



APPLICATION FOR COUNCIL INNOVATION FUND

CC 941 (R2019-08)

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Date of Submission

2019-08-16

Name of Project

The Wearable Technology Citizen Scientist Program

Sponsoring Councillor

Councillor Gondek

Applicant Name

Dr. Reed Ferber

Applicant Contact Number

403-210-6468

Include area code, no spaces

Applicant Business Unit or Name of Organization

Faculty of Kinesiology, University of Calgary

Affected Business Units and/or Departments

All Departments

Amount of Funds Requested

\$57,500.00

Draft PFC cover report attached

Yes No

Please list supporting documents provided.

Applications for the Council Innovation Fund are to be submitted to the Chief Financial Officer Department (name of person) no later than six (6) weeks in advance of the targeted Priorities and Finance Committee (PFC) meeting date.

Only completed applications supported by a PFC cover report will be submitted for placement on the PFC agenda. The PFC will review the report and proposal and provide their recommendation to Council. The recommendation and report will then be forwarded to Council at their next scheduled meeting.

Provide a summary description of the project to a maximum of 1 page.

Project Description: Wearable technology, such as smartwatches, activity monitors, and smartphones, have revolutionized our ability to collect scientifically-valid biometric data regarding health and activity. Researchers at the University of Calgary are currently leading Canada's first graduate training program specializing in wearable technology, the NSERC Wearable Technology Research and Collaboration (We-TRAC) CREATE training program. We-TRAC is developing the next generation of wearable tech experts, and focusing on using wearable technology to revolutionize sport performance, healthcare, and health research. This technology can provide us with an unprecedented opportunity to better understand what people are doing and how that relates to their health and wellbeing. We propose to build a web-portal to allow Calgarians to voluntarily upload their wearable technology data (i.e. Garmin or Fitbit smartwatch, Google phone, etc) to a research database housed at the University of Calgary. In addition to providing scientific biometric data already collected through their wearable devices, our Calgary "citizen scientists" will also consent to participate in

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various research studies, simply by using their wearable tech device(s) and going about their daily routine.

Examples of these research studies range from understanding heart rate and stress levels while cycling to work, determining how the layout and connectivity of the street network is amenable to design by urban planners and developers, investigating sleep patterns and its effect on quality of life for clinical patients, collecting data on green space utilisation in order to aid in promoting physical activity resulting in healthier communities, and monitoring running patterns while Calgarians run and train on our pathways and trails.

Project Logistics: The Citizen Scientist Wearables Project will be run by the University of Calgary's We-TRAC research team. The We-TRAC research team currently has 30+ students and 15 researchers. The purpose of the proposed project is to collect biometric data from everyday Calgarians in order to better understand stress levels in urban environments and to use these data to help inform decisions around urban planning, engineering and infrastructure investment.

The We-TRAC team is hoping to attract 10,000 Calgarian participants to participate as Citizen Scientists. Calgarians looking to participate in the study will be able to sign up at the University of Calgary's We-TRAC homepage. Participants must have their own wearable device and can register it on the site. Once participants sign up, the biometric data from their device will be shared with University We-TRAC research team. Only the We-TRAC research team will have access to the personal data of the participants, and data will be held within a level 3 secure database server. Level 3 Security (L3S) is referred to as the most in-depth and highest security level technology for securing identities and identity documents. The University of Calgary will then analyze the data to check for biometric measures such as stress and relaxation (e.g. heart rate) and activity patterns (e.g. geolocation, cadence, steps). The We-TRAC team will then aggregate and anonymize the data for City and public use. The University will then work with The City and external partners to use the data to help build a better city and optimize infrastructure investments.

The Citizen Scientist Wearables project is an ongoing study with no planned end date. Calgary Citizens can opt out at anytime and all will provide informed consent as per the University's Conjoint Health Research Ethics Board.

Economic Benefits: The Wearable Technology Citizen Scientist program has strategic alignment with key focus areas of the economic strategy for Calgary. The Strategy is intended to align The City of Calgary, its civic partners, the private sector, educators, and other community stakeholders to achieve economic competitiveness while building long-term prosperity and a stronger community. Specifically, this application meets three strategic areas of Calgary in the New Economy: Place, Innovation, and Talent.

