



An Economic Impact Analysis of the Nanaimo Technology Sector

Final Report

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1 Executive Summary

The Nanaimo Economic Development Corporation (NEDC) commissioned Nordicity to undertake this economic impact assessment of the Nanaimo tech sector.

There were two primary sources of information for this report and the accompanying *Nanaimo Tech Sector Inventory*. The sources of information were previous sector inventories carried out by MISTIC¹, as well as an online survey of the tech sector companies of the region. The survey response analysis comprised **117** tech sector businesses (of an identified **347** potential tech sector business respondents). These businesses together represented **19** different technology sector categories as classified by NAICS. Accordingly, the margin of error is +/- **8.7%** (**18 times of 20**) for tech sector businesses.

The final report comprises two main sections: (1) Nanaimo Tech Sector Profile, and (2) Economic Impact Analysis, as well as Nanaimo Tech Sector Vignettes throughout the report.

Nanaimo's Tech Sector Profile

- Nanaimo is home to an estimated **350+** tech sector businesses. These businesses fall into **19** unique categories within the tech sector cluster.
- The Nanaimo tech sector industry generated **\$204.1 million in revenues** in 2012, and had expenditures of **\$155.2 million**.
- Tech sector companies spent **\$155.2 million** on sector-related expenditures in 2012.

Tech Sector Trends

- Given the ubiquity of broadband access in the region, entrepreneurs who wish to start new businesses in the tech sector have greater opportunities than ever before to locate their businesses where they wish.
- While certain areas of the tech sector have experienced downturns over the previous few years, the impacts of this downturn were felt differently by different sub-sectors and has been a catalyst for innovation in some areas
- The continued shift to a knowledge economy has driven sectors that are traditionally less technology-driven to adapt new ways of doing business and consequently branching out into the tech sector

Economic Impact Analysis

- The tech sector in Nanaimo had a total **GDP impact of \$199.0 million** in 2012.
- The tech sector in Nanaimo had a total **household income impact of \$133.3 million** in 2012.
- The Nanaimo tech sector contributed approximately **5%** of the total **\$3,867million** regional GDP in Nanaimo in 2012.

¹MISTIC – Mid-Island Science and Technology Innovation Council, rebranded to Innovation Island.

- The Nanaimo tech sector had a total employment impact of **2,730** jobs in 2012.
- The Nanaimo tech sector **generated \$19.7 million in taxes** in 2012 (\$6.9 million in provincial taxes, \$1.4 million in local taxes and \$11.3 million in federal taxes).
- For every \$1 million in industry output, the tech sector in Nanaimo **generates 14 jobs**.
- The tech sector returned approximately **\$6.9 million** 2012 in direct and indirect tax revenue to the Province.

A note on this report and previous work

This report marks the second analysis undertaken by the Nanaimo Economic Development Corporation to better understand the tech sector in the region. Previous work was undertaken to determine the size of the sector by undertaking a detailed inventory exercise. This report builds on the previous inventory exercise, but also undertook to determine specifically what the economic impacts of this sector have on Nanaimo.

The body of this report will focus on the methodologies used to arrive at these impacts, while also exploring the wide array of businesses that form the tech sector within the vibrant community of Nanaimo.

The rationale for undertaking this report was to create the most up-to-date inventory of businesses, data and economic impact analysis of Nanaimo's tech sector in order to support and inform important decision-making for industry, stakeholders, policymakers and government.

2 Methodology

Nordicity deployed a series of primary and secondary research methods to collect timely, reliable data, including the creation of an updated Tech Sector Inventory for the Nanaimo region, hosting a tech sector ‘meet-up’ event in Nanaimo, creation and delivery of an online survey, as well as targeted follow-up phone calls to create tech sector vignettes. The exact methodologies and results of the work are presented in the subsections below.

2.1 Tech Sector Inventory

A key input into the economic impact assessment was the creation of an updated, recent business inventory covering the Nanaimo tech sector. This inventory was completed through the use of both primary research (i.e. inputting data that was collected as part of the online survey component), and secondary research. The secondary research was desk-based and consisted of two primary streams: (i) Internal Data, and (ii) Publicly Available Data.

The Internal Data included previous research and analyses conducted on the local and regional technology sector, including the MISTIC Region business inventory data. **The Publicly Available Data** included raw data, analyses, reports and technology sector publications available in the public domain. Key sources of information are listed below:

- MISTIC Region / Innovation Island Technology Association
- BC Innovation Council
- BC Ministry of Technology, Innovation and Citizens’ Services
- BC Stats
- Industry Canada
- Statistics Canada

Both the internal and publicly fed into the construction of the tech sector inventory. The 2010 MISTIC business inventory was the starting point for the updated business inventory. The Nanaimo Region companies were taken from the MISTIC business inventory. In consultation with the Nanaimo Chamber of Commerce and local government, this list was cross-checked with other business lists. In the process, Nordicity also searched to identify new companies based in Nanaimo. This process allowed for an initial “clean-up” of the database as Nordicity removed companies that were no longer in existence from the inventory. Where possible, Nordicity’s online research also helped to identify the specific technology sector category for each business.

For each company in the business inventory information was collected to verify contact information. In particular, contact emails for company principals (i.e. company founder or president) was collected, in order to distribute the online survey to them.

At the conclusion of this exercise, the current 2013 inventory of technology companies in Nanaimo contains 347 verified entries including contact information, website URL and North American Industry Classification System (NAICS) numbers. In addition to the fully verified companies, there are a number of companies identified as being in existence, but for which full contact information could not be



verified. For the final vetting of the inventory, and during the process of promoting and the economic impact survey, Nordicity called some 120 target companies to establish whether they were in operation and relevant to the technology sector. Specifically, over 50 companies were called as follow-ups to bounce backs that were received on the original email invitations to participate in the survey, and also, over 100 calls were placed for the final survey reminder. Some companies were then removed from the primary inventory as a result of those calls. These companies were placed on secondary inventory sheets comprising of companies that either had no contact information, or did not fall within the criteria of 'tech sector' companies.

2.2 Online Survey and Data Analysis

The online survey formed the most vital source of data collection, fundamental to developing the industry profile and economic analysis. Hosted on the Canadian-based fluidsurveys.com, the survey was open throughout the month of October, 2013. The online survey was strongly promoted through NEDC, Innovation Island, and Nordicity, and supported by individual email and telephone follow-ups to increase the participation rate. As part of a grass-roots effort to encourage the community to participate, and industry meet-up was also organized and hosted by NEDC at a local establishment in Nanaimo.

A total of 117 survey responses were collected during this time, of which a total of 71 were identified as reliable, and fully analyzed (of an estimated total of 347 potential respondents as identified by the inventory exercise). Accordingly, the margin of error is +/- 8.7% (18 times of 20) for representative tech sector businesses.

Based on these response rates, Nordicity was required to extend the sample of data received by the survey to represent the total universe of tech sector companies operating in Nanaimo. To do so, Nordicity first assumed that the lists of companies developed during this study (through the inventory-updating exercise) formed the universe being examined. Then, Nordicity used the survey data to establish what an "average tech sector firm" might look like (in terms of revenue, expenditures and employment). In so doing, Nordicity took care to ensure that very large and very small firms did not skew our estimates. Nordicity's estimates should be viewed as conservative as they assume that there are no tech companies operating in Nanaimo that have not been counted (and verified) on the above-mentioned inventory.

2.3 Tech Sector Vignettes

Through the work undertaken for both the tech sector inventory and the survey data collected for the economic impact assessment, it became clear that there was indeed a vibrant tech sector in the Nanaimo region. Some companies have been in operation for many years, while others are relative 'newcomers' to the Nanaimo region and in the tech sector. Companies varied widely in size and scope, and this diversity is precisely what makes the sector as vibrant as it is. As a result, we decided to highlight a few of these companies throughout this report with 'sector vignettes'. These information boxes are simply brief overviews of the companies, what they do, and a little bit about their background. The belief is that these vignettes help to put a 'face' to the tech sector, and reveal a bit more about what this industry is all about.

3 Nanaimo Tech Sector Profile

This section of the report presents a profile of the tech sector in Nanaimo. In so doing, it describes the tech industry, based on the results of the online survey and analysis of the sector inventory compiled for this report.

Postach.io (aka Input Logic)



Founded: 2008
Employees: <10
Sub-sector: Software

Input Logic is a boutique digital product design & development agency based in beautiful Nanaimo, BC, Canada, founded by Shawn Adrian and Gavin Vickery. They create and invest in products in the publishing, productivity, and organization spaces.

After building web sites and apps for clients for give or take 10 years, developers Shawn and Adrian decided to focus on side projects - the stuff that was keeping them distracted from our "real" work, this lead to the development of the award-winning Postach.io software.

When working on documentation for a product they had built, Quote Robot, they became frustrated with the existing tools for publishing. So they decided to write their own.

Since they were doing their documentation in Evernote, as so many people do, they thought the best thing they could have was a tool that took that writing and quickly and easily published it, with zero intermediate steps between Evernote and the Web. This pet project became Postach.io.

Postach.io won the Evernote Devcup 2013 Gold Award, a \$20,000 prize and a wicked-cool trophy. The award was granted to Postach.io based upon a careful examination of the app by a panel from Evernote, as well as user voting after the team's presentation at the Evernote Conference.

Aside from making it effortless to publish from Evernote to the Web, Postach.io supports several gorgeous themes, a discussion system, and integration with several other services like Facebook, Twitter and LinkedIn and more integrations are coming.



3.1 Defining the Tech Sector

“Technology” is an indistinct term, at best. Accordingly, the first step to creating a profile of the tech sector in Nanaimo is defining the limits of the sector itself. To do so, Nordicity employed the North American Industry Classification System (NAICS) codes to set clear, definite boundaries for the sector. While this approach may produce a somewhat imperfect picture of the industry (as there may be technology-focused firms operating in other, related sectors), it does make the results of this study reasonable comparable with technology sectors in other jurisdictions. This approach also ensures that there is no double counting between this study and similar reports generated for other sectors of the Nanaimo economy.

Table 1 below lists the NAICS codes that were deemed to form the “technology sector” for the purposes of this economic impact assessment:

