



McElhanney

Since 1910

Canadian Consulting Engineering Awards 2015

Traffic Count App, Edmonton

Revolutionizing traffic data collection with
new touch technology application



CLIENT // McElhanney Consulting Services Ltd.

AWARD CATEGORY // F. Special Projects



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Full Project Description

Summary

McElhanney has revolutionized the collection of traffic data by developing a new touch technology application that enables reliable, real-time, paperless traffic counts. Since its launch, the app has been used at over 550 locations for a variety of clients and has proven itself to be reliable, efficient, and user-friendly. By combining innovation, engineering and current technology, McElhanney has brought traffic counting into the digital age; and provided a traffic count you can count on.



TRAFFIC COUNT APP

REVOLUTIONIZING TRAFFIC DATA COLLECTION
WITH NEW TOUCH TECHNOLOGY APPLICATION

Project Highlights

1. Innovation

Engineers and designers rely on traffic count data for the planning, design, and operation of major roadways. While there are commercial solutions for traffic counting, none of them seemed to meet or exceed the requirements set forth by our clients. One of our largest clients, Alberta Transportation, requires turn movement counts be performed with vehicles categorized in five distinct classes, and six additional classes for pedestrians. For over a decade, we investigated various solutions to address:

- Traditional counting boards that were ineffective in high volume locations,
- The inability to classify pedestrian crossings, and
- The inability of video analytics systems to class the vehicles effectively according to Alberta Transportation standards.

*User-friendly
touchscreen
interface.*



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With no “off-the-shelf” technology available to meet our requirements, innovation was critical to the development and modernization of the counting process.

Our innovations to this solution included:

- 1 A new approach to automate a typically manual process,
- 2 Fully customizable, touch screen inputs,
- 3 Remote upload of data (as opposed to mailing or delivering hard copies),
- 4 Remote supervision of counting staff – the automatic timestamp verified that traffic was being counted at the required time and makes falsification of data extremely difficult.
- 5 Eliminating the manual digitization of count data – reducing the labour requirement and the likelihood of data entry errors,
- 6 Significantly faster output, from count to finished report, and
- 7 User-friendly and intuitive interface – the tablet makes it easier to count (less paper to sort and time intervals to track) and provides a more engaging user interface.



Traffic Counting App Screen Shot: Keys & Classes

Traffic is counted and classified into 12 movements and up to six classes using the time stamp feature of 72 traffic keys.



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2. Complexity

McElhanney has made several attempts to streamline the traffic counting process and the development of this application proved to be much more difficult than was initially expected. This idea was conceived over a decade ago and nearly languished due to a lack of suitable hardware. Since McElhanney is not a software company, but rather a consulting engineering firm with little to no software development experience, the entire exercise was challenging. Through the hidden talents of staff and by bringing in key partners on the programming side, this difficult project ultimately flourished and became a reality.

Traffic Counting
App Screen Shot:

Conditions

Data can be manually entered or set up to populate each field automatically.



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Over the last 15 years, McElhanney researched numerous ways to merge modern technology with traditional traffic counting methods. Whether due to battery power, processing speed, accuracy, cost, or simply ease of use, the technology could not quite meet all the requirements and always seemed to fall short. However, with recent advances in touch technology, modern day lithium-Ion battery packs, and powerful mobile processors, McElhanney has finally been able to bring a conventional traffic count to the digital age. In 2014, with the programming services of Jibinfo System Inc. Canada and the graphics design services of Ben J. Cote, our vision became reality and the tablet-based app was born. Every aspect of the final version of the project was conceived, tested, fixed, retested, and implemented in-house in just over a year.



McElhanney's
Edmonton team
in a meeting.

