

August 11, 2014

**REPORT # 2014-20
COMMUNITY SERVICES – ECONOMIC DEVELOPMENT**

TO: Mayor Van Bynen and Members of Council

SUBJECT: Implementation Strategy for Gigabit Corridor pilot project

ORIGIN: Community Services – Economic Development

RECOMMENDATIONS

THAT Community Services/Economic Development Report 2014-20 dated August 11, 2014, regarding the implementation of a gigabit corridor pilot project be received and the following recommendation be adopted:

- 1. THAT Council receive the “Initial Stakeholder Meeting and Economic Development Impact Statement” report prepared by Sandel and Associates (Attachment A);**
- 2. AND THAT staff be directed to issue a Request for Proposals (RFP) seeking interested Internet Service providers (ISPs) willing to provide specified service levels and cost structures;**
- 3. AND THAT staff provide a further report to Council with the RFP results, including alternate options if necessary, implementation recommendations and budget impact.**

COMMENTS

Council identified within their 2012 – 2014 Strategic Priorities a corporate action to pursue a “Broadband Initiative and Innovation Centre” with specific reference to, “explore opportunities, partnerships, and business cases”. The recommendations within this report build upon these strategic priorities. Most recently in January, 2014 a joint NEDAC/Council workshop directed that staff research and report back to Council on the economic impact and cost of implementing a “gigabit corridor” pilot project in Newmarket. The firm of David Sandel and Associates was subsequently engaged to identify and recommend a pilot project area and prepare the economic impact assessment. The Sandel report is attached (Attachment A).

Sandel Report Summary

The Sandel report clearly states that the “time to act is now” for Newmarket to establish a leadership position and competitive advantage within the regional market. Three inter-connected areas are proposed for the pilot project, including Main Street from Water Street to Davis Drive, Davis Drive from Main Street to Leslie Street, and the Leslie Street/Harry Walker Parkway area. Future phase(s) could include Davis Drive west of Main Street swinging south on the Yonge Street corridor from Davis Drive to Mulock Drive.

Using available economic impact modelling software, the report suggests that the creation/attraction of approximately 17 firms with 205 employees could result from the implementation of the phase one gigabit corridor, despite the modest geographic coverage of the project. An additional 126 indirect jobs would also be generated from this activity. It is important to note that this is over and above projected growth anticipated from the natural evolution/transformation of Davis Drive upon the completion of the vivaNEXT rapid transit project. Further, and as noted in the report comments received during community consultations, high-speed competitively-priced broadband will ensure stability and ongoing growth from existing companies demanding increased bandwidth within their business processes.

A number of recommendations are provided in the Sandel report to facilitate broadband implementation, with two of critical importance. First, ongoing community engagement to build awareness and support, possibly led by the already-established Innovation Team, is fundamental to the success of the pilot project and to potential future implementation of Town-wide community broadband. It is anticipated this public engagement beyond what has occurred to date would be targeted for early 2015. Second, the report recommends that the Town issue a Request for Information (RFI) seeking internet service providers (ISPs) as partners to develop the phase one pilot using fiber and/or wireless solutions based on specified expectations of broadband speed and costs.

Staff considered RFI vs RFP and specifically what would be a better approach. Staff has determined that that an RFP would enable Council to make a more informed decision in Q1, 2015. It is important to note that the RFP will be structured in such ways to ensure Council has no obligation to award.

An RFP, albeit primarily focused on the Phase One corridor identified, could provide options that extend to additional phases. The RFP could outline some of the advantages the Town offers for the short and/or longer term to help attract private sector ISPs to act. Examples could include items such as potential access to install WIFI antennas on up to 7,500 street lights being retrofitted to LED; potential access along the trail systems (above grade via WIFI or below grade); and potential access to major Town and community facilities (Town of Newmarket owned/operated and potentially other community partners with conversations facilitated by the Town) to help with deployment.

Next Steps

Newmarket is serviced by literally dozens of internet service providers (ISPs) with the ability to purchase bandwidth at wholesale rates if they do not own their own fibre networks. By offering to partner with ISPs and potentially leveraging Town-owned assets for infrastructure installation as required to build out and manage a high speed phase one pilot project broadband network through an RFP process, the Town anticipates strong interest from the private sector. The overarching goal of the RFP is to set the standards for speed, service and pricing, and seek partner ISPs willing to accept these standards.

