptics, antibacterial agents, antimicrobial agents, analgesic and anesthetic agents for treatment. A company that has an interest with, regulatory clearance with and IP protection of such areas would be of interest. Additional regulatory clearance would be required for the different formulations with different indications for use, so partners with regulatory cleared chemistry would be preferred. As a product class, these combination products could lead to multiple and varied products for sale.
3. To create a hemostatic glove, raw materials manufactures will be required. Manufacturers with IP in development for unique manufacturing of hemostatic fibers, acting like a tightly conforming hemostatic bandage, the actions of the surgeon's, physician's, warfighter's or medic's hands and fingers applying manual pressure will also accelerate hemostasis chemically. Material manufacturers for hemostatic gloves can be used similar to most of the current source materials for hemostatic bandages such as packing into wounds for contact hemostasis, wherein the glove can be removed from the caregiver's hands and temporarily inserted into the wound to temporize blood loss.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

Goal: A treated matrix could be used as a cloth and/or glove that accelerates hemostasis and repels clot binding. Companies with early prototypes of a relevant product developed prior to our discussions would be of interest. Our data is available for review under MNDAA ahead of the face-to-face meeting.

1. Being that predicate hemostatic dressings exist, it is expected that partners with regulatory clearance (or in process) for a hemostatic chemistry, and technology that can safely accelerate blood clotting with plant fibres, would be of interest. Capabilities for surface modification of plant fibres that also retains biodegradation capability would also be of interest.
2. Interest in particular pharmacologically and chemically active agents both related / not related to hemostasis are of interest - both adsorbed or dried on to the glove material(s). Companies with regulatory clearance for an, styptic, antibacterial agent, antimicrobial agent, analgesic and anesthetic agent would be of interest as well.
3. Interest in innovative types of textile fibres, surface modification of plant fibres that can safely create a superhydrophobic surface coating, thickness of interwoven and non-woven layers, etc. may also be worth discussing.

48Hour Discovery

Company representative: Craig Milne and Samantha Kwok

Technology: Biotechnology

Location: Edmonton, Alberta, Canada

Website: <http://48hourdiscovery.com>



COMPANY

48Hour Discovery INC (48HD) is a spin-off company from the University of Alberta founded by Prof. Ratmir Derda. Since starting in February 2017, we have recruited 6 full time employees, secured \$300,000 in non-dilutive funding and generated \$150,000 in revenue to date with an additional, approximately, \$300,000 for completion of all milestones in executed agreements. Our management team includes:

- **Prof. Ratmir Derda** (Founder and CEO): Ratmir is an Associate Professor of Chemistry at the University of Alberta; he is the author of over 45 peer-reviewed publications and is the inventor on 10 patent applications (three issued patents). He is an advisory board member of Organic and Biomolecular Chemistry journal, and recipient of several awards including the David Gin New Investigator Award from the American Chemical Society (2017), Martha Cook Piper Research Prize from the University of Alberta (2017) and Rising Star in Chemical Biology award from International Chemical Biology Society (2015).
- **Craig Milne** (Business Development): Craig is a serial entrepreneur who co-founded or lead a number of companies over the past 10 years. Through his roles in consulting and banking, Craig has helped close to 100 companies develop strategies for success. He is highly creative, data-driven and tenacious. Craig has an MBA in Finance from the University of Alberta and a Ph.D. in Immunology from the University of Toronto.
- **Samantha Kwok** (Operations): Samantha completed her BSc with Honours from the University of Waterloo and MSc in Chemistry at the University of Alberta. Samantha joined the Derda Research Group in January 2017 as a research and administrative assistant, where she spearheaded the technology translation from Derda lab to 48Hour Discovery Inc. She formally joined 48HD in December 2017 and is the recipient of a Commercialization Associates Grant from Alberta Innovates to support her commercialization efforts.

We have established an advisory board to guide the company with industry veterans:

- Curtis Sprouse, CEO of Eureka Connect LLC

- John Dwyer, Director, Protein Engineering, Ferring Pharmaceutical
- Richard Gabriel, COO and President of GLG Pharma LLC

At 48Hour Discovery INC (48HD), we enable accelerated drug discovery using massively high-throughput screens. 48HD provides services in ligand discovery for research networks, academics and the pharmaceutical industry using a patented ligand discovery process licensed exclusively to 48HD. Our first product provides the chemical structures of ligands for purified protein targets, a list of 50–100 confident leads, within a few days of the receipt of the target by the company. Our product development includes molecular discovery platform for cell-based screening and high value targets (e.g., GPCR), developing an accessible form of our discovery platform as a "kit", and empowering the next generation culture and screening of personalized cancer therapeutics [1]. Our mission is to fill the world with reliable molecular information to enable new product development in diverse industries.

1. News Article: [Precision Therapeutics Subsidiary, TumorGenesis, Announces License Agreement with 48Hour Discovery](#)

INNOVATION/TECHNOLOGY

Our molecular discovery platform permits us to streamline the traditional method for ligand identification by making it possible to simultaneously assess the drug-ability of the target and performing high-throughput screening of a large compound library. At 48Hour Discovery Inc., we combine: i) the synthesis of new genetically encoded chemical entities; chemically modified and value-added libraries of peptide molecules ii) patented technologies for genetic encoding of these structures and iii) bioinformatics expertise for rapid mining of these libraries. Genetic encoding permits us to barcode and thereby identify each molecule. At the preliminary level, this technology permits us to perform the high-throughput screening in one assay vessel. In contrast, the canonical method to test 100 compounds would require 100 different reaction or assay vessels. Additionally, by having libraries of greater than 10⁹ diverse molecules combined in one vessel the drug-ability of the target is tested simultaneously. Our core service is screening with a single simple or complex protein. This innovation is a TRL 9: the technology is in its final form and under commercial revenue generating conditions. We are using the innovation under operational conditions and constantly optimizing the technology under these conditions.