Place: this project accelerates better connectivity across the city by enabling the city to make informed decisions on infrastructure (roads, bike paths, crosswalks, transit, sidewalks, parks) based on robust datasets provided by local citizens.

Innovation: this program supports further growth in Calgary becoming a hub for an emerging Life Sciences sector by establishing it as a city that is capable and willing to test wearable devices and Health IT related innovations in a real-world setting. A progressive framework that allows organizations to validate new technologies would help to drive company attraction and investment into this sector in Calgary.

Talent: YYC Citizen Scientist is sourcing top talent out of an emerging faculty at the University of Calgary in Biomedical Engineering to develop real world solutions to be implemented at a Municipal level. Allowing local academia the opportunity to develop and implement new technologies provides an innovative platform for top talent attraction.

The City of Calgary's Responsibilities and Roles:

City of Calgary Administration will be responsible for the following items for the Citizen Scientist Wearables Project:

- Providing one time matching funding through the Council Innovation Fund to help support the development of the Citizen Scientist Wearables Project.
- Finalize data privacy and data sharing agreements through the Urban Alliance
- Host the data on aggregated anonymized data on The City's Open Data Portal
- Use the data to make better planning and engineering decisions
- Communicate and collaborate with the We-TRAC Research group on how The City is using the data
- Report back to Council through PFC on the project outcomes

The University of Calgary's Responsibilities and Roles:

The University of Calgary's We-TRAC research team will be responsible for the following items for the Citizen Scientist Wearables Project:

- Providing matching funding for The City of Calgary's contribution
- Finding study participants
- Obtaining, analysing and anonymizing wearable data
- Securing the data behind a level 3 server
- Providing an anonymized data set that can be hosted on The City's Open Data portal for public use

**Councillor Gondek CIF Application:
University of Calgary, Faculty of Kinesiology,
Citizen Scientist Wearables Project**

Identify how this project meets the criteria as outlined in the Terms of Reference for the Council Innovation Fund.
Please attach additional information as required.

The proposed Project meets several key priorities of the City of Calgary:

1. Well Run City
 - a. This Program also directly supports "diverse communication channels, including online digital tools to enable two-way communication with Calgarians."
 - b. Wearable data can help the City to "be as efficient and effective as possible, reducing costs and focusing on value-for-money."
2. Prosperous City
 - a. This Program will support Calgary Economic Development Ltd. and specifically the key industry sector of Transportation and Logistics.
3. A Healthy and Green City
 - a. This Program helps "create and implement initiatives that are citizen centric and focus on community and environmental needs."
4. City of Safe and Inspiring Neighborhoods
 - a. Wearable tech data can help the City "systematically invest in established neighbourhoods as they evolve to accommodate changing community needs."
 - b. Wearable tech data can provide the information necessary to "develop a new funding framework to provide for infrastructure in new and redeveloping neighbourhoods."
 - c. Using the data, we can encourage walking and cycling as well as the promotion of other healthy habits

Outline the proposed timeline for this project, including the final report back date.

1. Finalize web-portal development (March 2020)
2. Promote opportunity with community partners (March – June 2020)
3. Review research projects with City of Calgary (June 2020)
4. Final Report to PFC on program execution, including lessons learned report (Q2 2021)

Identify what success looks like, and how it will be measured.

This program is intended to (1) help Calgarians be more engaged as Citizen Scientists, (2) help the City to become "Smart" through the use of wearable technology data and citizen feedback, and (3) transform scientific research through the gathering of wearable technology data.

The Wearable Technology Citizen Scientist Program will be a success if:

1. It is able to build capacity with other City of Calgary initiatives, such as Vivo for Healthier Generations, and other programs, such as healthYYC.
2. The program is able to source, and create talented students, researchers and entrepreneurs in the growing field of wearable devices.
3. Scientific data can be leveraged, and evidence-informed decisions can be made based on these data that will lead to cost-savings and improved infrastructure for the City.

Your personal information is being collected, used and disclosed for the administration and processing of your application for funding under the Council Innovation Fund Project. Your information is collected pursuant to section 33(c) of The Freedom of Information and Protection of Privacy Act ("FOIP Act") of Alberta. If you have any questions about the collection, use or disclosure of your personal information, please contact The City of Calgary's Chief Financial Office (#8003), The City of Calgary P.O. Box 2100, Stn. M, Calgary, AB T2P 2M5 and by calling at 403-268-5664.