



FARMING REIMAGINED

Written Submission for the Pre-Budget Consultations in Advance of the 2020 Budget

Smart Regulation to Empower a World-Leading Autonomous Farming Innovation

Submitted by: Dot Technology Corp.

House of Commons Finance Committee

August 2, 2019

List of Recommendations

Recommendation 1: The Government of Canada should foster and encourage collaboration with its provincial and territorial counterparts to ensure the development of harmonized regulations impacting the use of autonomous machinery on farms and when being transported on roadways are uniform across jurisdictions.

Recommendation 2: That the government commit and adhere to aggressive targets for the provision of high-speed broadband infrastructure for Canada’s rural farming communities, recognizing that this infrastructure is essential and urgently needed.

Recommendation 3: To ensure Canada can take advantage of the lowered fuel consumption, reduced labour costs, better output and other benefits of autonomous farm machinery, the federal government should increase funding support for research and development programs for innovation in artificial intelligence applications.



Introduction

Always striving to fulfill the commitment to “Farming Reimagined,” Dot Technology Corp. is a Canadian small business based in Regina that has created the technologically advanced and world-leading Dot Power Platform. Built on an application of artificial intelligence with the potential to change how farming is done, Dot is a mobile diesel-powered platform capable of attaching itself to existing implements and operating them autonomously. It can handle a large variety of commonly used farming implements, with mining and construction applications also possible. Its U-shaped frame facilitates the direct loading of implements, so that, once loaded, the implement “becomes one” with the mobile powered platform.

Working for farmers, Dot completes tasks autonomously and enables farmers to spend more of their time focusing on the overall operation of their farms. A cutting-edge product with unlimited potential, this new farming platform is making a unique contribution to Canada's efforts to harness innovation and technology to grow the economy, increase farm productivity, reduce fuel consumption and expand Canada's export sales. It is capable of bringing automation to very labour intensive jobs and can redefine the way Canadians and farmers worldwide work in the years to come.

After trials in 2018, Dot platforms are now being put into use successfully by farmers in Saskatchewan. Full commercialization will follow.

Dot is the latest invention of founder and President Norbert Beaujot, himself a farmer and long-time innovator, whose companies are part of this country's “short-line” farm manufacturing sector. A truly Canadian success story, this specialized equipment-making sector was built up over decades by manufacturers who developed specialized agricultural equipment that met the unique needs of local farmers given the harsh climate and growing conditions of the region. Today, this sector's agricultural equipment is among the highest quality and most sought-out in the world, with annual exports worth nearly \$2 billion.

As part of a sector born of ingenuity, Dot welcomes the challenge from federal leaders to strengthen Canada's business and industrial capabilities by building and sustaining a smart, forward-looking economy based on technology and ingenuity.

Recommendation 1

Given the food productivity gains and environmental advantages that are within reach today through the use of autonomous machinery on Canada’s farms, the federal government should at the earliest opportunity instruct federal-provincial officials working on a National Policy Framework for AI vehicles to include regulations impacting the use of autonomous farm machinery. The policy should ensure the creation of harmonized regulations across jurisdictions governing transport of autonomous farm vehicles on roadways.

This would be done with the aim of alleviating the compliance cost and administrative burden of non-standardized regulations while also encouraging the quick adoption of a unique, world-leading Canadian breakthrough in innovative technology for this sector.

Autonomous farm vehicles offer a range of advantages. Through the continuous development of artificial intelligence capabilities, Dot reduces greenhouse gas emissions, improves soil conditions and creates efficiencies such as approximately 20 per cent savings on fuel and equipment capital costs.

And the improvements in farm safety possible with autonomous vehicles is very significant. A recent study by the Canadian Automated Vehicles Centre of Excellence estimated an 80 per cent reduction in collisions is achievable with autonomous vehicles.

Also, such vehicles can address the very pressing issue of labour shortages, which in agriculture are the highest faced by any major Canadian economic sector. Within a decade, the job vacancies on our farms could reach crisis proportions. According to the Canadian Agricultural Human Resource Council, the job gap in agriculture in Canada could double by 2029, rising to 123,000, or one in every three jobs--a shortcoming that would result in \$11 billion in annual lost sales.

New technology offers an important way to reduce the impact of farm labour shortages, the Council noted in its report, *Agriculture 2029: How the Sector’s Challenges Will Shape Its Future*.

To ensure Canada’s farmers can benefit from these advantages, authorities will need to work together in a forward-looking way to quickly ensure regulations for autonomous technology are harmonized across jurisdictions.



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We believe the savings in labour, fuel and capital costs autonomous farming platforms provide will convince more agricultural producers to begin using autonomous or semi-autonomous means such as Dot at an early date

Having the federal government working with the provinces to develop harmonized regulations will lower compliance costs and uncertainty and will better enable farmers to become early adopters of autonomous technology.

The federal and provincial governments are in a position to provide leadership in this area. They should at the earliest opportunity advise federal-provincial officials working on the National Policy Framework for AI vehicles to expand their mandate to include regulations impacting the use of autonomous farm machinery. The policy should ensure the creation of harmonized regulations across jurisdictions governing movement of autonomous farm vehicles on roadways.