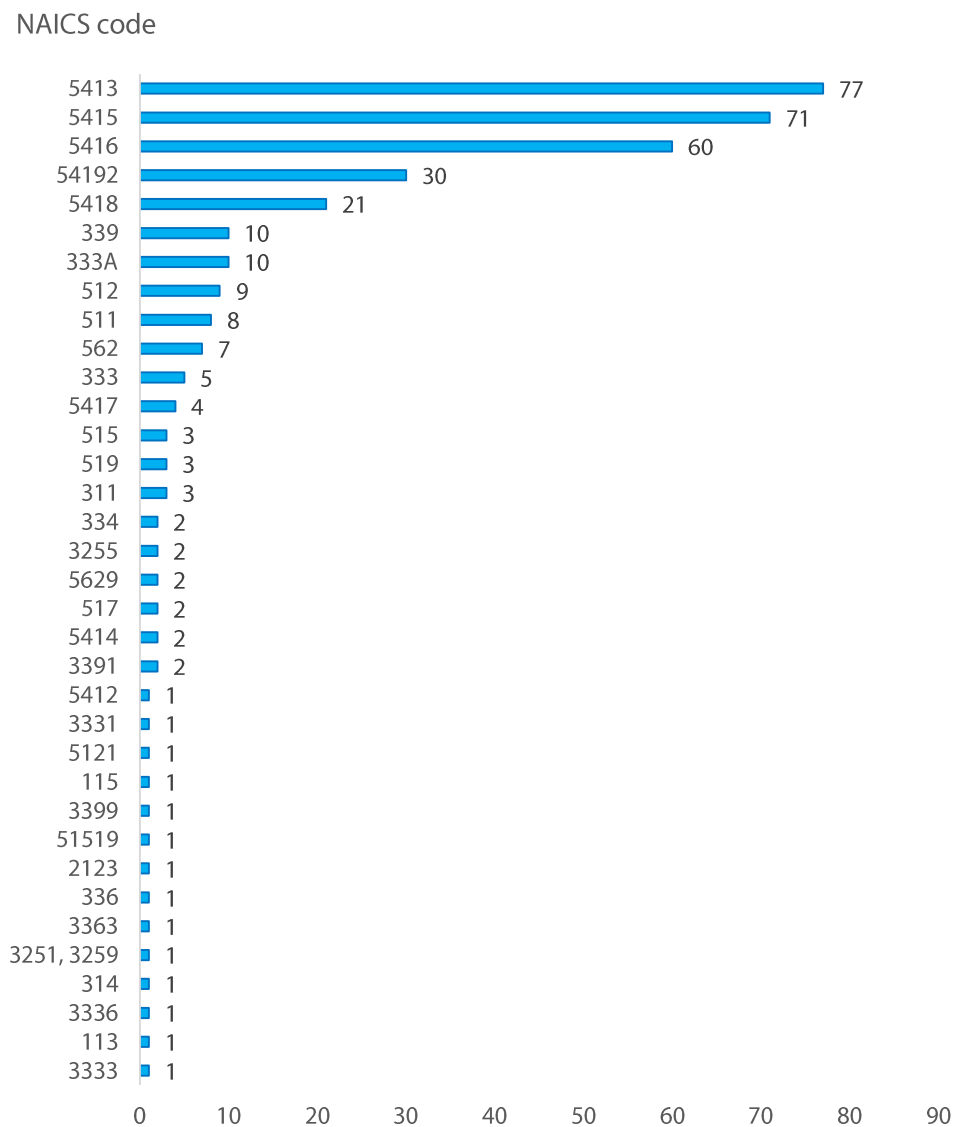
Table 1: NAICS codes for the “technology sector”

Industry	Sub-sector	NAICS Code
Resource-based	Forestry and Logging	113
	Mining and Quarrying	212
Manufacturing	Chemical	325
	Machinery	333
	Computer and Electronic Product	334
	Transportation Equipment	336
	Miscellaneous	339
Publishing	Newspaper, Periodical, Book and Directory	5111
	Software	5112
Motion Picture/Sound Recording	Motion Picture and Video	5121
	Sound Recording	5122
Broadcasting	Radio and Television	5151
	Pay and Specialty	5152
Telecommunications	Wired	5171
	Wireless	5172
	Satellite	5174
	Other	5179
Other Information Services	New Syndicates	519
	Libraries and Archives	519
	Web Search Portals	519
	Internet Publishing and Broadcasting	519
Professional Services	Architectural, Engineering and Related	5413
	Computer Systems Design	5415
	Management, Scientific and Tech Consulting	5416
	Scientific Research and Development Serv.	5417
	Advertising, Public Relations and Related	5418
	Photographic Services	54192
Educational Services	Universities	6113
	Business Schools / Computer & Mgmt Training	6114
	Technical and Trade Schools	6115
Public Administration	Federal	911
	Provincial/Territorial	912
	Local/Municipal/Regional	913
	Aboriginal	914
	International/Extra-territorial	919
Waste Management	Waste Collection	5621
	Waste Treatment and Disposal	5622
	Remediation and other Waste Mgmt	5629

3.1 Tech Sector by NAICS Code

According to the inventory created for this project, there are 347 companies operating in the tech sector in Nanaimo. Figure 1 displays these companies according to the NAICS code in which they are situated.

Figure 1: Distribution of NAICS Codes from Inventory

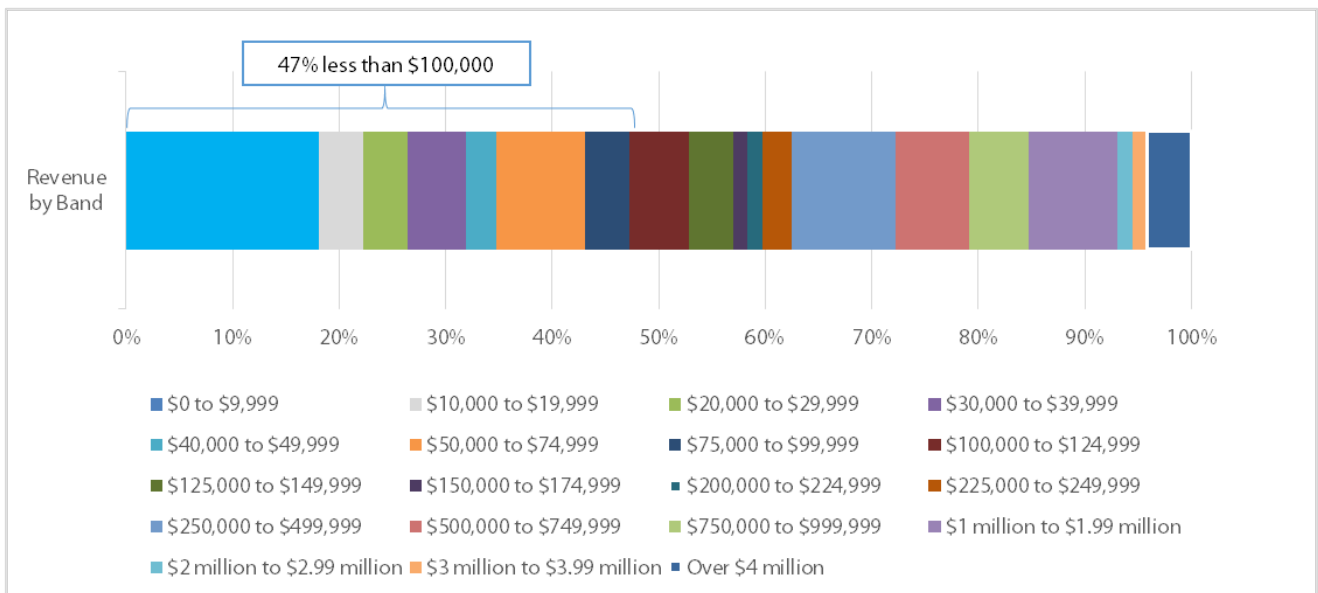


3.2 Revenue and Expenditure

Revenues are a key indicator for determining the health and status of any industry. To that end, Nordicity estimates that the tech sector in Nanaimo generated **\$204.1 million in revenue** in the 2012 fiscal year, with an average tech firm generated an estimated \$526,651 in revenue in that year.

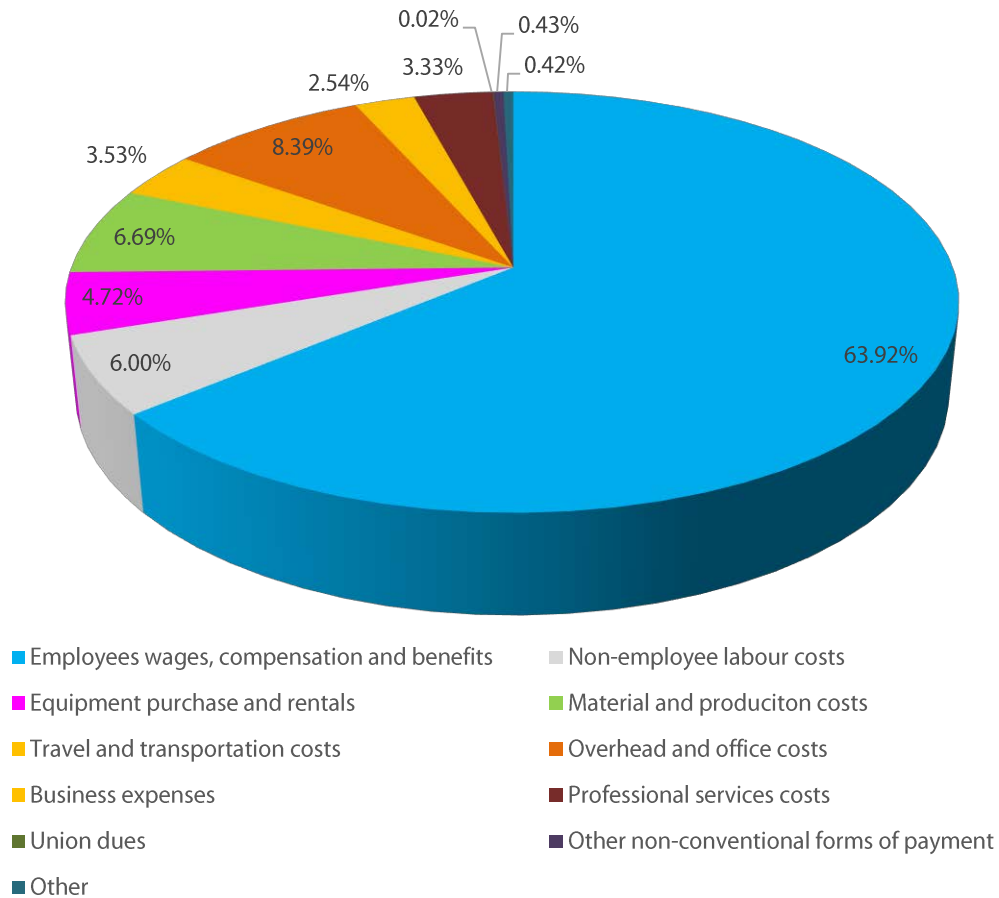
As Figure 2: Companies by Annual Revenue (2012) Figure 2 below illustrates, just under half of the companies operating in Nanaimo's tech sector generated less than \$100,000 in their 2012 fiscal year.

Figure 2: Companies by Annual Revenue (2012)



In the same year, the tech sector in Nanaimo spent an estimated **\$155.2 million on business expenditures**. Figure 3 presents a breakdown of these expenses:

Figure 3: Expenditures by Category (2012)

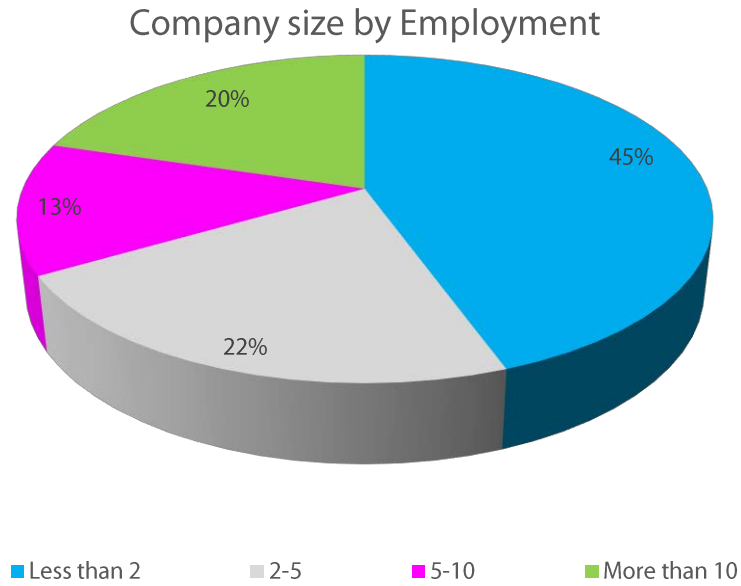


As the Figure 3 above illustrates, almost two thirds of the tech sector’s expenditures in 2012 related to employee costs, with a further 6% spent on non-employee labour costs (i.e. freelancers). This result indicates that a) employment in the tech sector is largely based on standard employment contracts, and b) that technology in Nanaimo is a labour-drive industry.

3.3 Employment

In the 2012 fiscal year, the tech sector in Nanaimo directly employed an estimated 2,730 people. As such, the typical company in the sector employed an average of eight FTEs in 2012. In Figure 4, we can see the distribution of companies by number of employees. Nearly half of all companies in the sample (45%) employ fewer than two people full time, while 20% employ more than ten.