The long-term vision of 48HD is to develop enabling technologies for increasing demands in molecular discovery. The different phases of product development are as follows:

- Phase 1: "Discovery Kit" with matching cloud Deep-data Analysis platform (this product is under development as part of the executed agreement with Precision Therapeutics Inc. (NASDAQ:AIPT) and TumorGenesis): TRL 6
- Phase 2: Customized macrocyclic or pharmacophore screening: (pricing strategy to be determined; ongoing partnership discussion with undisclosed biotechnology company): TRL 7
- Phase 3: Cell-based target, GPCRs (pricing strategy to be determined; one contract secured to date): TRL 6
- Phase 4: Platform Technology: licensing of the technology for exclusive or non-exclusive use as an internal discovery tool in major pharmaceutical company: TRL 3. An example of a licensing deal with a platform technology company in similar area is below:
<https://www.biospace.com/article/unique-japans-peptidream-bags-1-11b-r-and-d-pact-with-bayer/>

Phase 1 involves development of a portable kit of the silent-encoding technology for phage display libraries. This service format provides customers of 48HD with a rapid, easy to use platform for in-house screening of a limited set of libraries available at 48HD. We anticipate development of this product to take 4-6 months and the market for the molecular discovery kit will be focused on pharmaceutical companies with programs in cancer. Our access to the marketplace strategy leverages the agreement 48HD has with TumorGenesis. TumorGenesis was formed to develop

a new rapid approach to growing tumors in the laboratory and essential fool cancer cells into thinking they are still growing inside the patient. This approach will provide a much more relevant model of patient tumors that is necessary for personalized therapy, testing of drugs and/or development of new drugs. With 240,000 new cases of cancer in the United States of America alone, each case requiring a kit from 48HD to develop the personalized treatment plan for that patient, the market value is ~\$2 billion USD.

Phase 2 involves the integration of the genetically-encoded libraries with molecules that exhibit a pharmacophore or war-head for desirable affinity and antagonism or agonism i.e.) response of the target, and macrocyclic structures. Of interest, these scaffolds or types of molecules have been validated and shown to be effective ligands for many targets of interest. We are currently discussing with a potential collaborative partner and anticipate development of this product to take 6-9 months.

Phase 3 involves the translation of the genetically-encoded molecular discovery technology to an especially difficult subset of targets. G-protein coupled receptors (GPCR) are a class of proteins that are of special interest to the pharmaceutical industry because they are the direct line between the “outside” world of a cell and the internal response. With nearly 1,000 different GPCRs, each with a unique and specific signaling pathway, in the human body this set of proteins play an essential and critical role in hormone signaling, blood clotting, blood sugar level regulation, nerve transmission etc. The research and development for Phase 3 involves performing the screening service with a target that is located on a cell surface i.e. extracellular. In contrast, the current service uses purified protein targets in solution. Expansion to this area of research is reasonable, as we have preliminary data that supports the application of our platform to cell surface targets. This requires acquisition of cell-lines, cell culture infrastructure and equipment and recruitment of qualified personnel.

Phase 3 can be taken one step further by applying the genetically-encoded molecular discovery technology to discover intracellular target screening. We envision that the research and development of a system that is responsive to delivering a molecule from outside of the cell to inside the cell and releasing a signal will propel projects looking into drug delivery forward. In addition, this discovery platform will provide a mechanism to study and modulate specific cellular pathways.

Phase 4 involves generation of high value platform technology for cell-based screening. Specifically, the technology developed in Phase 3 will need to be packaged and optimized to a translatable and transferable platform technology. We anticipate packaging of the technology can be accomplished in 12-24 months. An additional 6-8 months of maximal sales and marketing efforts will place this platform technology with 2-3 key clients and afford whole marketplace acceptance.

MATCHMAKING OBJECTIVES

48Hour Discovery INC is seeking collaborations with companies on either one of two opportunities:

- (1) companies that have drug discovery related technologies such as protein scaffolds, macrocycle technologies, or other post-translational modifications.
- (2) companies or research institutes conducting clinical trials with a focus on precision medicine. On this specifically, working with our partners at TumorGenesis and Precision Therapeutics Inc to develop custom/precision microenvironments for cancer testing. A new partner organization may have access to cancer samples or require high volume screening and identification of protein targets.

48HD would like to identify a partner and develop a joint project for commercialization. We anticipate the benefits a collaboration would offer for our company development process includes: access to in-kind contributions of reagents, industrial expertise in the development of new technologies, industrial feedback on the performance of our technologies and strategically beneficial access to the European market.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

The following are the important aspects we are looking for in a European partner company. Note, any potential partner company would not be expected to have all of these aspects.