The RFP award would be subject to Council approval and would recommend potential partner(s) with an interest and capability in providing the specified level of high speed services/pricing. The RFP preparation and screening of interested parties would occur in the fall, with staff reporting back to Council early in its new term with recommendations based on the information received. Staff would also investigate alternate funding and operational options to support this initiative as required/necessary and report to Council.

BUSINESS PLAN AND STRATEGIC PLAN LINKAGES

Living Well

- Health education, wellness services and state of the art medical facilities

Well Balanced

- Educational, hotel and meeting/conference facilities

Well Equipped and Managed

- Leadership excellence and leading edge management
- Clear vision of the future and aligned corporate/business plans
- Efficient management of capital assets and municipal services to meet existing and future operational needs
- Ideal mix of residential, commercial, industrial and institutional land use
- Small town feel with big city amenities
- Appropriate mix of jobs to population and people to industry

Well Planned and Connected

- Long term strategy matched with short term action plan
- Revitalization of neighbourhoods starting with the downtown area
- Telecommunications infrastructure and policies for an increasingly wired world

Well Respected

- Discovering innovative and creative solutions for future well being

CONSULTATION

Since the wrap-up of the Shared Digital Infrastructure (SDI) project in 2012, the community partners involved in this project—the Town of Newmarket, Southlake Regional Health Centre, Newmarket Chamber of Commerce, Newmarket-Tay Hydro, Newmarket Public Library and others —have continued to meet and embrace the concept of Newmarket as an Intelligent Community, using high speed broadband as the platform to advance innovative technology projects to drive future employment growth.

An Intelligent Community also requires a cooperative and collaborative approach between private and public sector partners. Over the past two years, companies and organizations such as IBM, Cisco, York Region, and ventureLab have since partnered in this broad-based coalition. While the group has evolved in name from SDI to the Community Collaborative Ecosystem (CCE) and more recently (and simply), the Innovation Team, the core objective of community collaboration combined with the application of innovative technologies to drive economic growth remains fundamental.

The Innovation Team has identified a number of implementation projects through its own strategic planning process. First and foremost is the recognition that competitively-priced, ultra-high-speed and ubiquitous broadband service is needed but unavailable within the Town, and that current providers have to date not expressed interest in upgrading broadband services in the short term.

A number of initiatives, originating with Newmarket's interest, resulted in growing support for a broadband enabled community. The YRBiz Series Business and Bandwidth conference in May 2013 served as a catalyst for York Region to develop a York Region Broadband Strategy. In January 2014, invited industry leaders to a Council/NEDAC workshop session spoke of the growing need for high-speed broadband within communities, and endorsed broadband infrastructure as a critical enabler of business growth through its role as a competitive differentiator within the economic and community development marketplace.

The Sandel report included consultation with the Newmarket Chamber of Commerce Board and various members as well as approximately 20 IT related local businesses. The draft Sandel report was circulated to NEDAC and discussed at the July meeting that resulted in NEDAC reaffirming broadband's role as an economic driver and supporting the report recommendations in principle. As per the minutes of its July 21st 2014 meeting, NEDAC also encouraged Council to move forward with a gigabit corridor phase one pilot by early 2015. The final Sandel Report was also circulated to NEDAC for review.

HUMAN RESOURCE CONSIDERATIONS

Staffing levels remain the same.

BUDGET IMPACT

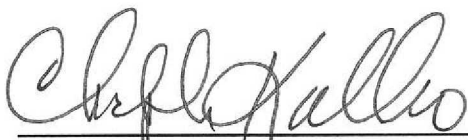
Operating and Capital Budget (Current and Future)

Issuing an RFP and assessing its results can be managed internally without additional resources. This is expected to be completed during the fourth quarter. As stated, a full accounting of our options will be provided to Council in early Q1 2015 in order for Council to consider and provide direction with respect to implementation.

Costing Option	Scope	Estimated Cost Range (high level estimate subject to additional research and costing)
A (Preferred option and recommended starting approach)	Partner with an existing ISP on the delivery of service	Town cost to range from \$ 0 - \$TBD subject to the outcome of an RFP process
B (Town makes the capital investment)	RFP (Option A) does not garner a level of interest from the private sector or an acceptable framework resulting in the Town considering options to deliver service through a Town funded broadband infrastructure	Phase I High Level Estimate: Sandel Report estimates a range from \$290,000 to \$1.1 million depending on extent of WIFI vs below grade fibre vs above grade fibre. Note: There is a peer review ongoing related to this high level cost estimate.