Figure 4: Distribution of companies by number of employees (FTEs)



n=54

Seamor Marine



SEAMOR MARINE

Founded: 2006

Employees: 14

Sub-sector: Computer & Electronic Product Manufacturing

Seamor Marine Ltd. formed in 2006 to supply SEAMOR, a powerful and reliable inspection-class Remote Operated Vehicle (ROV) for industrial purposes.

The original Seamor technology was developed by Inuktun Services Ltd. In 2006 Inuktun sold the technology to Seamor Maine Ltd. – a company solely dedicated to the design, manufacturing and distribution of Seamor ROV's. The Seamor technology stems from the Scallop – also developed by Inuktun and then sold to VideoRay.

Seamor Marine Ltd. operates a 5000+ sq.ft. manufacturing, training, and distribution facility on Vancouver Island, British Columbia. The company employs 10 full-time and 4 part-time staff members. The company distributes Seamor ROV's directly in Canada but utilizes its 15+ international dealers to spear-head the sale of standard product outside of our domestic market. All custom sales are dealt with by the main office directly.

A recent and significant new addition to the company's product portfolio is the award winning 7F-H-ARM, a self-contained 7-Function Hydraulic Articulated Robotic Manipulator. This innovative unit can be employed as a stand-alone subsea robotic system, or readily skid mounted and paired with a SEAMOR. In addition to the well-designed skid-mount, dexterous arm and gripper, the 7F-H-ARM incorporates intuitive programmable position controls, gripper camera, and control unit complete with dedicated LCD touch screen controller/video monitor and joystick control. An indexing sample carousel is also available as an option.

In terms of a mean average salary, a typical worker in the tech sector in Nanaimo earned approximately \$47,000 in 2012.² As Figure 5 shows, over a quarter of firms maintain an average salary of between \$40,000 and \$49,999.

² This salary excludes those company employees for which the average salary is \$0, i.e. non-salaried employees.

Figure 5: Distribution of Average Salary (2012)

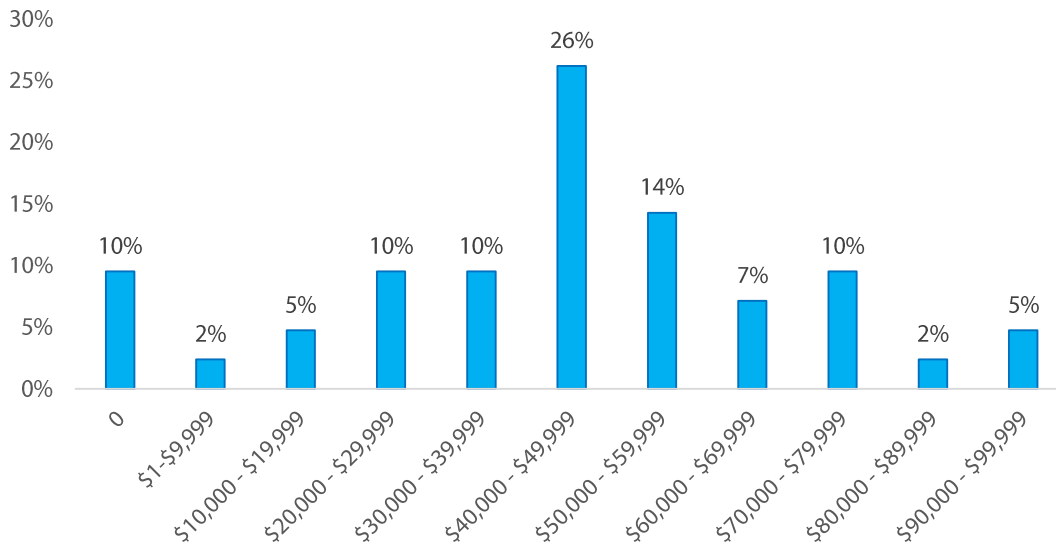


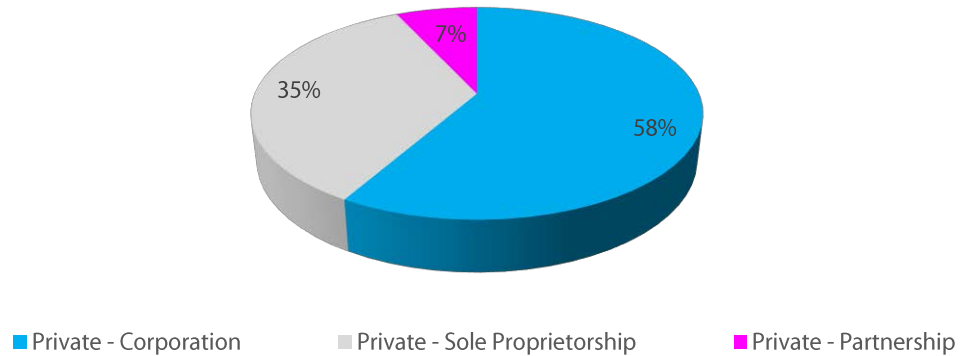
Figure 5 also shows that roughly 10% of companies do not pay employees. This situation is common to start-up firms where the principal(s) are investing their time into the firm and have not yet generated sufficient revenue to pay themselves salaries.

3.4 Other Industry Attributes

While revenue, expenditures and employment are the most common metrics by which to view an industry, there are other attributes that can be observed.

One such attribute is the corporate structure of the companies that make up the sector. As Figure 6 illustrates, most of the tech sector in Nanaimo is comprised of private corporations.

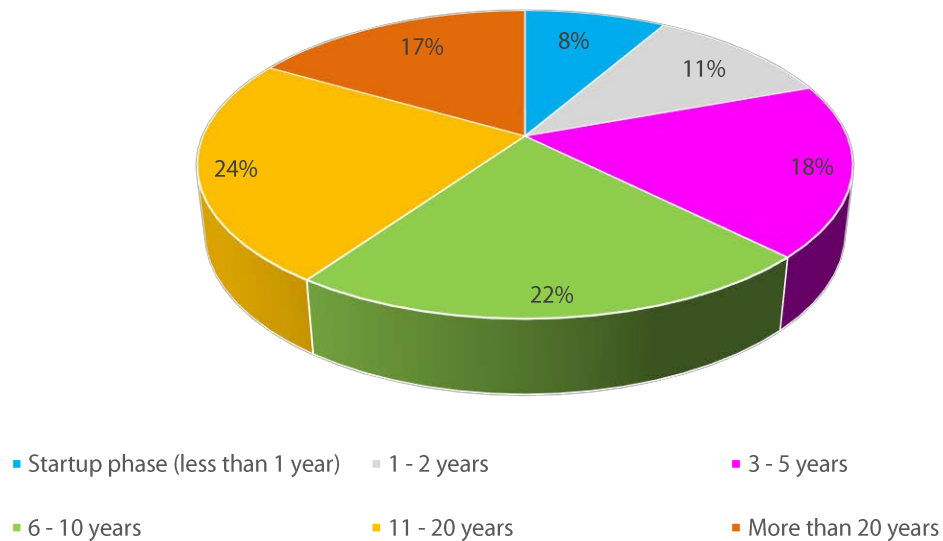
Figure 6: Corporate Structure



At the same time, nearly all (96%) of the companies in Nanaimo’s tech sector are BC-owned and operated.

Finally, Figure 7 illustrates the corporate ages among tech sector firms operating in Nanaimo:

Figure 7: Age of Companies



As Figure 7 illustrates, the firms operating in Nanaimo’s tech sector vary widely by age. The vast majority of firms (83%) have been in operation for under 20 years. What is more, Nanaimo’s tech sector is characterized by a relatively large group of emerging companies: approximately 37% of firms have been in operation for five or fewer years. Indeed, nearly one out of every five firms in Nanaimo’s tech sector was founded in the last two years. On average, a firm in Nanaimo’s tech sector was approximately 9.9 years old in 2012.

Inuktun Robotics



Founded: 1989

Employees: 55

Sub-sector: Computer & Electronic Product Manufacturing

Inuktun Services Ltd. (ISL) was founded in 1989 to design and manufacture Remotely Operated Vehicles (ROVs) and modular robotic systems for use in confined spaces and hazardous environments. Since then, the company has built a reputation as the expert in remote controlled robotic transport and delivery of visual inspection equipment and instrumentation tooling. Reliability, efficiency, quality, and cost-effectiveness are emphasized in the design of all equipment produced by ISL.

The company employs a multi-disciplinary team of engineers, scientists, administrative and production personnel at its facility in Nanaimo, on Vancouver Island.

In addition to producing and selling a complete line of standard equipment for a variety of remote robotic inspection applications, the company also offers a complete range of engineering services from conceptual design through to project completion.

ISL has an excellent track record in providing complex, custom, mobile robotic systems to sophisticated clients such as Ontario Hydro, GE Nuclear Energy, Hitachi Nuclear, Idaho National Engineering Laboratory (US Department of Energy), Pacific Gas & Electric, ERDC, and many others.

Recently, Inuktun Services Ltd. (ISL) has signed an exclusive distributor agreement with Green Technology Asia Pte Ltd (GT Asia) to expand its market presence in Asia. It is expected that the new servicing centre will help the Canadian company make inroads in the huge Asian market.

ISL also has servicing centres in Aberdeen, Scotland, and Rio Rancho, New Mexico, to serve the European and American markets.

4 Economic Impact Analysis

The following section focuses on the economic impact of the technology sector in Nanaimo in 2012. The analysis was done by BC Stats using the British Columbia Input-Output Model (BCIOM) and reports on the direct, indirect and induced economic impact of the technology sector in Nanaimo. The input data was provided to BCStats by Nordicity with data collected through the survey³.

The economic impact analysis measures:

1. Employment Impacts (contribution of jobs to the economy)
2. Gross domestic product (GDP) Impacts (contribution towards the general economy)
3. Household income impact (contribution towards the household incomes)
4. Fiscal Impacts (contribution towards government taxes)

Each of these impacts is described in detail throughout this section, and include “absolute figures” and the “intensity ratios” (demonstrating the impact on a per \$10 million basis for comparing with other sectors of the economy).

Impacts Defined

The **direct** impact refers to the increase in GDP, household income and employment within the Nanaimo technology sector.

The **indirect** impact refers to the increase in GDP, household income and employment in the industries that supply inputs to the Nanaimo technology sector. Legal and accounting services, and computer-equipment wholesaling represent examples of industries that supply inputs to the Nanaimo technology sector

The **induced** impact refers to the additional economic activity due to the re-spending of incremental household income in the Nanaimo economy.

4.1 Economic Impact Highlights

- The tech sector in Nanaimo had a total **GDP impact of \$199.0 million** in 2012.
- The tech sector in Nanaimo had a total **household income impact of \$133.3 million** in 2012.

