The role of the universities in the creation of a tech corridor in Cascadia

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First, I want to welcome our guests and colleagues from across the border. In many ways this conference is a reminder that the US and Canada have long been each other's closest partner, exchanging people and ideas as well as goods. In the realm of knowledge discovery and dissemination, borders should have no meaning. We benefit most when we work together, and I'm happy to remind you that Canadian and American scholars and scientists are extensively embedded in the libraries, laboratories, and classrooms of each other's countries.

I also want to thank Microsoft for its role in sponsoring this event. Microsoft is playing a major role in developing tech industries in this part of the world, and in bringing all parts of the Pacific Northwest closer together.

Over the last few hours we've heard a good deal about tech corridors, how they have developed, and how they might develop in this region. The question before us now is, in what ways can universities contribute to achieving that goal?

This should be a relatively straightforward proposition. Big universities like UBC and the University of Washington already conduct large research enterprises in areas such as information technology, digital media, software development and so on. And I'm happy to note that we already do engage with one another in a variety of ways: so, for example, the Pacific Institute for the Mathematical Sciences, based at UBC, is a consortium of universities that includes UW as a member. And then there's UBC's Applied Science Faculty, which holds an annual conference with the University of Washington around the topic of hydrology and water resources—a conference that has been going on since the mid-1970s.

So there are cross-border connections. But we are nowhere close to realizing the potential that lies in a greater combination of our individual

capabilities, allied to coordinated initiatives by government and industry. To move that agenda forward, we need to convince ourselves and our partners that the conditions are right: that the necessary political, social, and economic factors are in place to transform the Cascadia region into a technological hub comparable to Silicon Valley and Boston.

We need to remember that universities do not operate in a vacuum. Whether we are talking about student access and mobility, research priorities, transportation links, or physical facilities, we are inextricably linked to the socio-economic environments in which we find ourselves. Most universities, including UBC and UW, were established to meet the practical needs of a new settler society, and that sense of responsibility to the state or province of their foundation remains, as indeed it should, a strong influence on their mission and operation.

In the public realm especially, universities must also depend on the support they receive from regional and national governments, both for research funding, whether basic or applied, and for operating. The consequence of such arrangements is that decisions about the teaching and research enterprise are rarely made unilaterally; university presidents in Canada spend a lot of their time keeping a wary eye on provincial and federal ministers and trying to influence the direction of research and innovation policy.

In Canada, our federal government has recently launched two important initiatives: a fundamental science review and a consultation on Canada's innovation agenda. Combined, these two initiatives aim to address how best to foster an innovation-based economy in the 21st Century. In doing so, they are asking important questions about the globally competitive levels of research funding, best practices for "big science", and whether or not Canadian innovators and researchers have the right supports to collaborate across borders. So this conference is very timely within the national discourse in Canada.

And as you know, in British Columbia, the provincial government recently launched its Tech Strategy. It is an important acknowledgement of the role the tech sector is playing in our provincial economy and a needed commitment to provide the supports to ensure the sector flourishes.

Since 1998 the provincial government has provided important matching funding to ensure universities attract Canada Foundation for Innovation funding for research infrastructure through its Knowledge Development Fund. Through this and other provincial programs such as Genome BC and the Michael Smith Foundation for Health Research, UBC and our sister institutions in BC have been able to build the kind of solid foundation that makes advanced research possible and contributes to both provincial and national socio-economic wellbeing. BC is indeed a place where research and innovation flourish.

And as I hope you know, UBC itself is a major player in the research enterprise. After that University in Eastern Canada, we are the second largest research institution in Canada. In the past year we garnered $600 million in research funding, supporting almost 9,000 research projects across the university. We conduct 90% of the industry-sponsored research in BC. In 2015, UBC was in the 73rd percentile for tech transfer among North American universities, and in the 87th percentile among Canadian universities.   In 2016, UBC was in the 92nd percentile for start-up company creation among North American universities, and in the 97th percentile among Canadian universities. So UBC is and should be a critical partner as we discuss further strengthening cross-border collaborations.

Successful research universities must be actively engaged along the full range of the innovation spectrum – fostering and recruiting talent, pushing the edges of discovery and helping bridge those discoveries to the market place, the hospital bed, or to government policy.

Large research universities like Washington and UBC supply both the technical know-how and the qualified graduates to keep our industries at the

forefront of world markets. We contribute to the development and evolution of new companies, products, and services, and create the new technologies that industry needs to remain productive and competitive. UBC students have the benefit of the largest co-op education program in Western Canada, gaining invaluable work experience before they graduate, and facilitating the exchange of knowledge between industry and academia.

To further promote research-industry collaborations, UBC's University-Industry Liaison Office—the UILO—helps start-ups and spin-offs, and provides the kind of network and know-how that enables researchers to bring their discoveries into the marketplace. UILO is comprised of two distinct groups: the Sponsored Research Group and the Technology Transfer Group. Both groups are recognized nationally, negotiating more than 2,500 contracts, issuing hundreds of patents and licensing agreements, and spinning off new companies each year.

