



tarek loubani • tarek@glia.org • +1 519 488 6475 | amy miller • amy@glia.org • +1 514 812 6817

<http://glia.org>

# Executive Summary

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Glia is a social enterprise dedicated to facilitating equal health care for all people by making high quality medical devices available at a fraction of the cost of the current gold standards. Glia leverages communities of scientists, designers, hackers and engineers to create high quality medical devices through the use of technologies like 3D printing and other types of rapid prototyping. The plans for how to make and test these devices are then released under a Free/open hardware license that allows health care providers, hospitals and ministries of health to study, modify and use devices for a fraction of the cost and with more freedom than devices currently on the market.

Devices are chosen by expert physician assessment of high cost, high impact devices that are widely used and past patent expiry dates. Devices can be made in a variety of ways due to the broad and flexible development strategy that Glia uses. In addition to traditional manufacturing techniques, each device will be manufacturable in very small runs by amateur creators with minimal training.

Glia is designed to be self-sustaining, so that research and development is paid for by income from the company's work. Glia makes money by selling devices directly, through grants and consulting, and by licensing our Health Canada certification to others to create and distribute approved devices.

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# About Glia

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Glia is a social enterprise dedicated to facilitating equal health care for all people by developing and making high quality medical devices available at a fraction of the cost of the current gold standards. It will design, market, lease and sell free software and hardware medical tools and devices to health care workers around the world. Glia leverages communities of scientists, designers, hackers and engineers to create high quality medical devices through the use of technologies like 3D printing and other types of rapid prototyping. The plans for how to make and test these devices are then released under a Free/open hardware license that allows health care providers, hospitals and ministries of health to study, modify and use devices for a fraction of the cost and with more freedom than devices currently on the market.

Glia will be established as a for profit corporation in April 2015 with founder Dr Tarek Loubani serving as Executive Director and a core engineer for products. Glia's team has a strong mix of innovative, research, mechanical and clinical experience that will ensure success of the venture. Engineers include Kliment Yanev and Jennifer Glauche, global leaders in 3D printing, along with MD candidate and trained engineer Spencer Chambers. Coordination will be ensured by Amy Miller, an experienced large scale project manager with experience in the filmmaking industry.

# Device development

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Devices are chosen by expert physician assessment of high cost, high impact devices that are widely used and past patent expiry dates. Devices are then developed by examining the most current research and studying current gold standard devices. A prototype is made and tested using rapid prototyping techniques. Once ready, the prototype is validated through a clinical trial and published. The devices are also licensed and approved through Health Canada (and other authorities as required).

The development process as well as the end products are completely Free (as in freedom), commonly referred to as open source. Our research and development will be registered with the proper legal channels in ways that will make it impossible for anyone else, including ourselves to patent the product. Each tool will go through an internal validation and verification process and be approved by an ISO-approved lab before seeking approval by Health Canada.

Glia products will match the market gold standards in quality and reliability, and will do it for a fraction of the price.

## Making devices

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Devices can be made in a variety of ways due to the broad and flexible development strategy that Glia uses. In addition to traditional manufacturing techniques, each device will be manufacturable in very small runs by amateur creators with minimal training.

As an example, a device that contains electronic and mechanical parts (e.g., a pulse oximeter) is created by using commonly available parts and techniques to easily create the electronics. A 3D printer creates the mechanical housing and any other required plastic parts. These parts are then assembled. A testing protocol then reveals any defects. If none are found, software to run the device is uploaded, the device checked one last time, and the device is packaged for distribution or sale.

## What we make

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Transforming the medical device industry, Glia will design, manufacture, freely distribute and sell gold standard medical tools at extremely low costs, but will also offer specialization and customization of these tools.

Glia will initially research and develop to market three distinct medical tools built and created with free software and hardware reference implementation.

1. The Stethoscope, a device that is used to listen to the internal sounds of the body like breathing and heartbeats.
2. The Pulse oximeter, a device that is used to monitor oxygen saturation non-invasively.
3. The Electrocardiogram (EKG or ECG), a device to measure the heart's electrical conduction system.

# Glia's financial sustainability

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Glia is designed to be self-sustaining, so that research and development is paid for by income from the company's work. Glia makes money in three ways:

1. By selling devices directly to health care providers, non-governmental organizations, clinics, hospitals and ministries of health.
2. Through grants and consulting fees paid by organizations, clinics, hospitals and ministries of health to train workers in the assembly, testing and development of devices.
3. In licensing fees for the use of Glia's Health Canada licenses to create and distribute approved devices.

This capital input is then fed back into research, development and administration of the company.

Glia will initially focus on hospitals and medical centers across Canada, as well as building partnerships with ministries of health and international medical organizations such as Médecins Sans Frontières (MSF), who will be able to provide training of the technology on the ground to local communities, as well as buy the medical products in bulk for communities in need.

## Revenue forecast

<b>Revenues</b>	<b>FY2015</b>	<b>FY2016</b>	<b>FY2017</b>
SRED Tax Incentive Program	\$10,000.00	\$20,000.00	\$25,000.00
Sale of ECG's	\$0.00	\$18,000.00	\$36,000.00
Sale of Stethoscope	\$0.00	\$12,000.00	\$12,000.00
Sale of Pulse Oximeter	\$0.00	\$24,000.00	\$24,000.00
Consulting fees	\$0.00	\$10,000.00	\$30,000.00
Licensing fees	\$0.00	\$5,000.00	\$30,000.00
<b>Total revenue</b>	<b>\$10,000.00</b>	<b>\$89,000.00</b>	<b>\$157,000.00</b>
<b>Liabilities</b>	<b>FY2015</b>	<b>FY2016</b>	<b>FY2017</b>
SRED Tax Incentive Program	\$6,000.00	\$6,000.00	\$6,000.00
Production of ECG's	\$0.00	\$9,000.00	\$18,000.00
Production of Stethoscope	\$0.00	\$6,000.00	\$6,000.00
Production of Pulse Ox	\$0.00	\$12,000.00	\$12,000.00
Research and development	\$25,000.00	\$25,000.00	\$25,000.00
Administration	\$50,000.00	\$50,000.00	\$50,000.00
<b>Total liabilities</b>	<b>\$81,000.00</b>	<b>\$108,000.00</b>	<b>\$117,000.00</b>
<b>Margin</b>	<b>-\$71,000</b>	<b>-\$19,000</b>	<b>\$40,000</b>