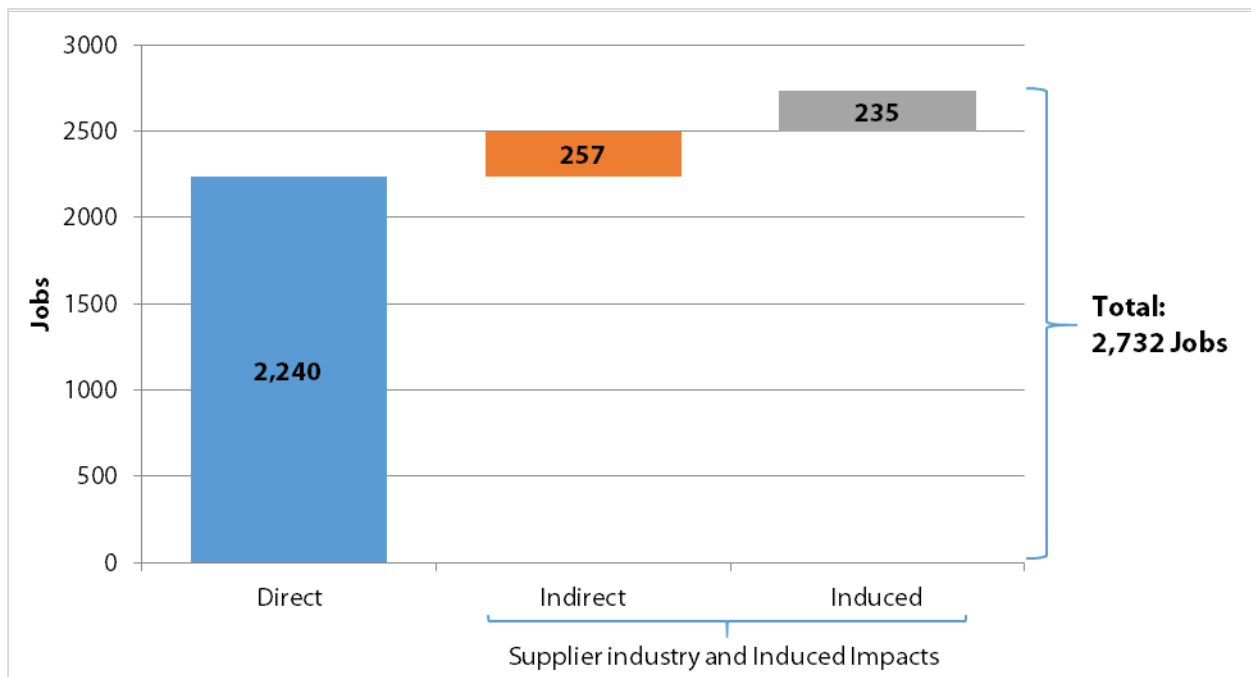
³ The full BC Stats report can be found in Appendix C of this report.

- The Nanaimo tech sector contributed just over **5%** of the total **\$3,867million** regional GDP in Nanaimo in 2012.
- The Nanaimo tech sector had a total employment impact of roughly **2,730 jobs** in 2012.
- The Nanaimo tech sector **generated \$19.7 million in taxes** in 2012 (\$6.9 million in provincial taxes, \$1.4 million in local taxes and \$11.3 million in federal taxes).
- For every \$1 million in industry output, the tech sector in Nanaimo **generates 14 jobs**.
- The tech sector returned approximately **\$6.9 million** 2012 in direct and indirect tax revenue to the Province.

4.2 Employment Impact

The technology sector in Nanaimo generates 2,730 jobs in the Nanaimo economy. Of this total, approximately 2,240 jobs are directly generated in the technology sector while approximately 490 jobs are generated in the wider Nanaimo economy. More specifically, we can estimate that these jobs are in the supplier industries to the tech sector and are categorized as indirect and induced job numbers. The employment numbers are not strictly full-time equivalent numbers, however, given the nature of the tech sector, these jobs are likely to be full-time rather than part-time or casual positions and the input numbers for analysis were converted to FTE numbers. Figure 8 below shows the employment by type of impact for 2012.

Figure 8: Employment by Type of Impact (2012) (jobs)



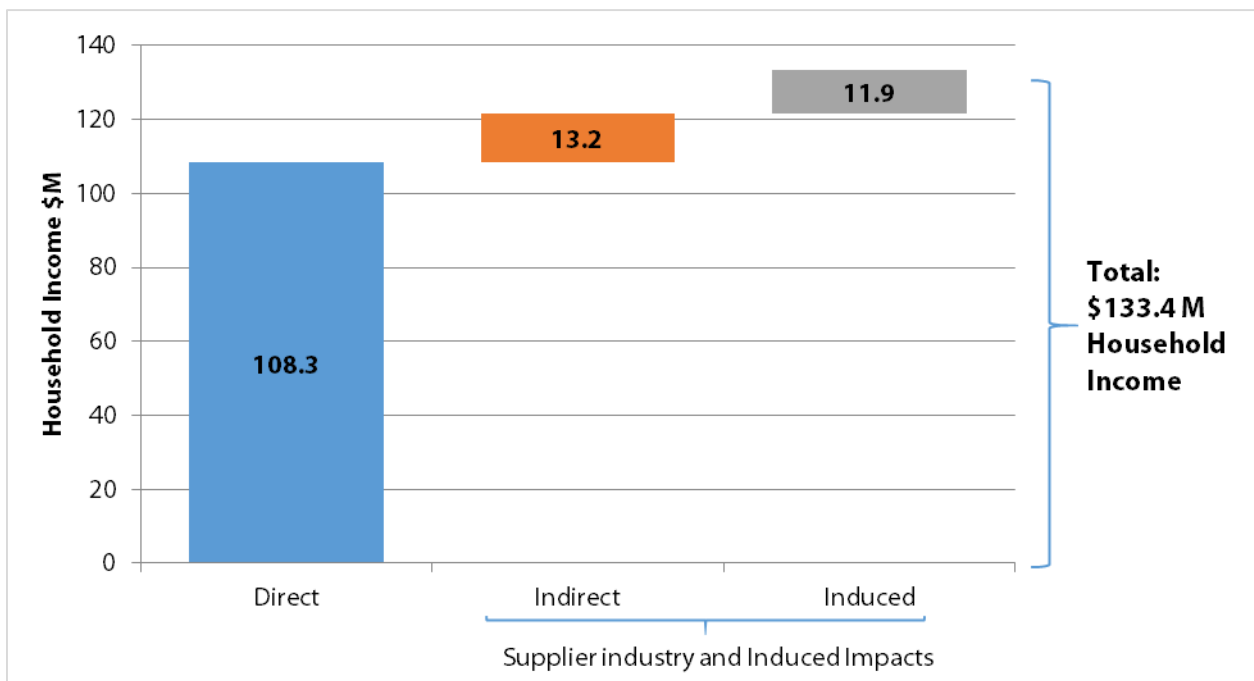
Sources: Nordicity Survey results and BCStats analysis.

The average annual wage of these jobs in the tech sector was calculated to be approximately \$48,330 while the supplier industry and induced impact’s average annual wage was reported to be slightly higher at \$51,000 per employee. This is above the 2011 BC average earnings for the professional, scientific and technical services sector of \$49,400.⁴

As a portion of total revenues for companies in the tech sector in Nanaimo, the total labour costs in the company operating expenditures was \$99 million. Overall, labour costs accounted for almost one-half (47%) of total revenue generated in the Nanaimo tech sector in 2012.

Total household income in the tech sector was \$108.3 million in direct economic impact and an additional \$25 million impact was calculated in the indirect and induced impacts. This data is described in Figure 9 below. The household income and operating surplus are inputs into the next section for calculating the overall GDP impact of the tech sector in Nanaimo.

Figure 9: Household impact by type of impact (2012) (\$M)



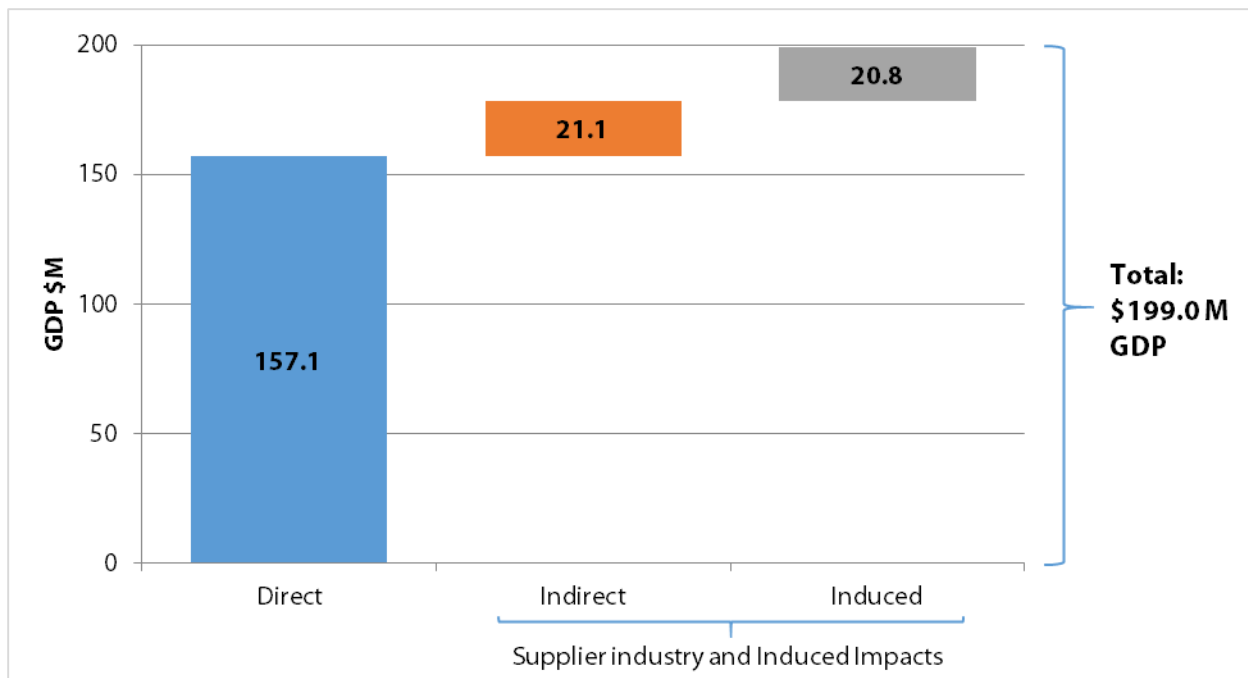
Sources: Nordicity Survey results and BCStats analysis.

⁴ Source: Statistics Canada Table 202-0107

4.3 GDP Impact

The GDP impact of the Nanaimo tech sector was calculated at basic prices. The overall GDP impact is \$199.0 million. Of this overall GDP impact, \$157.1 million was generated directly in the tech sector, while \$41.9 million was generated in supplier industries and the wider economy that indirectly supplies the tech sector. The \$41.9 million in spin-off GDP comprises the indirect and induced impacts. The impact breakdown is illustrated in Figure 10 below.

Figure 10: GDP Impact by Type of Impact (2012) (\$M)

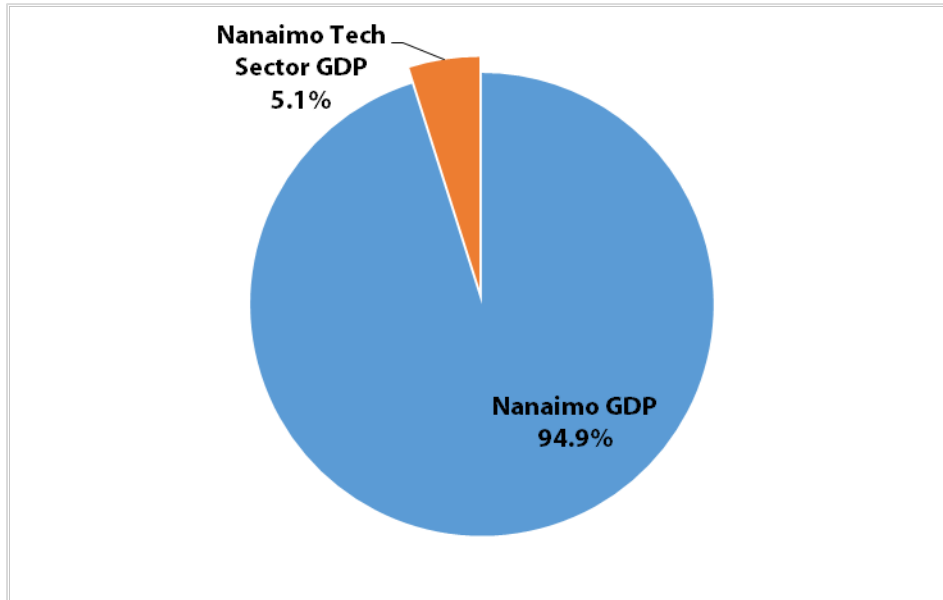


Sources: Nordicity Survey results and BCStats analysis.