- drug discovery program
- expertise peptide chemistry (i.e. lipidation to prolong half-life of peptides in circulation, disulfide bond mimetic (macrocycles), expertise in transforming natural peptides into peptide therapeutics; drug development pipeline and/or generation of peptide-drug conjugates
- drug candidate validation assays
- clinical trials
- Companies with many targets for 48Hour Discovery to work with. Targets are any bio-active substance that could be the site of action for a drug. These include soluble proteins, whole cells (with defined response), or intracellular membrane protein such as GPCRs.

Applied Quantum Materials Inc.

Company representative: Dr. David Antoniuk

Technology: Advanced Materials, Nanotechnology

Location: St. Albert, Alberta, Canada

Website: www.aqmaterials.com



COMPANY

AQM is a spin-off from the University of Alberta and became operational in September 2016, as a private corporation. AQM is a world leader in the research, development and synthesis of biocompatible silicon quantum dots (SiQDs) and Group IV semiconductor nanoparticles for applications in nanofabrication, sensing, energy, displays, security and bio-imaging. AQM is working with numerous Tier 1 corporations on custom synthesis and development of specialty nanomaterials.

The company is led by Dr. David Antoniuk, CEO who was the architect of Alberta's nanotechnology initiative in 1999, which led to the creation of the National Institute for Nanotechnology, NanoBridge prototype development centre, and the Alberta Centre for Advanced MNT Products (ACAMP).

The technical lead of the company is Dr. Jonathan Veinot, a professor at the University of Alberta and co-author of more than 150 peer-reviewed publications and 19 international patents. In 2016, he received the Burghausen Chemistry Award and was recognized by the chemical industry of Bavaria for his impressive contributions to the field of silicon nanomaterials. Dr. Veinot is the Program Director of the innovative joint training initiative Alberta/ Technische Universität München (ATUMS) International Graduate School for Hybrid Functional Materials.

INNOVATION/TECHNOLOGY

- AQM is the only company worldwide commercializing silicon quantum dots for a variety of applications. One application is the manufacture of quantum dot trace sensors for explosive detection and chemicals. This sensor is currently under evaluation by Transport Canada, the RCMP and the Department of National Defense.
- AQM is active in the development of silicon nanostructured materials for improved tire performance. A prototype silica nanofiber that can be easily manufactured at low temperatures has been developed as a replacement for precipitated silica. AQM is looking to demonstrate the technology with tire manufacturers and as a reinforcement for polymers.

- AQM designs and has developed several nanocomposite polymers with unique physical properties. One nanocomposite is being evaluated as an optical film for displays. Another is being integrated into a security application. AQM is looking for partners in the solid state lighting and display sectors.
- These hybrid materials also have applications as luminescent solar concentrators for building integrated photovoltaics (BIPV). AQM is undertaking a developmental project to optimize the parameters and scale the process.
- AQM is developing in vivo bioimaging agents that incorporate our silicon quantum dots.

MATCHMAKING OBJECTIVES

AQM has received interest and sales from a number of European nanofabrication facilities for its electron-beam resist. Dr. Veinot has many connections in Europe and ties to the Technische Universität München. Our objective is to partner with companies, design, develop and incorporate our nanomaterials and co-develop new products. AQM aims to be an advanced materials supplier to leading end users in the display/lighting, battery, tire manufacturers, solar windows, chemical sensing and nanofabrication centers.

- For the display/lighting industry we would like to find a development partner or end user that would incorporate our bio-compatible silicon-based materials as a substitute for heavy metal, toxic cadmium and lead-based, or expensive indium-based quantum dots. EU REACH legislation is prohibiting all cadmium and lead materials in consumer electronics by October 2019.
- For the tire industry, we are looking to provide nano-structured silicon fiber additive for strengthening the rubber matrix. We are looking for high performance tire companies interested in testing our materials.
- We are looking for glass manufacturers to partner with in the development of solar power generating windows and photovoltaic (PV) cell manufacturers to construct building integrated PV systems for buildings and greenhouses.
- AQM has developed graphene/silicon aerogels for next generation anode Li-ion battery materials. We are looking for a battery company to joint venture, co-develop and test these materials.
- AQM sells a polymer resist for extreme UV, electron-beam and helium-ion semiconductor lithography and nanoimprint lithography to nanofabrication research centres around the world. We are looking for academic and industry users to co-develop and test new product variations.
- AQM is looking to partner with pharmaceutical companies to co-develop and test its bio-compatible silicon based quantum dots and dye-doped silica nanoparticles for contract imaging agents.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

Research active companies looking at a joint venture to incorporate new advanced materials towards commercialization of advanced products such as Li-ion battery materials, optical displays, lighting products, nanocomposite polymers and nanofabrication facilities using electron beam lithography.

H3alth Technologies Inc.

Company representative: Elias Gedamu

Technology: Health, 3D Imaging

Location: Calgary, Alberta, Canada

Website: www.3dhealthtechnologies.com



COMPANY

H3ALTH TECHNOLOGIES INC. is an Alberta company offering 3D body imaging technology for the health market. We combine 3D body imaging, image processing, and analytics to solve high-impact health problems.

H3ALTH TECHNOLOGIES INC. is staffed with professional engineers, biomedical engineers, image processing developers, software developers, and fullstack developers. Our technical core competencies include, biomedical engineering and devices, anatomical mapping, 3D software development (including image reconstruction and image processing), large volume data analytics, full stack development, and business development and commercialization in Sub-Saharan Africa.

Our Purpose

To be a leader in the health industry by providing automated, cost-effective, simple-to-use, accessible, and noninvasive 3D imaging technologies.