CONTACT

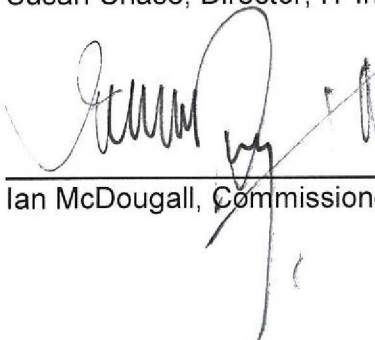
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Town of Newmarket



Newmarket

Initial Stakeholder Meeting and Gigabit Corridor Economic Impact Statement.

July 21st, 2014

Prepared by:

SANDEL & ASSOCIATES

“We Build a Smarter City, We Shape a Better Gigabit World”

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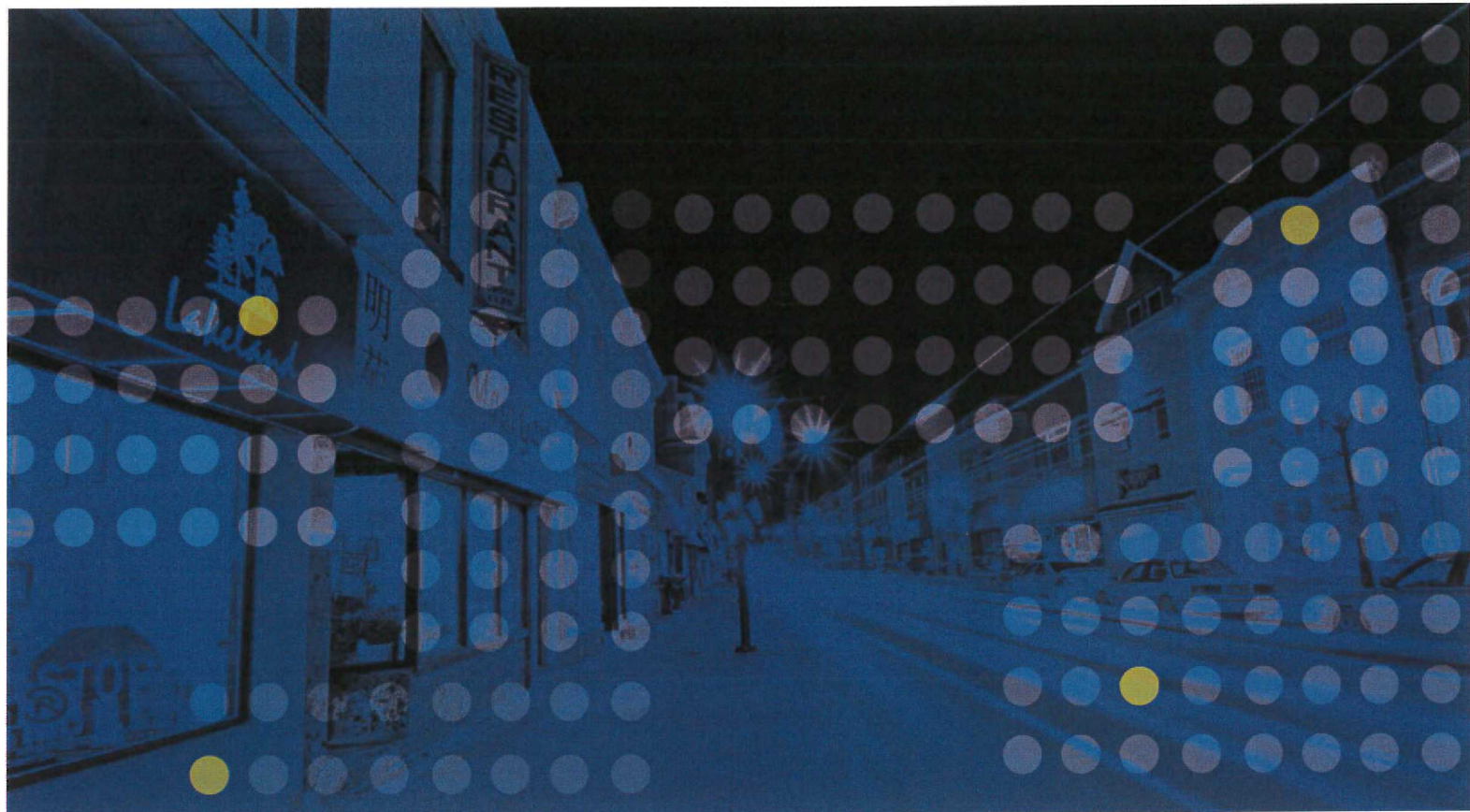
TABLE OF CONTENTS