The overall GDP impact of the tech sector in Nanaimo comprises just over 5% of Nanaimo’s overall regional GDP in 2012.⁵ This information is represented in Figure 11 below.

⁵ Nanaimo GDP was approximately \$4,000 million and the Nanaimo tech sector comprised 4.8% of this number. Source: NEDC and Nordicity analysis.

Figure 11: Nanaimo tech sector share of overall Nanaimo GDP (2012) (%)



Sources: Nordicity Survey results, BCStats analysis and NEDC data.

4.4 Fiscal Impact

The fiscal impact is described in the table below and measures the economic return to the federal, provincial and local government as a result of the tech sector activities in Nanaimo. This number is expressed using tax revenue data.

In total, Nanaimo's tech sector generated \$19.7 million in taxes for federal, provincial and local governments. Of this total, taxes paid to the federal government accounted for 57%, or \$11.3 million. Taxes paid to the Province accounted for 35%, or \$6.9 million. Local governments in the Regional District of Nanaimo collected an estimated \$1.38 in local taxes on account of the economic activity generated by the Nanaimo tech sector.

Island Daily Deals



Founded: 2011

Employees: 6

Sub-sector: Advertising and Related Services

Island Daily Deals is a new group buying company that has grown to a subscriber base of over 50,000 people capturing markets first in Nanaimo, then the Comox Valley and has recently expanded into Victoria. Island Daily Deals is now the biggest group buying company on Vancouver Island.

Island Daily Deals offers businesses an opportunity to provide discounted goods and services to subscribers to help businesses attract new customers and increase sales. Companies that participate offer 50-90% off their products and Island Daily Deals promotes their “deal” through social media and email.

To further enhance their product line Island Daily Deals has created the “Approved Christmas Sale” which is a trade show that happens annually at Beban Park in Nanaimo. Other recent activities include offering whole solutions for Web presence, SEO and social media development through a subsidiary called Executive Web Club.

The federal government receives the highest portion of taxes, compared to the provincial and local governments, collected from direct, indirect and induced spending from the tech sector. Personal income taxes represents over 50% of the tax revenue collected from the tech sector for the federal government. The provincial government also receives a high number of tax revenues from personal income taxes – which comprise 35% of the total tax revenues collected by the province from the tech sector. The federal government, however, receives over half of the total tax revenues. A summary of results is presented in Table 2 below.

Table 2: Total Fiscal Impact, tax revenues (2012) (\$M)

	Federal Government	Provincial Government	Local Government	Total Impact
Taxes on products (\$M)	0.333	1.101	-	1.434
Personal Income taxes (\$M)	8.062	3.038	-	11.100
Corporate Income taxes (\$M)	3.429	1.562	-	4.991
Net taxes on products (\$M)	-0.501	1.246	-	0.745
Local taxes (\$M)	-	-	1.380	1.380
Total (\$M)	11.323	6.947	1.380	19.650

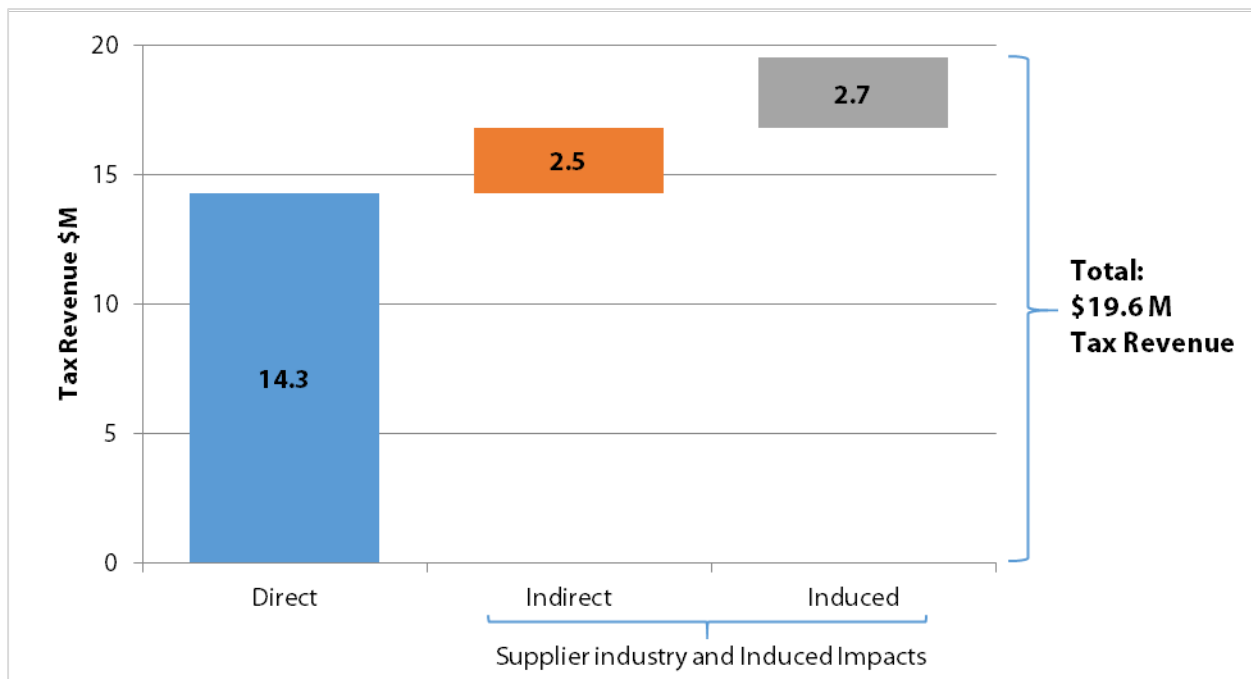
Sources: Nordicity Survey results, BCStats analysis.

Note: Some totals may not sum due to rounding.

* The BCIOM indicates that economic activity in the Nanaimo tech sector generates an increase in federal subsidies on products.

The total fiscal impact attributed to the Nanaimo tech sector in 2012 was \$19.65 million. The direct fiscal impact for the provincial and federal tax revenues was \$14.4 million for the tech sector in Nanaimo. The indirect and induced provincial, federal and local tax revenues (that is, those tax revenues collected from the supplier industries and induced impacts) was \$5.2 million. Figure 12 below shows the fiscal impact overview by type of impact.

Figure 12: Fiscal Impact Overview (2012) (\$M)



Sources: Nordicity Survey results and BCStats analysis.

Note: Some totals may not sum due to rounding.

5 Observations

Nanaimo is home to a diverse and thriving technology sector. This sector in Nanaimo is a significant economic contributor to the region, in terms of impact from GDP, household income, employment and fiscal (or government taxes). The over 350 unique businesses, as well as the regional organizations and individual thought leaders in the tech community are what make this sector thrive in the region, making its contributions to the region reach beyond what the numbers may show.

iDus Controls



Founded: 2008

Employees: 5

Sub-sector: Environmental Technology

iDUS is a group of free-thinkers who are fully committed to being the change they want to see; applying technology to meet real-world needs related to managing water and food resources more efficiently, iDUS draws on the talents of people from Nanaimo, Vancouver and Victoria to stitch together the skill set needed to succeed.

iDUS is known for innovation and technology development in water reuse and efficiency applications. iDUS has created a series of technologies for reusing water and optimizing its use in domestic and agricultural applications, leading to the development and launch of the SensMit Platform. This highly disruptive technology enables all types of agriculturalists to readily aggregate and manage sensor data related to the environmental and growing conditions at their sites, and use the data to optimize their operations.

Following successful real-world full-scale technology demonstrations at factory farms in California, the SensMit Platform was just launched through a US licensing partner's 1800 global distributors. iDUS recently gained the necessary hardware certifications enabling global installations, and has entered into discussions for further licensing deals with several large US firms.

When observing this sector's input to the regional GDP of 5%, one could dismiss the tech sector as only a small part of the overall productivity of the Nanaimo region. Nonetheless, many people are



involved in this sector, and the nature of some of these enterprises leads the authors of this report to feel that the impacts are felt far beyond the local Nanaimo region, and are truly finding themselves at the forefront of the digital economy, with sales and engagement with people throughout the world.

As a result of revisiting prior inventory work undertaken in the region, it was clear that while there is churn in this sector (e.g. companies relocating or closing), there are also new companies cropping up to take their place. This signifies the existence of a good set of tools and services available to entrepreneurs in the region to help them nurture and grow their ideas.

To conclude, one common thread amongst those involved in the tech sector which participated in this exercise was pride of place. Those businesses that choose to undertake their work in Nanaimo do so specifically because of what the region has to offer in terms of a lifestyle and access to what they need to grow their businesses. This indicates that the tech sector in Nanaimo is well positioned to continue to grow and yield even more success stories.



A Appendix A – Survey Questions

The below section reproduces the questions that were included as part of the survey sent to respondents.

The Impact of the Technology Sector on the Economy of Nanaimo Region

Page #1

Welcome to the Survey!

The Nanaimo Economic Development Corporation (NEDC) and Innovation Island are excited to be working together to release a detailed economic impact study relating to the technology sector for the Nanaimo region. The study will help Nanaimo best position itself for the future and give it a firm grasp on the benefits realized by the knowledge economy.

About this Survey

This survey will allow Nordicity to estimate the impact that the technology sector has on the economy in the Nanaimo region. To complete it, you will need access to your company's financial records from your most recently completed fiscal year. Accordingly, this survey questionnaire is best completed by your company's owner, CFO, or financial controller.

The survey questionnaire will take roughly 20 minutes to complete.

Confidentiality

NEDC and Innovation Island engaged Nordicity as a neutral and independent third party to administer this survey. Please be assured that your responses to this survey will remain confidential and only released in aggregate (i.e. never on an individual basis).

If you have any questions or concerns regarding this survey, please do not hesitate to contact Kristian Roberts of Nordicity at kr Roberts@nordicity.com.

Page #2

A. Basic Information

A1. Please provide your contact information

Remember: At no time will your responses be attributed to you or your business.

This information simply lets us know that you have participated and ensures against duplicate entries.

Your name: _____

Company name: _____

*Email address (required: we will not send you SPAM, we promise): _____

Postal code (first 3 characters): _____

Website: _____

A2. Which of the following best describes the structure of your business?

Private - Sole Proprietorship (i.e. it's only you)

Private - Partnership

Private - Corporation

Public Corporation

Registered Charity

Help - Show me additional information

Helpful Definitions

"Partnership": persons who carry on a business in common with the belief they will make a profit. You can have a partnership without a written agreement. "Corporation": a legal body incorporated either federally or provincially. "Public Corporation": corporation (as defined above) that has shares available for sale to the general public (usually on a stock exchange). "-controlled": A company is controlled by the person or company that owns enough of the company to direct its activities (but not necessarily a majority of the company). Accordingly, a "foreign-controlled" company is one where non-Canadian interests maintain sufficient ownership to direct the activities of the company. "in operation": A company is in operation from the date that it first began to pay employees. In the case of a sole proprietorship, a company is deemed in operation once the accounts of the proprietor/owner become separated from those of the company (i.e. when you began to pay yourself from the company's bank account).

A3. Is your business British Columbia, Canadian or foreign-controlled?

British Columbia-owned and controlled
 Canadian owned and controlled (outside of British Columbia)
 Canadian-controlled, but foreign-owned
 Foreign-owned and controlled

A4. For how many years has your business been in operation?