Through cooperative action, we believe it is possible to move quickly to create common-sense regulations for the use of autonomous vehicles on provincially controlled roadways for the benefit of small businesses, agricultural producers, and innovative entrepreneurs—all positive factors for the economy as a whole.

Recommendation 2

That the government commit and adhere to more aggressive targets for the provision of high-speed broadband infrastructure for Canada’s rural farming communities, recognizing that this infrastructure is essential and urgently needed if the country’s rural communities are going to utilize the innovation and technology vital to the achievement of new levels of success in agriculture, industry, job-creation and economic growth.

Rural Canada’s prosperity depends increasingly on reliable broadband access. As has been the case with many of the innovations adopted on the modern farm, the full capabilities of our technology are accessible only when connected to the Internet. However, a reliable broadband internet connection is still unavailable in many rural communities.



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While commitments have been made to address this shortcoming, with indications that all rural communities will have access by 2030, unfortunately, this means many communities will have to wait many more years to access technology that has been available for over a decade.

A recent survey commissioned by Agriculture and Agri-Food Canada on the use of precision agricultural technology on western Canadian farms found that a majority of farmers surveyed were “somewhat dissatisfied” or “very dissatisfied” with their Internet service or its speed on their farm. Nearly half of those surveyed expressed similar dissatisfaction with the cellular coverage or cellular data capabilities on their farms. Lack of speedy Internet service and insufficient cellular coverage were cited by respondents as among the five top barriers to adoption of precision agriculture technology.

To best ensure that all rural communities can participate in the modern economy, foster business and capitalize on the economic opportunities their regional proximity provides, we encourage the government to commit to a more aggressive timeline for providing all of Canada with the capability of accessing broadband Internet.

We are certain this would pay dividends across the board. We recommend the federal government work with the provinces and territories to implement the projects and infrastructure funding necessary to meet this goal ahead of schedule. In the case of Dot, for instance, our technology is available today, and other internet-dependent innovations that make farming more efficient and safer have also been previously available. It is in Canada’s best interest to pull out all the stops to provide its rural citizens with the benefits of connectivity on an urgent basis.

Recommendation 3

To ensure Canada can take advantage of the lowered fuel consumption, reduced labour costs, better output and other benefits of autonomous farm machinery, the federal government should increase funding support for research and development programs for innovation in artificial intelligence applications. Of equal importance, the government should ensure the funding eligibility criteria are written in a non-limiting way that takes into account the full potential of the ideas, research and project development that are at the heart of the innovations essential to Canada’s future growth and prosperity.



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Despite Canada’s agriculture industry having been on the cutting edge of world-leading innovations for decades, it is still a commonly held assumption that the role of farming in the modern economy has not been subject to as much technological advancement as other sectors.

Those in the agricultural sector understand this is not the case, that they are not farming in the same way as their parents and grandparents before them. The use of GPS, the emergence of zero-till seeding and the very existence of the modern canola seed are few of the countless examples of how the innovative spirit is fostered and thrives in the agricultural space.

These developments are the product of a new approach to farming with great promise for better land usage, environmental improvements and maximized production at a time when world populations may be outgrowing current crop yields.

However, the creation of new technology comes with a considerable price tag. Despite the uncertainties associated with pushing the boundaries of technology, innovators must be able to afford considerable, ongoing outlays for research and development, highly-skilled staff, capital investment needed to get projects off the ground and other costs.

And today this must be done during a period of unusual trade uncertainty in which the benefits of investment have to be weighed against the risks of diminished export options and the possibility of broad-based economic slowdowns.

Given the great potential of innovative technologies, Dot recommends that the federal government increase funding support for research and development programs for innovation in artificial intelligence applications on an ongoing basis.

It is equally important to ensure the benefits of doing so are strengthened by implementing rules and eligibility requirements in a manner in keeping with the forward-thinking, innovative principles underlying these incentive programs. Innovation is of course a creative, outside-the-box pursuit of excellence and efficiency that by its very nature breaks through existing ways of thinking and challenges customary standards, processes and outcomes.

Thus funding criteria and decision-making on applications need to be implemented in a way that is not limited by restrictive thinking—that instead fully recognizes the ingenuity and breakthrough capacity of this country’s entrepreneurs, scientists and industrial inventors. Doing so would ensure that government funding support more effectively achieves the intended aims.



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Conclusion

Dot Technology Corp. wishes to extend our thanks to the Standing Committee on Finance for the opportunity to submit a proposal in advance of Budget 2020. In closing, we would reiterate our belief that innovative technologies can provide exponential advances for Canadians and the world. And governments can help open the way for these advances by providing forward-looking leadership that creates a pro-growth environment through funding support and appropriate regulatory cooperation while striving to establish Canada as a world leader in connectivity.

We are confident that the recommendations provided above are not only vital for the growth of our own innovative space but would foster a business environment that is more encouraging and conducive to the development of emerging technologies across all sectors.

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