Our Core values

- We believe that everyone should have access to health
- We believe that technology will bridge the global health inequalities gap
- We apply creativity, innovation, and social responsibility as part of our business model
- We integrate technology, humanity, and business

INNOVATION/TECHNOLOGY

Our innovation is a non-invasive 3D body imaging solution that enables health professionals to increase quality of care. Our system is fully automated (like blood pressure devices in Walmart). Users can simply enter our imaging unit like an airport scanner without the need of a health technician, log in through the user interface, and click "image me". Data is acquired, sent to our cloud servers, processed, and made available to users and health professionals through an on-line dashboard. Health analytics are determined automatically using proprietary algorithms and provided to both the users and health professionals.

Health professionals can provide health services to more people in both urban and rural settings because the system is completely automated and operated by the users. People from any location are provided access to health professionals and services that they would not otherwise have because we link them through telehealth. Our technology enables increased coverage and disrupts the current model for health services.

MATCHMAKING OBJECTIVES

The objective for participating in the matchmaking mission is to identify partners that are interested in participating in collaborative technology demonstration. We have an MVP for 3D body imaging specific to health and medical and are at the technology demonstration / field trial stage. We have two international participants / customers that have committed to a demonstration and we are looking for a third participant in Europe. We would also be interested in strategic partnerships with companies that are experienced in 3D software development to provide support during our demonstrations and field trials.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S) For the technology demonstration we are look for:

- health clinics, research hospitals, and hospitals
- rehabilitation service providers
- partners seeking non-invasive technologies for health
- partners with access to large patient / subject cohorts

For software development, we are looking for a group with experience in

- commercial grade 3D software development
- automation
- 3D segmentation and classification
- anthropomorphic measurement software capabilities
- model-based morphological alignment
- non-linear and rigid registration
- data noise reduction

RESOURCE TECHNOLOGY

MWDPlanet and Lumen Corp.

Company representative: Mariya Kucherenko,
and possibly Derek Belle

Technology: Oil/Gas, Environmental

Location: Calgary, Alberta, Canada

Website: <http://www.mwdplanet.ca>



MWDPLANET TELEMETRY

COMPANY

MWDPlanet is an APEGA accredited MWD technologies engineering and manufacturing company that focuses solely on custom solutions for our clients because we believe that nothing else will do. Unsatisfied by the technological limits in conventional technology, Borys Kucherenko, MWDPlanet's lead project developer, started our company in 2010 in Calgary, Alberta. Since then we have been helping our clients identify their technological needs that are appropriate to their projects and drilling environments.

We focus on developing strategies that drastically improve drilling experiences, by reducing the frequency and length of stop-downs and increasing accuracy. We know that the best tool for the job is not necessarily the most expensive one. It's the one that will perform the best in your project's drilling conditions.

Our policy is to make sure our clients have a clear understanding of how each specification is beneficial to them in the long-run. We are interested in your repeated success, which is why we offer strong, ongoing support and easily accessible parts. You will never feel like you have to make difficult technological decisions alone. Our current lineup of tools includes:

Bottom-landed and top-hanging mud pulsers, Terre-LP and Terre-RP; Pegasus EM drop-in transmitter and Terre-Flex, a hybrid telemetry system; Custom and hybrid client-specific technologies.

Our R&D department is continuously working on new innovative technology that will take on the demands of tomorrow.

INNOVATION/TECHNOLOGY

We are proposing to build a down-hole directional orientation module (sensor pack) to measure bore-hole orientation for MWD or any Directional Drilling applications.

A novel sensor pack design consists of a newly developed rock-solid magnetometer and three accelerometers, for azimuth and inclination measurements respectively. At this time we have developed and tested an in-house triplexis magnetometer prototype. We have also sourced a third-party MEMS-based accelerometer. The next step is to combine these components into a three-dimensional, compact sensor pack.

As the main part of the project development we will create a calibration tool, which is an additional commercial component that customers will use to calibrate the sensor on-site. The complete sensor pack with calibration station will then be pushed to commercialization.

Sensor pack's new internal mathematics will eliminate industry's old problems of slow and not always repeatable measurements, while at the same time the newest integration section of the Sensor Pack will still keep the possibility to communicate with old MWD-systems.

Our primary innovation is combining the MEMS accelerometer technology with our in-house flux-gate magnetometer design. The combination of these technologies permits the following innovations, compared to directional modules currently available on the market:

- We can rate our combined sensor pack to a lower overall power consumption;
- Our sensor pack will be smaller (more compact);
- Due to the higher shock and vibration ratings of the MEMS based accelerometers, our sensor pack will be more reliable;
- Because we are using in-house components for the magnetometer, the overall cost of materials will be lower.
- Resulted design will communicate with all existing MWD protocols on the market.
- By offering Calibration System together with Sensor Pack - We will resolve all Directional Service company's problems that operate within harsh logistical parameters by providing them with a way to perform simple quality control of measured trajectory and/or possible repair and recalibration even in remote exploration areas.

Since our product in its infancy stage has a strong interest of our current clients, we plan to focus on keeping them consistently updated on the progress of the project with direct outreach, print and video marketing materials. Patenting, Successful field tests and Certifications will be the main selling points of our product. When it comes to innovative technology that is a part of a multi-million dollar operation, data and statistics are necessary to assure our clients in the success of the development. Thus we will need multiple field-test with carefully catalogued results. The data will be posted with the printed and video marketing material. Clients will be also invited to be present and participate at the actual field-tests, so that we can directly demonstrate the efficacy of our product.