One of UBC's most successful spin-offs is Westport Innovations, BC's largest clean tech company. The company engineers the world's most advanced natural gas engines and vehicles, reducing emissions and fuel costs, employing more than 450 people in BC and over 1,000 in Canada, all with technology developed at UBC. The company was initially built through close partnerships with UBC researchers, grad students and lab facilities, and maintains extensive research partnerships with UBC to this day.

I offer this example to emphasize how UBC has already developed the kind of expertise in university-industry start-up and collaboration that could well create a platform for the kind of partnership that is the theme of this conference. Not only do we produce the brainpower; we also know how and where to apply it to the greatest effect.

Success in joint enterprises of the kind I've been describing is predicated on strength in local and regional economies. Partnership supposes strengths on each side, both in broad economic terms and at the more granular level of research and manufacturing capacities. The states and provinces that form Cascadia are in such

a position. I will speak only of British Columbia in this context, to emphasize that the province would be a strong partner in the kind of alliance we are contemplating today, an alliance built around advanced technologies and their associated industries.

Despite some stagnation in the Canadian economy and setbacks in resource investment, BC has continued to forge ahead, enjoying a boom in technology-based industry and manufacturing, along with the lowest unemployment rate in Canada; indeed, the projections are for BC to lead Canada in economic growth over the 2016-2017 economic period. And over the last five years Vancouver has become a technological hub, developing real strengths in film-making, special effects, and electronic games.

Part of our region's strength lies in the high quality of its education system—a necessary precondition for the creation of a tech corridor. Our universities and colleges play an increasingly important role in helping the province maintain a strong position within the Canadian economy. The economic impact of university research on the provincial economy through knowledge transfer has been estimated at $8 billion annually. UBC alone engages in hundreds of research projects each year that boost employment and contribute substantially to the provincial GDP. Our licensed technologies are at the heart of a huge range of treatments, products, processes and services that have generated an estimated $12 billion in sales.

None of the factors I have discussed so far—government funding, public-private partnerships, or the role of universities in contributing to regional economic strength—mean much if they are not underpinned by the capacity to generate new ideas—if they lack the brainpower and curiosity that sustain fundamental research and bring about innovation. Research is nothing if it is not driven by a desire to discover the unknown, and to turn that discovery into something new—whether a new product, a new way of thinking, a new solution to an old problem. This is where universities excel: in creating the conditions in which innovation can flourish, in which, with time and financial support, people

can dedicate themselves to bring about changes in the ways we act, think, or create.

Recognizing this, industry is turning more and to the universities to find new ways of solving their problems, to help them develop new products or improve quality and efficiency.   So, for example, Boeing and SkyNRG, with support from Canada's aviation industry and other stakeholders, are collaborating with UBC to turn leftover branches, sawdust and other forest-industry waste into sustainable aviation biofuel. And industrial partners are making more and more use of UBC facilities such as our Imaging Lab or our Centre for High-Throughput Phenogenomics, to help them test new products or examine the causes of disease.

Within Canada, there are more and more such instances of collaborative enterprise fostering innovation. Provincial and federal governments are beginning to recognize the importance of innovation to a healthy and thriving economy. Our federal government's innovation agenda articulated last June includes the creation of research clusters and partnerships—the kind of partnerships within and between universities and industry, between public and private, and across national borders, that we are envisaging here today.

UBC and Vancouver are certainly ready for the kind of opportunities that a tech corridor would present. Microsoft's new presence in the city in the form of its Excellence Centre promises to act as a spur to innovation in many aspects of software development; and it encourages us to think about creating networks linking UBC data scientists, Microsoft Research, and software engineering scientists at UW. A number of UBC researchers in computer science and electrical and computer engineering already have strong connections and ongoing projects with Microsoft Research in Redmond; given the right support, this could easily expand into a much broader and more comprehensive relationship.

We can and must forge new alliances; we must learn how to draw on one another's strengths; we must develop a climate of collaboration and

complementarity, if we want the region to prosper, if we want to bring about economic growth and social wellbeing on both sides of the border.

Collectively we have the brainpower to make this possible. What we need is to find a way of unleashing that brainpower, perhaps by the creation of a supra-national regional authority that could bring universities, governments, and the private sector together; not to create a new independent nation as John Quincy Adams believed might happen in the Pacific Northwest, but rather to enrich the lives of people on both side of the border and contribute to the prosperity and wellbeing of all the citizens of Canada and the United States.

Thank you.

(http://www.gov.bc.ca/citz/technologyandinnovation/Funding/examples.html)
(https://news.gov.bc.ca/releases/2016MTICS0012-000835)

(http://webometrics.info/en/North_america)