Start-up phase (less than 1 year)
 1 - 2 years
 3 - 5 years
 6 - 10 years
 11 - 20 years
 More than 20 years

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2. Sub-sector Identification

Please identify your company's sub-sector and industry group

Please select the sub-sector (left column), and a series of industry groups will appear in the right column.

Please select the sub-sector and industry group in which your company generated the largest share of its gross revenue in its most recent fiscal year.

For example, if your company generated 40% of its revenue in 2012 from the sale of machinery products, 30% from technical consulting fees, and a further 30% from other forms of manufacturing, you would select "Machinery Manufacturing".

Resource-based Industries: Forestry and Logging
 Resource-based Industries: Mining and Quarrying
 Resource-based Industries: Oil and Gas Extraction
 Manufacturing: Chemical Manufacturing
 Manufacturing: Machinery Manufacturing
 Manufacturing: Computer and Electronic Product Manufacturing
 Manufacturing: Transportation Equipment Manufacturing
 Manufacturing: Miscellaneous Manufacturing
 Publishing (except internet): Newspaper, Periodical, Book and Directory Publishing
 Publishing (except internet): Software Publishing
 Motion Picture and Sound Recording Industries: Motion Picture and Video Industries
 Motion Picture and Sound Recording Industries: Sound Recording Industries
 Broadcasting (except internet): Radio and Television Broadcasting



Broadcasting (except internet): Pay and Specialty Television
Telecommunications: Wired Telecommunications Carriers
Telecommunications: Wireless Telecommunications Carriers
Telecommunications: Satellite Telecommunications Carriers
Telecommunications: Other Telecommunications
Other Information Services: News Syndicates
Other Information Services: Libraries and Archives
Other Information Services: Web Search Portals
Other Information Services: Internet Publishing and Broadcasting
Professional, Scientific and Technical Services: Architectural, Engineering and Related Services
Professional, Scientific and Technical Services: Computer Systems Design and Related Services
Professional, Scientific and Technical Services: Management, Scientific and Technical Consulting Services
Professional, Scientific and Technical Services: Scientific Research and Development Services
Professional, Scientific and Technical Services: Advertising, Public Relations and Related Services
Professional, Scientific and Technical Services: Photographic Services
Educational Services: Universities
Educational Services: Business Schools and Computer and Management Training
Educational Services: Technical and Trade Schools
Public Administration: Federal
Public Administration: Provincial/Territorial
Public Administration: Local/Municipal/Regional
Public Administration: Aboriginal
Public Administration: International/Extra-territorial
Waste Management Services: Waste Collection
Waste Management Services: Waste Treatment and Disposal
Waste Management Services: Remediation and other Waste Management Services

Help - Show me industry group definitions

Industry Grouping Definitions

"Resource-based Sectors"

Includes:

Forestry and Logging - Growing and harvesting timber on a long production cycle (>10 years). Includes timber tract operations, forest nurseries and gathering of forest products, and logging.

Oil and Gas Extraction - Operating oil and gas field properties, including exploration for crude petroleum and natural gas; drilling, completing and equipping wells; operating separators, emulsion breakers, desilting equipment and field fathering lines for crude petroleum; and all other activities in the preparation of oil and gas up to the point of shipment from the producing property. Includes the production of oil, the mining and extraction of oil from oil shale and oil sands, and the production of gas and hydrocarbon liquids through gasification, liquefaction and pyrolysis of coal at the mine site.

Mining and Quarrying - Mining, beneficiating or otherwise preparing coal, metal ores, and non-metallic minerals.

"Manufacturing"

Includes:

Chemical Manufacturing - The manufacturing of chemicals and chemical preparations, from organic and inorganic raw materials. Includes the manufacture of basic chemicals; resin, synthetic rubber, and artificial

and synthetic fibres and filaments; pesticides, fertilizer, and other agricultural chemicals; pharmaceuticals and medicine; paint, coating and adhesives, soap, cleaning compounds, and toilet preparation.

Machinery Manufacturing - The manufacturing of industrial and commercial machinery, assembling parts into components, subassemblies and complete machines. Includes the manufacture of agricultural, construction and mining machinery; industrial machinery; commercial and service industry machinery; ventilation, heating, air-conditioning and commercial refrigeration equipment; metalworking machinery; engine, turbine and power transmission equipment; and, other general-purpose machinery.

Computer and Electronic Equipment Manufacturing - The manufacturing of computers, computer peripheral equipment, communications equipment, and similar electronic products, as well as components for such products. Includes the manufacture of communications, audio and video equipment; semiconductor and other electronic components, navigational, measuring, medical and control instruments; and magnetic and optical media.

Transportation Equipment Manufacturing - The manufacturing of equipment for transporting people and goods, including motor vehicles, motor vehicle bodies and trailers, motor vehicle parts, aerospace products and parts, railroad rolling stock, ships and boats, and other transportation equipment.

Miscellaneous Manufacturing - Includes the manufacturing of medical equipment and supplies, and other miscellaneous manufacturing.

"Publishing Industries"

Includes: Newspaper, Periodical, Book and Directory Publishers, as well as Software Publishers. Does not include internet publishing.

"Motion Picture and Sound Recording Industries"

Includes establishments engaged in producing and distributing video and audio recordings or providing related services, such as post-production services, exhibition services and motion picture processing and developing services.

"Broadcasting"

Includes Radio and Television Broadcasting as well as Pay and Specialty Television. Does not include internet broadcasting.

"Telecommunications"

Telecommunications and/or video entertainments services provided over the establishments' own networks, or over networks operated by others. Includes Wired, Wireless, Satellite and Other Telecommunications Carriers.

"Other Information Services"

Includes News Syndicates, Libraries and Archives, Internet Publishing and Broadcasting, and Web Search Portals.

"Professional, Scientific and Technical Services"

Includes services related to Architecture and Engineering; Computer Systems Design; Management, Scientific and Technical Consulting; Scientific Research and Development; Advertising and Public Relations; and Photography.

"Waste Management Services"



Includes Waste Collection, Waste Treatment and Disposal, and Remediation and Other Waste Management Services.

"Public Administration"

Includes establishments engaged in the activities of a governmental nature, that is, the enactment and judicial interpretation of laws and their pursuant regulations, and the administration of programs based on them.

Public Administration subcategories include Federal, Provincial/Territorial, Local/Municipal/Regional, Aboriginal, and International/Extra-territorial.

"Educational Services"

Includes Universities, Business Schools and Computer/Management Training, and Technical and Trade Schools.

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C. Company Revenue

C1. What was your business's total annual revenue in the last fiscal year (2012)?

If your company has operations outside of the Nanaimo/Mid-Island Region, please only include revenue from your Nanaimo-based operations.

Fiscal 2012 Revenue

- \$0 to \$9,999
- \$10,000 to \$19,999
- \$20,000 to \$29,999
- \$30,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$124,999
- \$125,000 to \$149,999
- \$150,000 to \$174,999
- ... 6 additional choices hidden ...
- \$2 million to \$2.99 million
- \$3 million to \$3.99 million
- \$4 million to \$4.99 million
- \$5 million to \$7.49 million
- \$7.5 million to \$9.99 million
- \$10 million to \$12.49 million
- \$12.5 million to \$14.99 million
- \$15 million to \$17.49 million
- \$17.5 million to \$20 million
- More than \$20 million

Help - Show me additional information

Helpful Definitions



Fiscal Year: A complete year for which your business has filed taxes. For many, the most recent fiscal year will have ended on December 31st -- making the last fiscal year January 1, 2012 to December 31st, 2012. For others, the fiscal year may end on March 31st -- or at the end of some other month.

Total Revenue: The total amount that your business earned from all sources, including grants, tax credits, etc. However, this figure does not include proceeds from the sale of "capital assets" (i.e., a car, an office building, etc.).

C2. In the 2012 fiscal year, what percentage (%) of your total annual revenue came from public sources? Examples of public support may include: Scientific Research and Experimental Development (SR) tax credits, Government research grants (e.g. from NSERC), Research assistance grants (e.g. from IRAP), Other tax credits.

% Public Support _____

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D. Company Expenditures

D1. What were your company's total expenses over the last fiscal year (2012)?

If your company has operations outside of the Nanaimo/Mid-Island Region, please only include expenditures from your Nanaimo-based operations.

Fiscal 2012 Expenditures

- \$0 to \$9,999
- \$10,000 to \$19,999
- \$20,000 to \$29,999
- \$30,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$124,999
- \$125,000 to \$149,999
- \$150,000 to \$174,999
- ... 6 additional choices hidden ...
- \$2 million to \$2.99 million
- \$3 million to \$3.99 million
- \$4 million to \$4.99 million
- \$5 million to \$7.49 million
- \$7.5 million to \$9.99 million
- \$10 million to \$12.49 million
- \$12.5 million to \$14.99 million
- \$15 million to \$17.49 million
- \$17.5 million to \$20 million
- More than \$20 million

D2. What was the approximate breakdown of your business's expenses in 2012?

Responses must sum to 100%
(Respond with % of total expenses)

Employees wages, compensation and benefits _____

Non-employee labour costs (e.g., freelancers, etc.) _____



Equipment purchase and rentals _____

Material and production costs _____

Travel and transportation costs _____

Overhead and office costs (incl. rent, utilities, office equipment, etc.) _____

Business expenses (incl. bank fees, insurance, internally developed marketing materials)

Professional services costs (incl. advertising services, legal, accounting, etc.) _____

Union dues _____

Other non-conventional forms of payment (cash, per diems, contributions in-kind, unreported, parallel/grey market) _____

Other _____

I am unable to provide a breakdown of my company's expenses.

D3. What percentage of your labour expenses were incurred WITHIN BC in 2012?

% of labour expenses: _____ (0)

D4. What percentage of your non-labour expenses were incurred WITHIN BC in 2012?

I.e. All expenses other than labour.

% of non-labour expenses: _____ (0)

Page #6

E. Employment

E1. How many people does your business employ?

This includes all owners and management. Don't forget to include yourself.

Full time employees _____ (0)

Part-time employees _____ (0)

Contract/freelance employees _____ (0)

Interns and volunteers _____ (0)

E2. How many hours per week do people in your business typically work?

Estimate for an average staff member.

Full time employees (hrs) _____ (0)

Part-time employees (hrs) _____ (0)

Contract/freelance employees (hrs) _____ (0)

Interns and volunteers (hrs) _____ (0)

E3. What is the average wage of your business's employees?



Please select the most appropriate range in both drop-down menus below.
Average Employees Wages

Full time (annual salary)

- \$0
- \$1-\$9,999
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$69,999
- \$70,000 - \$79,999
- \$80,000 - \$89,999
- \$90,000 - \$99,999
- More than \$100,000

Part-time (hourly rate)

- \$0/hr
- \$10-\$15/hr
- \$16-\$20/hr
- \$21-\$25/hr
- \$26-\$30/hr
- \$30-\$39/hr
- \$40-\$49/hr
- More than \$50/hr

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Thank You!

Thank you for completing this survey questionnaire. Your responses will be held in the strictest of confidence and will only ever be presented in aggregate.

B Appendix B – Glossary

Term	Definition
Gross Domestic Product (GDP)	The market value of all officially recognized final goods and services added within a jurisdiction in a given period of time.
Direct Impact	The increase in GDP and employment within Nanaimo’s technology industry.
Indirect Impact	The increase in GDP and employment in the industries that supply inputs to Nanaimo’s technology industry.
Induced Impact	The additional economic activity due to the re-spending of incremental household income in the BC economy.
Intensity Ratio	The amount of a given output (<i>e.g.</i> , GDP) per unit of activity (<i>e.g.</i> , \$1 million of revenue).
Direct Jobs	Those jobs within companies that create technology products or services.
Spin-off Jobs	Those jobs in other industries that are sustained by the technology industry’s expenditures
Fiscal Impact	The net result of a calculation of provincial revenue and expenditure
Household Income	The combined sum of all incomes of all adult members of a household.
Gross Output	The sum of production expenditures, capital expenditures and revenues.
Cluster Effect	The attraction of artists and businesses, inward investment and skilled labour.
Knowledge Spillovers	The development of human capital and informal networks resulting from a cluster effect.