We have a confirmed site for the Official Independent Field Test at Catoosa Test Facility, OK, USA. The findings and data from this test will be published as a part of the marketing materials.

We have been involved with the independent Industry Steering Committee on Wellbore Survey Accuracy (ISCWSA).

Another proposed project- Pegasus EM drop-in transmitter – revised version to make suitable for Defense application

Our R/D team has completed the development of our first release candidate of our Tensor drop in EM transmitter/Receiver.

Our most recent product the “Pegasus” allows MWD service companies with existing Tensor based MWD Mud pulse strings to upgrade their existing kits to EM/Dual telemetry Kits with minimal effort and changes to their existing MWD processes and training regime.

The Pegasus acts as an independent channel that the client programs independently of the DIM thus allowing both the mudpulser and EM transmitter to work independently of each other.

And started to look for additional Vertical or Horizontal Well that is being drilled such that we could test our MWD/EM transmitter/receiver.

We really do have a unique product then there should be ample for strategic partners that would want to grow with us.

Pegasus EM drop-in transmitter for Tensor based mwd-systems: drop in EM transmitter that converts any existing Tensor mud-pulse system into a stand alone EM or fully functional hybrid mwd system. Product Stage: manufacturing release. Rev2 field test stage.

The Proactive Rx-Tx Feedback System which has four main components: the downhole transmitter, downhole receiver, surface transmitter, and surface receiver. During a drilling operation, the downhole transmitter will send EM signals to the surface receiver. If the EM signal does not reach the surface receiver due to attenuation, or cannot be successfully extracted and decoded, the surface transmitter will send feedback to the downhole receiver. Based on this feedback, the downhole transmitter will adjust the transmission configuration to ensure successful signal reception and decoding. This will ensure the reliability of EM telemetry, and increase data transmission rate and transmitter power efficiency when the environment allows.

MATCHMAKING OBJECTIVES

Technical R&D expertise, value-added reseller, system integration, early adopter, investor.

Technology Adaptation of a proven innovative product to meet new requirements such as country-specific regulations and standards in the market being entered,

Technology Validation of functionality, performance, quality and usability with early adopter customers in Europe and Asia market being entered. validation of product value proposition (test, procedure/tools development, test results analysis and reporting).

Through GCCIR’s Alberta-Germany coordination fund, we would like to arrange a joint project with a German partner to develop the sensor package. We like the German partner to develop any of the following:

- High Temperature MEMS Accelerometers
- High Temperature MEMS Magnetometers
- A 3-axis sensor assembly (with precise mechanical assembly) that utilizes 3-sensor MEMS accelerometers, magnetometers, and possibly gyroscopes

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

Ideally, this partner would be able to develop all the three components and deliver a high temperature MEMS 3-axis sensor assembly. MWDPlanet would complete the sensor package which would include this 3-axis sensor assembly, power supply, processor, and enclosure. Additionally, MWDPlanet would complete the calibrating procedures and create the error modelling firmware and research needed. Ideally, the IP plan would grant us the exclusive right to utilize the sensor assembly in a downhole environment (and perhaps other oil and gas applications in general). The partner would retain the right to commercialize the sensor assembly for other applications.

AUTOMATION AND ROBOTICS

Rational Robotics

Company representative: Parveen Reddy

Technology: Coating robots

Location: Edmonton, Alberta, Canada

Website: <http://www.rationalrobotics.com>

RATIONAL ROBOTICS

COMPANY

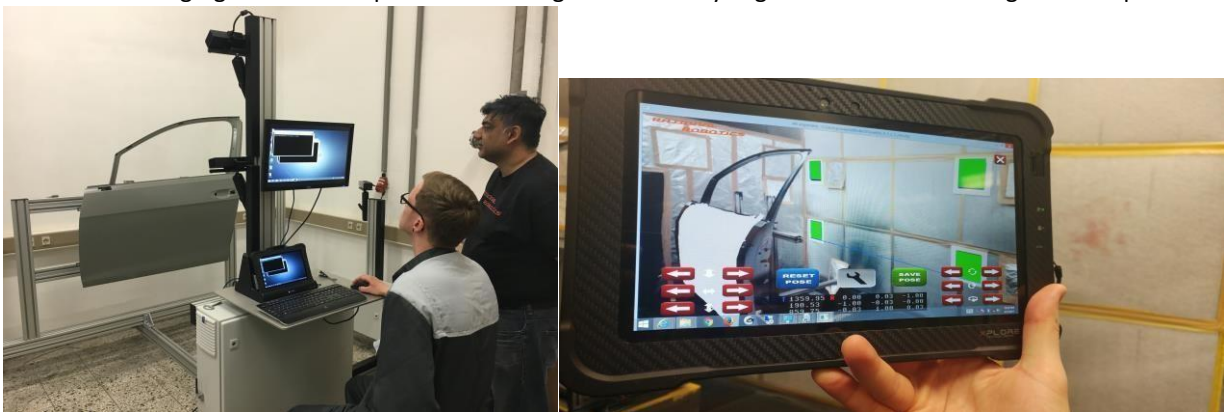
Rational Robotics specializes in vision guided robots. Rational Robotics combines robots with computer vision to make robotic automation economically viable in low quantities with high mix. Our main area of application is coating and painting, but we are expanding this to other products such as machine tending. We are a venture backed company with support from SOS Ventures and Qualcomm ventures.