Executive Summary /5	General Recommendations /23
Primary Recommendation /6	Ducts /23
The Opportunity at Hand /7	Street Lights /23
Newmarket Interview Highlights /8	Education /23
Business Case /11	Feasibility Study /24
International Perspective /11	Accelerating Ecosystem Development /24
Singapore /11	Community Visioning /25
Chattanooga and Kansas City /12	Community Engagement /25
St. Louis Area – Loop Data Rail /14	Realizing Economic Impact /26
Newmarket Perspective /15	Short Term Organization /26
Estimate of Newmarket Economic Development Impact /17	Gigabit Pilot /27
Purpose /17	Progress to Date and Next Steps /28
Methodology /17	Phase 1 – General Recommendations /28
Project Assumptions /18	Phase 2 – Next Steps - Implementation and Execution Plan /29
Hydro Diligence /21	Phase 3 – Town Wide Build-Out Appendix /30
Main/Davis to Main/Millard /21	Hydro Routes /31
Davis/Leslie to Davis/Roxborough /21	RIMS II Input-Output Multiplier /32
Leslie/Greenlane South to Leslie/Davis /22	Relevant Links /35
Davis/Roxborough to Davis Main Street /22	

Figure 1 Loop Data Rail – Gigabit Main Street Two Mile Route /14
Figure 2 Innovation Ecosystem Corridor /16
Figure 3 Hydro Routes Explored /21
Figure 4 Innovation Ecosystem Pilot /27

Figure 5 High Level Cost Projection /27
Figure 6 Main-Davis to Main-Millard /30
Figure 7 Davis-Leslie to Davis-Roxborough /31
Figure 8 Leslie-Greenlane South to Leslie-Davis /32

NEWMARKET IS WELL POSITIONED TO TAKE ADVANTAGE OF THE “WINDOW OF OPPORTUNITY”



Executive Summary

In March of 2011, Kansas City was announced as the first market to receive Google Fibre. In April 2013, Austin, Texas was announced, soon followed by Provo, Utah. AT&T declared its entry into the Gigabit market, hours after Google Fibre's Austin announcement, with its GigaPower offering. In the past several months, Google Fibre has raised the stakes by announcing another nine metropolitan area candidates; again, AT&T quickly followed by announcing another twenty-one metropolitan area candidates.

This recent activity from Google Fibre and AT&T — when combined with current network development taking place in community initiatives around the United States and across Canada such as The Toronto Water Front project, I-Canada and CATA — signals that the next round of metropolitan Internet development has begun.

During the technology economic bubble (1994-2000), a common strategy was simply to “get into the game”: buy a server or a PC with Netscape, and get connected. The focus of the tech economy has since shifted, and its next wave (2014-2020) centers on high-speed internet connectivity, with cities and community organizations facilitating as players or negotiators. The greatest reward will go to those cities that will thoughtfully align organizations and resources to create high-impact innovation communities. With a marked de-emphasis on chasing the elusive “next big employer,” economic development favors communities with interesting neighborhood amenities, flexible and trained workforce, arts and culture, high quality education, affordable housing options, and robust mass transportation systems. These communities will be the one that thrives in the future.

In other words, forward-thinking communities have a window of opportunity now to establish regional leadership positions and accelerate the economic development of the organizations and resources associated with their high-speed fibre infrastructure.

Since Newmarket has already completed considerable planning work in key areas with the Intelligent Community Forum, developed a Community Collaboration Ecosystem Innovation Team, participated in The York Region Broadband Strategy, and developed working relationships with I-Canada and CATA, the evaluation team believes Newmarket is a community well prepared to move forward.