C Appendix C – BC Input-Output Model Report

The subsequent pages contain the entirety of the report entitled: *BC Input-Output Model Report: Technology Sector in Nanaimo Regional District (Revised)*, produced by BC Stats.

BC Input-Output Model Report: Technology Sector in Nanaimo Regional District (Revised)

BACKGROUND

This report summarizes the results of an input-output analysis that assesses the economic impact of the technology sector in the Nanaimo regional district.

The British Columbia Input-Output Model (BCIOM) was used to generate the estimates. A description of the BCIOM, and the assumptions underlying input-output analysis, is included in the Appendix.

ABOUT INPUT-OUTPUT ANALYSES

Input-output analyses highlight the relationships among producers and consumers (businesses as well as individuals) of goods and services. An input-output analysis is based on first identifying a basket of goods and services used by a specific project¹ and then tracing through all of the steps involved in producing those goods and services to identify the total extent to which the British Columbia economy will be affected by project expenditures.

THREE TYPES OF IMPACTS

Three different types of impacts are reported in a typical input-output analysis:

The **direct impact** measures the *impact on BC industries supplying goods and services directly used by the project.*

The **indirect impact** *measures the impact on BC industries that are further back in the supply chain.* The indirect impact is cumulative, and includes transactions going all the way back to the beginning of the supply chain.

The **induced impact** measures the effect that spending by workers (those employed by the project, or by direct and indirect supplier industries) has on the economy.

¹ Or, in the case of an industry analysis, the total value of production by one or more industries.

HOW ARE ECONOMIC IMPACTS MEASURED?

Output, GDP, employment and tax revenues are the key measures used to assess the economic impacts associated with a project. In order to properly interpret the results of a BCIOM analysis, some background information about what these measures represent and how they are calculated may be helpful. A brief explanation of terms and concepts follows.

Output is simply a measure of the total value of production associated with a project. In an **industry-based** analysis, output is equal to the value of goods and services produced by the BC industry or industries that are affected by a specific project. In an **expenditure-based** analysis, it can be measured as the total dollar amount of all spending on **goods and services produced in BC**. It should be noted that purchases of goods and services produced outside the province do not directly affect BC businesses, so these expenditures are explicitly excluded from the analysis. This is usually the main reason why the direct impact on BC industries is less than initial project expenditures.

Gross Domestic Product (GDP) is a measure of the value added (the unduplicated total value of goods and services) to the BC economy by current productive activities attributable to the project. It includes **household income** (wages, salaries and benefits, as well as income earned by proprietors of unincorporated businesses) from current productive activities as well as profits and other income earned by corporations. Only activities that occur within the province are included in GDP.

Employment estimates generated by the model are derived from estimated wage costs using information on average annual wages in an industry. They are not full-time equivalent (FTE) measures. Instead, they reflect the wages paid and hours spent on the job by a typical worker in an industry. For an

BCIOM Report Technology Sector in Nanaimo Regional District (Revised)—continued...

industry where most employees work full time, the numbers will be very similar to FTE counts. However, in an industry where part-time work is more common, the job counts will be quite different from FTEs.

Government tax revenue estimates generated by the model include income taxes as well as commodity taxes. *Provincial and federal tax revenues* include federal and provincial personal and corporation income taxes. Also included are PST, GST and other *commodity* taxes such as gas taxes, liquor and lottery taxes and profits, air transportation taxes, duties and excise taxes. Property tax revenues are not included in the estimates. *Municipal tax revenues* are primarily related to accommodation taxes.

A more detailed explanation of input-output modelling in general and the BCIOM in particular is included in the Appendix.

Output or GDP: which measure should be used to evaluate economic impacts associated with a project?

Output and GDP are both valid economic measures. However, there are some key differences between them that should be kept in mind when analyzing the results of an input-output analysis.

Output measures correspond to total spending or production, but may overstate the economic impact of a project because the value of a good or service is counted each time it changes hands.

If one is only looking at direct effects, output is a meaningful measure since it shows the total dollar value of industry production. However, there is a danger of double-counting when activities in industries further up the supply chain are also included. Output measures may overstate the indirect economic impact associated with a particular project since the activities of every industry that has contributed in some way to the creation of a final product are counted each time a good or service changes hands.

For example, when a construction company builds a house, the selling price of the house includes:

- the cost of the land on which it is built;
- the cost of inputs (lumber, shingles, cement, carpets, paint, hardware, plumbing fixtures, architectural services and so on) purchased and used by the builder; and
- the value of the work done by the construction company.

An **output-based impact measure** would include the entire selling price of the house (including all these imbedded costs) in the direct output of the construction industry. The value of architectural services included in the cost of the house would also be counted as an indirect output impact on the architectural services industry. The value of the lumber used would be counted as an indirect output impact on the wood industry, and going further back in the supply chain, the value of the logs used by the sawmill would be counted in the indirect output impact on the logging industry. In this example, the value of the logs used to produce the building materials is counted at least three times: once in the direct output impact, and twice in the indirect output impacts on the sawmill and logging industries. In other words, the indirect output impact could be quite high simply because goods (or services) used in production have changed hands many times.

Indirect output impacts provide useful information about the total amount of money that has changed hands as goods and services are transformed into final products. GDP is a better measures of the economic impact since the value of the work done by each industry is attributed only to the producing industry, and is counted only once.

GDP is calculated by subtracting the cost of purchased goods, services and energy from the total value of an industry's output. As a result, the value of the work done by a producing industry is only counted once. In the construction example, the direct GDP impact would only include the value of the work done by the construction firm. The indirect impact on the sawmill industry would only include the value of the work done to transform the logs into lumber, and the indirect impact on the logging industry would be a measure of the value of the work done by the loggers. There is no double counting in GDP measures.

BCIOM Report Technology Sector in Nanaimo Regional District (Revised)—continued...

It should be noted that the relationship between GDP and output is a useful analytical measure since it shows the extent to which industries rely on labour and capital as opposed to material and service inputs in production. The analysis of economic impacts relies on this relationship, since output is more easily and directly measured than GDP. In fact, the starting

point for most input-output analyses is a measure of the direct output associated with a project. From this, known relationships between output and other indicators such as GDP and employment can be used to estimate the economic impact associated with a specific project.

SUMMARY OF RESULTS, TECHNOLOGY SECTOR IN NANAIMO REGIONAL DISTRICT

SOURCES OF DATA

The results of the BCIOM analysis are based on data inputs provided to BC Stats by Nordicity. The estimates come from a survey of technology companies in the City of Nanaimo, Gabriola Island, and Lantzville. The technology sector estimates included data from companies in the NAICS categories included in the following table.

Definition of Technology Sector

NAICS	Industry
334	Manufacturing: Computer and Electronic Product Manufacturing
333	Manufacturing: Machinery Manufacturing
339	Manufacturing: Miscellaneous Manufacturing
	Publishing (except internet): Newspaper, Periodical, Book and Directory
5111	Publishing
	Motion Picture and Sound Recording Industries: Motion Picture and
5121	Video Industries
	Motion Picture and Sound Recording Industries: Sound Recording
5122	Industries
5179	Telecommunications: Other Telecommunications
51913	Other Information Services: Internet Publishing and Broadcasting
51913	Other Information Services: Web Search Portals
	Professional, Scientific and Technical Services: Architectural, Engineering
5413	and Related Services
	Professional, Scientific and Technical Services: Computer Systems Design
5415	and Related Services
	Professional, Scientific and Technical Services: Management, Scientific
5416	and Technical Consulting Services
	Professional, Scientific and Technical Services: Scientific Research and
5417	Development Services
	Professional, Scientific and Technical Services: Advertising, Public
5418	Relations and Related Services
54192	Professional, Scientific and Technical Services: Photographic Services
	Educational Services: Business Schools and Computer and Management
6114	Training
6115	Educational Services: Technical and Trade Schools
913	Public Administration: Local/Municipal/Regional
912	Public Administration: Provincial/Territorial

The BCIOM was used to estimate the economic impact associated with these expenditures. Total revenues of the region’s technology sector are estimated at \$204.1 million. Labour costs (wages, salaries and benefits) are estimated at \$99.0 million, accounting for nearly half of this amount. This, together with operating profits (\$48.9 million) and non-employee labour costs (treated as mixed income, at \$9.3 million) is reported as the sector’s direct GDP. It should be noted that the GDP to output ratio in the survey data (77%) is significantly higher than the average for comparable industries in

the province as a whole. This difference may reflect specific characteristics of technology sector companies in the region. For example, if a higher-than-average percentage of these companies are small businesses providing labour-intensive services, the labour cost component of total spending would account for a higher-than-average share of total revenues.

Technology Sector in the Nanaimo Region*

Total revenue (\$M)	204.1
Operating expenditures (\$M)	
Employees wages, compensation and benefits	99.0
Non-employee labour costs	9.3
Equipment purchase and rentals	7.4
Material and production costs	10.4
Travel and transportation costs	5.5
Overhead and office costs	13.1
Business expenses	4.0
Professional services	5.2
Other operating expenditures	1.4
Total operating expenditures	155.2
Operating profit/surplus (\$M)	
Average full-time salary (\$)	44,186
Implied number of FTEs	2,240

* City of Nanaimo, Gabriola Island, Lantzville

The data provided by Nordicity was coded to BCIOM categories using model averages. For example, equipment purchase and rentals was allocated to BCIOM categories based on the pattern of total spending on equipment purchases and rentals in industries included in the technology sector definition.

KEY ASSUMPTIONS

The wage component of the labour cost estimate is assumed to include pre-tax wages, salaries and supplementary income (e.g., the employer’s share of contributions to EI or CPP). The model’s estimates

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of income tax revenues are calculated by estimating income taxes associated with a given wage. For the calculation of induced effects, it is assumed that 80% of workers' earnings will be used to purchase goods and services in the province (the remaining 20% goes to taxes, other payroll deductions, and savings).

It is assumed that a social safety net is in place, and that workers hired to work on the project previously had some income from EI or other safety net programs (note: the social safety net assumption only affects the estimate of worker spending, which is the induced effect associated with the project).

All of the tax revenue impacts have been calculated based on the current tax structure, which assumes an PST of 7% is applied to items subject to the tax.

Employment estimates are generated by the model based on the wage bill and average earnings in each

affected industry. They should not be confused with FTE counts. The model estimates represent average jobs in an industry. In some industries, most workers are employed full time, but in others (e.g., accommodation and food services) the typical work week is usually shorter.

SUMMARY OF RESULTS

Total revenues of the technology sector are estimated at \$204.1 million. Of this total, an estimated \$15.9 million is used to purchase goods and services produced in other countries, other provinces, or withdrawn from inventories. The GDP impact is estimated at \$157.1 million. Taxes on products net of subsidies are estimated at \$1.4 million.