INNOVATION/TECHNOLOGY

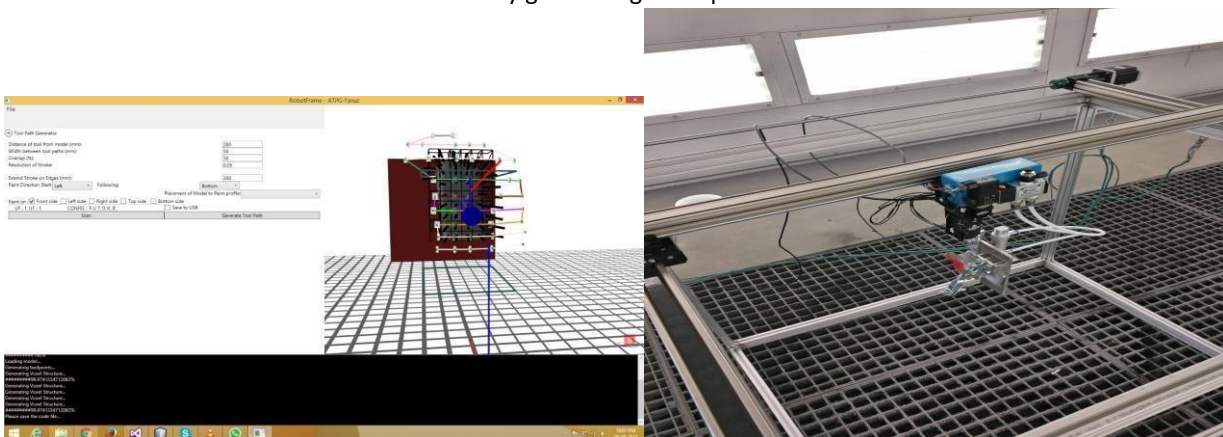
Rational Robotics robots are able to paint objects of varying sizes without the need for individual part programming, our scan and plan system automatically generates the tool path for the paint applicator.

Our vision servoed robots compensate for irregularities in uses cases where every part position is not known. Also, it lets our system compensate for failures that might happen.

This is our scanning rig used to scan parts and our augmented reality alignment tool used to align the toolpath



This is a screenshot of our software automatically generating a toolpath and this is one of our robots.



MATCHMAKING OBJECTIVES

We want to partner with companies that make or heavily use CNC machines. Our goal is to create a low-cost machine tending robotic system. The partner will provide the CNC expertise we will provide the robotics expertise. We want

to use a robot like this to do the task of machine tending and this is one of our industrialized cameras that we will use to differentiate us from other open loop systems.



PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

- Expertise in machining.
- Expertise in machine tending
- Expertise in Interfacing to CNC machines

INFORMATION TECHNOLOGY

SPLICE Software Inc.

Company representative: Tara Kelly and Karolina Congdon

Technology: Information Technology, Communications, Health

Location: Calgary, Alberta, Canada

Website: www.splicesoftware.com



COMPANY

SPLICE's Data-Driven Dialogs® use real-time data and Artificial Intelligence, in concert with live-recorded talent, to deliver timely Voice-, and Home-Assistant based messaging. SPLICE's Dialog Builder™ uses pre-recorded, linguistically-optimized message segments that are spliced together for the most human sounding, customized, messaging tailored to your company's brand. The same messaging can be deployed via phone or AI-assistant devices like Echo and Google Home. SPLICE delivers notification to our client's customers during critical moments in the customer journey, enabling proactive communications to drive fact-based decisioning which improves the overall

customer experience (CX) for insurers, bankers, and retailers. It's just part of how SPLICE combines art & science to help companies connect with their clients in new ways.

Our Three Promises: When you work with SPLICE, your solution is made up of these three factors:

- The Dialog Suite™: Secure access to SPLICE's award-winning Dialog Suite™ coupled with training ensures success. This client portal offers unique, helpful features and reports to optimize customer communications with our best-in-class software.
- Personalized Messages: SPLICE's data-driven human voice & SMS text messages give companies the opportunity to reach more customers, proactively providing important information, encouraging interaction, and enhancing brand connection.
- Dedicated Account Manager: SPLICE Account Managers are trusted advisors who analyze client results & monitor messages to recommend the most effective communication channels and customized messages for continuous improvement and ROI.

INNOVATION/TECHNOLOGY

SPLICE's patented Dialog Suite™ is a unique client portal which includes helpful features designed to optimize customer communications with best-in-class software. There are currently 4 components of the Dialog Suite™ including the Dialog Controller™, Dialog Builder™, Dialog Director™ and the Dialog Dashboard™. The Dialog Suite™ has been fully developed and we currently have dozens of companies using this technology to improve their customer experience initiatives, however, technology updates and new development are always occurring in order to optimize our solutions and integrate with new technologies.

The SPLICE Dialog Controller™'s dashboard captures and stores customer preference data through voice messages, SMS text messages, on-site customer interaction kiosks, or your database. SPLICE clients can quickly and easily import and export this customer information through our secure portal interface or through our API - the data bridge for faster and better results.