PRIMARY RECOMMENDATION

The evaluation team has identified an Innovation Ecosystem Corridor comprised of the following target areas: (1) the Main Street Business District from Davis Drive to Water Street, (2) the Davis Drive Health/Life Sciences Corridor, and (3) the Leslie Street/Harry Walker Parkway Business Corridor. Furthermore, the evaluation team recommends a Gigabit pilot project targeted on those areas as they present unique and high-potential opportunities for economic growth based upon increased access to lower-cost Gigabit Internet service. Given the initial pilot in place, the evaluation team has also identified the next progression to expand along the Davis Drive and Yonge Street corridor, south to the city limits in conjunction with planned redevelopment efforts, and then again in the final expansion, to the entire Town of Newmarket.

PHASE 1 - GENERAL RECOMMENDATIONS

Recommendation #1 – Call to Action

Take advantage of this window of opportunity, realize **the economic opportunity at hand**, and adopt the **Innovation Ecosystem Corridor** concept, as well as designate it as the pilot area for new Gigabit infrastructure. *The time to act is now.*

Recommendation #2 – Leadership Organization

Lead the pilot project development for the Innovation Ecosystem Corridor, with the Innovation Team or other organizational alternative working in concert with the Town of Newmarket.

Recommendation #3 – Economic Development

Begin to identify regional, national, and international partners that would have an interest in the success of the Newmarket innovation ecosystem.

Recommendation #4 – Education

Develop the requirements for a continuing education program for Newmarket staff. Engage local educators to participate in the development of the requirements for the continuing education program and community outreach.

Recommendation #5 – Ongoing Technology

Develop a matrix of the actual expiration/renewal dates for the utility pole positions and whether there are any options to recover the spaces (legal or financial), and a policy for common duct, hand-hole architecture, and lease pricing. As street lights are upgraded to LED standards, develop a plan to include Wi-Fi access points within the street light enclosures.

PHASE 2- NEXT STEPS - IMPLEMENTATION AND EXECUTION

Goal #1 – Lead with the Innovation Team to develop the Innovation Ecosystem Corridor pilot.

Step #1 – The Innovation Team should engage the **Community Visioning** process to develop consensus on specific opportunities that exist — in the community as a whole, in specific geographic areas such as the Innovation Ecosystem Corridor, and in or across specific market verticals — and to ensure that the pilot be executed in ways that allow the realization of those opportunities.

Goal #2 – The Innovation Team should develop and engage a RFI process for the pilot.

Step #2 – The Innovation Team should develop a simple Request For Information and associated requirements document. The RFI document will set clear guidelines for technology providers to offer innovative technical solutions or business proposals, to fulfill the vision and requirements of the pilot.



Goal # 3 – Select the best response and develop a tactical pilot action plan.

Step # 3 – The Innovation Team will work with each provider to shape a formal recommendation and a clear and simple step-wise plan with associated costs for review by the Town Council.

Goal # 4 – Develop community interest, economic impact and awareness – Community Engagement.

Step # 4 – The Innovation Team would implement the Community Engagement plan, monitor its progress, and use this information to tune the pilot as it moves forward.

Goal # 5 – The Innovation Team would proceed to implement the Phase 2 pilot.

Step # 5 – Implement plan as described from the previous steps and selected RFI proposal. Retain relationship with industry experts to monitor and guide the Innovation Team and pilot as it progresses.

PHASE 3 – TOWN WIDE BUILD-OUT

Goal # 5 – Create a Gigabit Town.

Given the results of the pilot, develop a strategy, a clear action plan, and next steps for a build-out that would encompass the entire Town.

The Opportunity at Hand

*Given that the Town of Newmarket is in the early planning stages of developing an Information and Communications Technology (ICT)-based innovation economy and has successfully planned for infrastructure investments over the last ten years, the Town of Newmarket is well positioned to take advantage of this **window of opportunity**. By considering the establishment of an Innovation Ecosystem Corridor and Gigabit pilot, Newmarket could attract and create high-value jobs, improve real-estate values, and bring new public and private-sector opportunity to the Town of Newmarket.*

THE TIME TO ACT IS NOW.