Nanaimo Region Technology Sector Revenue

Total impact, including technology sector, supplier industry & induced effects					
	Direct	Other suppliers	Total Indirect*	Induced**	Total impact
Total expenditures, technology sector (\$M)	204.1				
Supplier industry & induced impacts (\$M)	29.7	17.3	47.0	33.3	80.3
GDP at basic prices (\$M)					199.1
Technology Sector***	157.1				157.1
Supplier industry & induced impacts	13.0	8.2	21.1	20.8	41.9
Employment (#)****					2,732
Technology Sector (Estimated by Client)	2,240				2,240
Supplier industry & induced impacts	136	120	257	235	492
Household income (\$M)					133.3
Technology Sector	108.3				108.3
Supplier industry & induced impacts	7.7	5.4	13.2	11.9	25.1
Average annual wage (\$ per employee)					
Technology Sector	48,330				
Supplier industry & induced impacts	56,745	45,125	51,295	50,675	51,000
Tax revenue (\$M)					19.7
Technology Sector	14.4				14.4
Supplier industry & induced impacts	1.3	1.2	2.5	2.7	5.2

* The total indirect impact is the sum of the effect on direct suppliers and other supplier industries

** Assumes a social safety net is in place. Includes effects generated by project spending and activities of supplier industries

*** Project expenditure data provided by clients may not include all components of GDP (e.g., operating surplus)

**** Employment estimates are based on average annual wages in 2011. Includes total employment over the life of the project

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Allocation of Project Expenditures Technology Sector Revenue	
Total technology sector expenditures (\$M)	204.1
<i>minus leakages:</i>	
<i>imports from other countries</i>	9.3
<i>imports from other provinces</i>	6.4
<i>other leakages (e.g. withdrawals from inventory)</i>	0.2
<i>Equals:</i>	
Expenditures on goods & services (including labour and profits) produced in BC (\$M)	188.2
<i>Of which:</i>	
<i>Wages, benefits, unincorporated business income and operating surplus (\$M)</i>	157.1
<i>Taxes on products net of subsidies (\$M)</i>	1.4
<i>Taxes on factors of production net of subsidies (\$M)</i>	0.0
Direct BC supply (\$M)	29.7
<i>(the change in BC supplier industry output associated with technology sector)</i>	
Project employment associated with technology sector revenue (#)	2,240
Household income included in technology sector revenue (\$M)	99.0
Tax revenue derived from direct project expenditures Technology Sector Revenue	
	Federal Provincial Local Total
Total, all sources	9.597 4.810 0.000 14.407
Taxes on products (\$M)*	0.333 1.101 0.000 1.434
Taxes on factors of production (\$M)	0.000 0.000 0.000 0.000
Personal income taxes (\$M)	6.389 2.397 8.786
Corporate income taxes (\$M)	2.875 1.313 4.187
<i>(income taxes paid on worker's wages and returns to capital reported in project expenditure)</i>	

*Small differences between this figure and the value for taxes on products net of subsidies reported in the allocation of project expenditure are due to rounding and/or the inclusion of net taxes paid on some goods purchased by subcontractors which are not reflected in the indirect & induced impacts given below.

Indirect & Induced Impacts resulting from technology sector expenditures					
	Direct suppliers	Other suppliers	Total indirect impact (all suppliers)	Induced Impact**	Total indirect & induced impacts
Output (\$M)	30	17	47	33	80
GDP at basic prices* (\$M)	13	8	21	21	42
Employment (#)*	136	120	257	235	492
Household income (\$M)	8	5	13	12	25
Total tax revenue (\$M)	1.350	1.157	2.507	2.737	5.243
Federal (\$M)	0.358	0.489	0.847	0.880	1.727
<i>Personal income tax</i>	0.630	0.379	1.009	0.664	1.673
<i>Corporation income tax</i>	0.053	0.144	0.197	0.358	0.555
<i>Net taxes on products</i>	-0.325	-0.034	-0.359	-0.142	-0.501
Provincial (\$M)	0.622	0.466	1.087	1.048	2.136
<i>Personal income tax</i>	0.242	0.145	0.386	0.255	0.641
<i>Corporation income tax</i>	0.023	0.066	0.089	0.160	0.249
<i>Net taxes on products</i>	0.357	0.255	0.612	0.634	1.246
Local (\$M)	0.370	0.202	0.572	0.809	1.380

* Includes wages, benefits, unincorporated business income, operating surplus and net taxes on factors of production

** Assumes a social safety net is in place. Includes effects generated by project spending and activities of supplier industries

**Regional Impact Estimates based on Supplier Industry Output,
Census Employment Data, and Labour Force Statistics
(experimental data, *annual averages*)**

Estimated Regional Impact, Supplier Industries in Project Area					
	Direct	Other	Total		Total
	suppliers	suppliers	indirect	Induced	indirect &
			impact (all		induced
			suppliers)		
Total output (\$M)	5.6	3.4	9.0	4.4	13.3
Total GDP (\$M)	0.5	1.4	1.9	2.1	3.9
Total household income (\$M)	0.2	0.9	1.1	1.4	2.5
Total employment	0	30	30	40	80

Note: Totals are calculated using unrounded data; components may not sum to published values

The direct BC supply—the output of industries directly supplying goods and services used by the technology sector—is estimated at \$29.7 million. Another \$17.3 million of output is expected to be generated in industries further back in the supply chain. The induced impact of \$33.3 million is associated with spending by workers. Since wages comprise such a large portion of total spending, the associated economic impact attributed to worker spending is commensurately high.

The total GDP impact associated with the project is estimated at \$199.1 million, including \$157.1 million directly generated in the sector, another \$13.0 million in direct supplier industries, and \$8.2 million in industries further back in the supply chain. GDP in industries benefitting from spending by workers is estimated at \$20.8 million.

The estimate of direct employment (2,240) in the sector was supplied by the client. Another 136 jobs are supported in industries directly providing goods

and services used by the sector, with 120 jobs in other supplier industries. Spending by workers employed directly and indirectly by the sector supports another 235 jobs in the province.

Key supplier industry employers include professional, scientific & technical services (46 jobs), information and cultural industries (26), finance, insurance, real estate, rental & leasing (14) and administrative and other support services (13).

The employment impact in the Nanaimo Regional District is estimated at 80, including approximately 30 jobs in industries directly or indirectly supplying goods and services used by the technology sector, and 40 jobs in industries benefitting from spending by workers. It should be noted that regional supplier industry employment figures have been rounded, so the components will not sum to the published total.

INTERPRETING THE BCIOM RESULTS

BCIOM model results are summarized in the tables attached to this report. This section defines some of the terms and concepts used in the report tables and explains how they are calculated.

Variables that are calculated directly from information supplied by clients

Total project expenditure is usually provided by the client, and includes all direct expenditures associated with the project.

There are no jobs, GDP or output associated with the production of goods and services that are imported into the province. Therefore an estimate of the value of imported goods and services is deducted from project direct spending to determine the value of **project expenditure in BC**.

Estimates of wages, salaries and other components of GDP provided by the client are reported in **project direct GDP at basic prices**.

About Project Direct GDP Estimates

It should be noted that project direct GDP figures are derived from information provided by clients. These figures are usually project-specific, but they are not always based on complete information. For example, it is often possible to get good data on wages and salaries associated with a project or activity. Labour costs are the biggest component of GDP, but other variables which ought to be included in the estimate (such as investment income, operating surplus, or depreciation) are not always known. When the GDP figures generated by the BCIOM are based on partial information, they may understate the project's direct contribution to GDP.

Project direct employment is derived based on the project's wage bill and estimates of average annual wages in the industry.

Household income is calculated based on project direct wages, benefits and mixed income.

Variables that are estimated using model information

Commodity taxes less subsidies is calculated using information on average sales and other tax rates associated with each good or service purchased by the project.

Project expenditure in BC is traced back to the producing industries in order to determine the **direct BC supply**. Because industries do not “produce” taxes, wages or other components of GDP, the direct BC supply only includes the value of goods and services produced by BC industries. Direct project spending on wages, salaries, operating surplus and taxes are excluded from this measure.

An estimate of **corporate and personal income taxes** associated with these project direct expenditures is calculated using information on average tax rates from the model.

BCIOM impact estimates

The model is shocked using the direct BC supply calculated from the information provided by the client. This is used to determine the total economic impact of the project on the BC economy, which is reported in terms of direct, indirect and induced impacts.

The **direct impact** measures the change in economic activity required to satisfy the initial change in demand. The **direct output impact** is equal to the direct BC supply—the change in the economic activity of the industries producing the goods and services purchased by the project.

The **direct GDP impact** is the GDP generated as a result of the activities of the industries that produce the goods and services used by the project.

The **direct employment impact** shows total employment in these industries, and the **direct household income impact** is a measure of the wages, salaries, benefits and other income earned by these workers.

The **direct tax revenue impact** includes personal, corporation, sales and other taxes generated as a result of the activities of the industries that supply the goods and services used by the project.

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The allocation of tax revenues to federal, provincial and local governments is based on model averages.

Induced effects

The induced effect, which measures the impact associated with expenditures by workers, includes purchases of a variety of goods and services, including housing.

More detailed information about the impacts is available in the report tables included in this document.

APPENDIX

SOME BACKGROUND ON INPUT-OUTPUT MODELS AND ANALYSIS

Input-output analysis is based on statistical information about the flow of goods and services among various sectors of the economy. This information, presented in the form of tables, provides a comprehensive and detailed representation of the economy for a given year. An input-output model is essentially a database showing the relationship between commodity usage and industry output. It consists of three components:

- a table showing which commodities—both goods and services—are consumed by each industry in the process of production (the input matrix)
- a table showing which commodities are produced by each industry (the output matrix)
- a table showing which commodities are available for consumption by final users (the final demand matrix).

These data are combined into a single model of the economy which can be solved to determine how much additional production is generated by a change in the demand for one or more commodities or by a change in the output of an industry. Changing the usage or production of a commodity or group of commodities is often referred to as shocking the model. The known relationship between goods and services in the economy is used to generate an estimate of the economic impact of such a change.

If a change in demand is met by increasing or decreasing imports from other jurisdictions, there is no net effect on domestic production. All of the benefits or costs associated with employment generation or loss, and other economic effects, will occur outside the region. Therefore, it is important to identify whether or not a change in the demand for a good or service is met inside or outside a region.

ASSUMPTIONS AND CAVEATS

From an IO perspective, commodities made in BC have a much bigger impact than those imported into

the province. The analysis presented here is based on using default import ratios for most commodities: i.e., assuming they are purchased locally, but allowing for the fact that they may have been manufactured elsewhere.

All tax data were generated using the model structure, and are based on averages for an industry or commodity.

The precision of the figures in the tables should not be taken as an indication of their accuracy. Economic modelling is an imprecise science and the estimates in this report are probably no better than +/- 10%.

THE BRITISH COLUMBIA INPUT-OUTPUT MODEL

The BCIOM can be viewed as a snapshot of the BC economy. It is derived from inter-provincial input-output tables developed by Statistics Canada and includes details on 727 commodities, 300 industries, 170 “final demand” categories, and a set of computer algorithms to do the calculations required for the solution of the model. It can be used to predict how an increase or a decrease in demand for the products of one industry will have an impact on other industries and therefore on the entire economy.

LIMITATIONS AND CAVEATS ASSOCIATED WITH INPUT-OUTPUT ANALYSIS

Input-output analysis is based on various assumptions about the economy and the inter-relationships between industries. These assumptions are listed below:

Input-output models are linear. They assume that a given change in the demand for a commodity or for the outputs of a given industry will translate into a proportional change in production.

Input-output models do not take into account the amount of time required for changes to happen. Economic adjustments resulting from a change in demand are assumed to happen immediately.

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It is assumed that there are no capacity constraints and that an increase in the demand for labour will result in an increase in employment (rather than simply re-deploying workers).

It is assumed that consumers spend an average of 80% of their personal income on goods and services. The remaining 20% of personal income is consumed by taxes, or goes into savings.

The BCIOM is based on a “snapshot” of the BC economy in 2008. It is assumed that relationships

between industries are relatively stable over time, so that the 2008 structure of the economy continues to be applicable today. However, it should be noted that employment estimates have been adjusted to reflect wage levels for the year of the expenditures in each case.

The BCIOM does not distinguish between regional effects. It will not, for example, differentiate between the economic impact of a plant located in one region of the province and a similar plant elsewhere in BC.



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