The SPLICE Dialog Builder™ is our audio creation wizard, which features SPLICE-trained professional voice talents who record linguistically-optimized message segments that are spliced together for the most human sounding, customized, messaging tailored to your company's brand. When used in conjunction with a company's appropriate information, and customer data-points, SPLICE can produce a truly data-driven and results oriented messages.

The SPLICE Dialog Director™ provides everything necessary for initiating a message campaign and tracking progress for continuous improvement. The Dialog Director puts clients in the driver's seat by enabling approval of every detail before launch, including important reference materials like message scripts, contact lists and audio samples. The metrics available within the Dialog Director include the number of messages sent, received, and listenership to gauge ROI and insight. The listenership metric demonstrates campaign success and potential areas for improvement by showing how long customers stayed on the line.

The SPLICE Dialog Dashboard™ is the user-intuitive analytics center, which allows clients to dive through the details in a guided and straightforward presentation that inspires continuous improvement from response patterns of past campaigns compared against other data.

Built on existing APIs for simple deployment, these applications allow insurance, retail and finance companies to engage in automated communication with customers. Our clients' brands are literally invited into their customers' homes.

SPLICE Alexa skills are a new solution feature and are currently in beta and have not yet been piloted on a live client. For example, through secure API connections that already exist, a furniture company that uses SPLICE can send an automated voice response via Alexa Skills to a customer who asks a question such as, "When will my new sofa be

delivered?” Insurers can use the platform to respond to queries about an insurance claim, for example, checking the rental car coverage while a customer’s car is being repaired. A bank can use Alexa Skills to provide updates on mortgage applications or to respond to a customer’s request to change an appointment time.

MATCHMAKING OBJECTIVES

SPLICE is looking to build upon our existing technology to move into the healthcare space. There is a growing need to improve communications for Diabetic patients, and other chronically ill individuals that live in rural areas or have mobility issues. Our goal is to use wearable sensor technology to gather patient data (ex. blood pressure, glucose levels). We would like to create a database of speech characteristics for these patients, including analysis of spoken language, specific dialects, tone and emotion. This will be used to provide more personalized communication to the patient, matching them to a voice that is more likely to result in necessary action and mental comfort.

Our project aims to create a baseline of speech characteristics for patients or individuals in this type of care - this would include and analysis of spoken language, specific dialects, tone and emotion. We will then use this analysis provide more personalized communication to the individual/patient, matching them to a voice that is more likely to result in necessary action. This personalized experience will be tailored to lifestyle and will provide a level of mental comfort. We would like to work alongside the Fraunhofer institute to develop an algorithm that will assess and analyze these different acoustic cues and create a baseline - resulting in a hypothesis, adjusting it as the dialog is continued with the specified patient/individual. SPLICE will then use this analysis to send out personalized notifications that are based on the inputs and the state of the person.

The activity scope for this project will cover the development of a functioning algorithm, along with the data base for the different characteristics that can be demonstrated in the global marketplace. Based on the outcomes of the evaluation study, SPLICE is hoping to license the technology for use within the healthcare industry and all collaborators recognize the commercialization potential of the solution. The resulted licensing program is expected to be available within a year of project completion.

Based on this project description, we are looking for a partner specifically within the wearable technology space. The technology should include the ability to monitor specific health data, including glucose levels, heart rate, etc. – or the company must have the ability and resources to update their technology to monitor these as part of the project scope. The project will also require some type of inbound audio recording device, so that SPLICE & Fraunhofer can analyze speech characteristics – ideally the wearable technology company would provide a device that allows the patient to record audio – sending it via the cloud for analysis.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S) Companies

with experience in:

- wearable technology
- health monitoring devices (smart watches, fitness trackers, smartphones, medical devices)
- the healthcare industry
- data gathering and transferring via API

Quantum Silicon Inc.

Company representative: Ken Gordon and Jason Pitters

Technology: Nanotechnology, ICT

Location: Edmonton, Alberta, Canada

Website: www.quantumsilicon.com

Quantum Silicon

COMPANY

Quantum Silicon Inc. is an early-stage company with a disruptive approach to building computing devices.

We make computer logic based on the ultimately-small silicon device: a single silicon atom forming an “Atomic Silicon Quantum Dot.” Our aim is to meet the semiconductor industry’s need for products that are faster and significantly more power efficient than is possible with today’s (or tomorrow’s) transistor- based approach. This allows the industry to resume its Moore’s Law path, but without discarding the multi-billion-dollar investment it has made in silicon over the past half century.

All of this is possible because our ability to manufacture at the atomic scale is the best in the world. For years, organizations around the world have sought automated and scalable tip-based manufacturing using scanning tunneling microscopes and atomic force microscopes. QSi has that, and we put it to work every day to make our unique circuits.

In summary, we are in business to develop, design, manufacture and license:

- high-speed binary logic circuits that meet the semiconductor industry’s need for faster products that use orders of magnitude less energy than the best of today’s transistor-based machines
- atom-scale quantum computers that have relaxed cryogenic requirements compared to other designs, and
- hybrid quantum-classical devices.

We are also marketing some of our atomic fabrication tools, including our proprietary Single Atom Tips (SATs).

INNOVATION/TECHNOLOGY Atom-scale Silicon Lithography

QSi’s lithographic techniques for atom scale fabrication are the best in the world. We use Scanning Tunneling Microscopes or Atomic Force Microscopes for manufacturing purposes. Until now, these tools have been research tools. We have developed them into economically scalable manufacturing tools. Our patented control systems and user interfaces create a fully-automated and scalable atom-scale production process. The tools and techniques that we have developed for tip-based manufacturing are products in their own right that we sell or license to others.