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3. Social and/or Economic Benefits

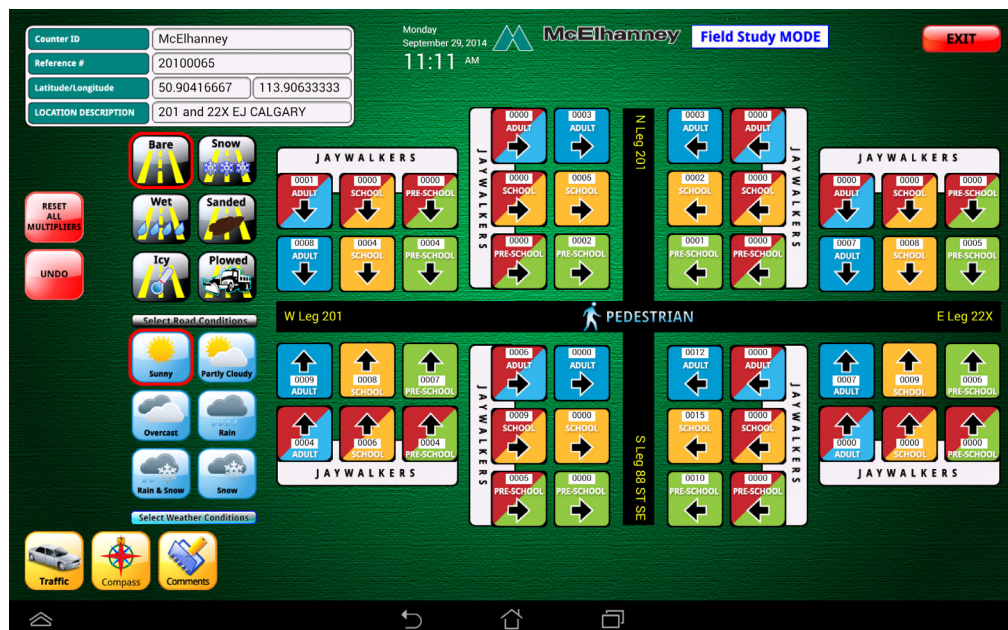
Roadways connect communities and enable the smooth flow of goods and people to their destinations. Smart infrastructure design supports Alberta's expanding economy and increasing population. City planners and transportation authorities rely heavily on traffic count data to design safe, efficient roadways and intersections and make strategic planning decisions. Having data that is both accurate and precise is an essential foundation that allows them to determine and model traffic patterns for transportation and land use planning, confirm or correct road classifications, and prioritize roadway and intersection upgrades that affect Albertans' quality of life.

Economically, this app decreases average data processing time from 10 days to less than two days. This in turn reduces fees charged to government clients and ultimately saves taxpayer money. Socially, this app provides more accurate data which assists engineers in designing safe and efficient intersections and road networks.

This app decreases average data processing time from 10 days to less than two days.

Traffic Counting App Screen Shot: **Pedestrians Input**

Pedestrians are counted and classified into eight possible movements, three classes, and two crossing types using the time stamp feature of 48 pedestrians keys.

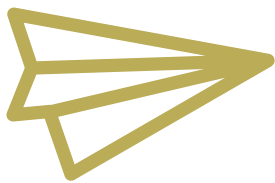


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4. Environmental Benefits

A single count on paper can use anywhere from 22 to 44 sheets of paper per counter at each location. With over 550 sites (many of which required multiple counters per site) counted in 2014, it is estimated that the traffic app saved over 35,000 sheets of paper, along with the toner and power associated with producing the field counting sheets. In addition, we were able to minimize the carbon footprint required for travel as field staff from all over the province no longer needed to deliver their count sheets or have them mailed/couriered to our Edmonton office.



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5. Meeting Client's Needs

McElhanney has been conducting paper-based traffic counts for a variety of clients for more than 17 years, including the provision of all data for Alberta Transportation's Traffic Monitoring Program. We sought out a method which would incorporate data collection, data entry, and data reporting in a single electronic process.

McElhanney has successfully combined innovation, engineering, and current technology to develop a unique traffic counting application that offers a multifold improvement in the accuracy, reliability, efficiency, and accessibility of traffic data at intersections. The results were better than expected. The app was used at over 550 locations in the first few months of its launch, proving its reliability and ease of use. The elimination of manual data entry has saved significant labour costs and reduced potential errors. Instead of mailing traffic count sheets to our clients, counters are now able to upload data over Wi-Fi or mobile hotspot connections, which reduces the processing time of a traffic count from weeks to days.

Our traffic counting staff say that the application has made their job easier and the touch screen allows for intuitive input. Count data is now more secure, accurate, and verifiable, as the time-stamped data is difficult to tamper with or falsify.

McElhanney is now developing plans to export this made-in-Alberta technology to other provinces and beyond, helping utilize this innovation and technology to improve engineering design.

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How the App Works