Products

We use our manufacturing techniques to make computing devices formed from patterns of Atomic Silicon Quantum Dots. Our ASiQDs have made it possible for us to develop atomically small, extremely fast and energy efficient devices that are made entirely of silicon, preserving the semiconductor industry’s enormous half-century silicon investment.

Binary Computing: For classical computing, QSi’s approach results in logic devices that use orders of magnitude less energy than transistor-based computers. As computer use becomes more ubiquitous, the amount of energy that the sector uses has increased to the point where computing today is responsible for greenhouse gas emissions as large as those of the airline industry. QSi’s binary products will be at least 1,000 times more energy efficient than the best of today’s transistor-based technologies while offering speeds in the terahertz range.

Quantum Computing: For quantum computing, QSi has developed an approach using unique qubits, replacing the spin or other qubits that are commonly used by others. Quantum computing machines using QSi’s qubits will be far easier to control than those using spin qubits while avoiding the need for milli-kelvin temperatures. The relative simplicity of our devices, and their very small size, makes it feasible for us to plan specialized quantum computing devices, or specialized hybrid quantum/classical devices, designed for specific applications. We are seeking collaborators to help fund and guide the development of our devices.

First Hardware Product: Our first hardware product is a unique atomic-scale chip – an electronic simulator designed to accelerate and improve the training of neural networks. We envision this as a white label or OEM chip. Part of the manufacturing will be done as a fabless semiconductor device using QSi’s proprietary macro-to- atom designs. The devices will be completed with atom-scale manufacturing at QSi’s facility. We are currently engaging with interested researchers to collaborate on product design.

MATCHMAKING OBJECTIVES

Our primary objective is to develop relationships with companies and research organizations that we could collaborate with on developing atomic scale fabrication technologies. QSi’s basic manufacturing technology uses the tip of a scanned probe microscope to selectively remove hydrogen atoms from a hydrogen terminated silicon surface. We have been automating this process, and have got to the point where it is accurate and relatively fast. We would like to find partners that can work with us to make it faster and more accurate. This could include developing special purpose machines in which several tips work in parallel.

We are, in addition, looking for companies and research organizations to collaborate with on developing and deploying the atomic scale coprocessor that we have developed for accelerating the training of neural networks from unlabelled data.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

The first objective mentioned above would most likely be of interest to companies or research organizations with expertise in these and related areas:

- scanned probe microscopy
- electron microscopy
- ion beam microscopy

The second objective would be of interest to companies developing neural network hardware, or companies deploying neural networks for machine learning.

Phase Advanced Sensor Systems Corp.

Company representative: Dr. Christopher Holt

Technology: Pressure Sensors, Fluid Properties Sensors, and Fouling Sensors

Location: Edmonton, Alberta, Canada

Website: www.phasesensors.com



COMPANY

The core development team at Phase Sensors consists of a PhD materials engineer with a background in hostile environment micro sensors; a firmware engineer with 15 years of experience coding for low level hardware (firmware, bare-metal BIOS, drivers); an electrical developer with 40 years of circuit design experience working at Ratheon, SPAR Aerospace, and the National Institute for Nanotechnology; and a hardware engineer with experience in ultra-sensitive fluid properties analysis.

We rapidly develop complicated sensing systems from designing the sensor element, building the data acquisition platform, through to designing the real-time web interface.

Our main products are a single crystal quartz pressure sensor, a laser heated and laser measured oil fouling sensor, and a fluid impedance probe for monitoring contaminants in lubricants.

INNOVATION/TECHNOLOGY

Our three main products (Quartz Pressure, Oil Fouling, and Oil contaminant sensors) are currently in the early pilot testing phase. Large customers have been identified and we are currently working with these customers to implement pilot testing in their facilities.

The quartz pressure sensor is microfabricated in our local nanoFab using lithographic techniques. We have a strong background in microfabrication methods and quartz etching.

The optical fouling sensors are assembled in our own laboratory. We have experience building fiberoptic based measurement platforms implementing spectrometers, photodetectors and lasers for measuring temperature and thermal conductivity.

Our oil contaminant sensor is fabricated in our laboratory and uses an ARM based digital signal processor with direct digital synthesis to analyze and interpret impedance of a test sample at multiple frequencies.

MATCHMAKING OBJECTIVES

We are looking for partners with experience in lubricant analysis and lubricant monitoring sensors. We would like to expand our product offering and already have a clear and strong channel to market.

We are looking for partners with experience in hostile environment sensor packaging. We have finished our prototype testing and will soon have finished pilot testing on our designs and are looking for partners to help with the final packaging and ruggedizing of our sensors for implementation in the field.

We are looking for partners with expertise in Infrared Spectroscopy of oil samples as we are planning on starting a project to build an inline infrared spectroscopy system for monitoring large engine lubricant systems.

PREFERENCES/REQUIREMENTS FOR POTENTIAL PARTNER(S)

We are excited to make new contacts that can help with optimizing our current sensors. We are looking for partners with experience in hostile environment sensing or building and deploying sensors in hostile environments. We prefer contacts with some experience working in high vibration and shock environments, and operation over a wide temperature range including high temperatures (above 200°C).