NEWMARKET INTERVIEW HIGHLIGHTS

The evaluation team conducted interviews or participated in briefings with more than fifty stakeholders in Newmarket. The team used the research from those meetings to formulate the economic impact estimate and drive the next step recommendations on deployment, community visioning, and community engagement. It is important to highlight three elements from those meetings in this document:

First are the results of a brainstorming session with approximately twenty stakeholders. Second is the CCE team, on what this deployment could mean from a civic perspective and for one of its primary assets, Southlake Regional Health Centre. Third are the perspectives from a technology firm about how Gigabit connectivity would impact technology-dependent businesses in Newmarket.

GROUP BRAINSTORMING RESULTS

From this group of approximately twenty stakeholders, whom the evaluation team specifically probed for their ideas and opinions in four areas: 1) perceived or anticipated benefits, 2) perceived or anticipated obstacles, 3) who they felt should be involved in supporting the project, and 4) what they believed should be the scope of both near-term and long-term deployment.

1. What would the biggest benefits of a Gigabit Main Street or Community be to your organization? How critical would it be for the future growth/development of your organization?

- Greater equalizer between urban and rural.
- Attraction to the community of businesses as well as retention of existing businesses—may be an image thing, or it could be a need—they wanted to expand in an area that offers this.
- Enhanced research capacity, enhanced resources.
- International cooperation.
- Access to better and more technologies – cloud-based, VoIP, work-from-home, analytics, better Netflix streaming, 4k
- From a manufacturing standpoint, fast transmission of CAD 3D models.
- Even though I don't know what they are yet, the ability to handle customer processes that come down to us—if we can work with them on their level, they could give us some advantage.
- Customers are going to want access to our networks to come in and look at our production processes. They don't right now, but they may well want access to come in and look at streaming video.
- Increase product for non-profit organizations in this area with back-office and service integration—there is a lot of talk and noise in shared services, some in the purchasing and procurement area though success is mixed right now.
- Use regular video chat and Skype right now for conversations with Japan and India, and it always fails.
- We would like to be able to have our sales people come into our office and walk around and talk to people using virtual telepresence devices.
- Digital inclusion to eliminate poverty.
- If you don't do it, you're going to become a digital peasant.

2. What do you see as the biggest obstacles? Why? How would you overcome it?

- Funding source—who's paying for it?
- Identifying the drivers—who is responsible for this? Leadership and responsibility.
- IT support post implementation—who's going to provide support, once it's built?
- Business structure around it, probably not commercial.
- Where do we start? How do we prioritize where this is going to go first?
- How do we get around or get through big blue and big red?
- Try to negotiate simplification of government policy at all levels.
- Education of stakeholders in the community—change management.
- Cost to build vs. return on investment – a lot of unknown costs to infrastructure.
- Lack of understanding on the part of traditional lenders... They don't know the lifecycle and profitability. Hard to get traditional lending at good rates.
- Municipalities have the capacity to borrow at very favorable rates.
- In a bond issue situation, the municipality can own the network until the bonds are paid off.

- Getting broad community buy-in.
- Population density and space—we don't have innovation areas, entrepreneurs; nothing is really set aside for people who would use this at this time; we don't have that density.
- Newmarket is full of all kinds of different landowners—basically, you've created an advantage for new builders. You're creating a competitive advantage in a rental environment that wouldn't have existed before.
- Permitting, construction schedules.

3. Who should support the development?

- Financially, who's going to benefit? Whoever is going to make revenue or own it should be the one to foot the bill.
- If there isn't someone with enough money to pay for it, and there are businesses that rely on it, then we're going to lose those businesses.
- York region police HQ are here, RCMP, OPP, major school boards, a lot of players in that broader public-sector side.
- You need a business model where it's the end users that will drive it.
- Vianet in partnership with the Town of Newmarket.
- I think we have our local council on board; I'm not sure about the regional council.
- The region has an RFP on the street now on their private network . . .to assess what the business models are moving forward.

4. How big should it be? What should be its speed/capacity? What locations or geography should it cover?

- Ultimately town-wide. If we had to pick a smaller corridor, Davis, down Main St., up Leslie a bit.
- There are certain areas of this town that have very bad connectivity.
- Back where I am on Leslie, it doesn't matter if you have Rogers or Bell, you're up and down all day (on Leslie, north of Davis—Harry Walker Pkwy); Rogers rep came in, "Yeah, I keep hearing this."
- On Davis from Main to Alexander St. (CreateIT Now) if you really had to limit it, then move on to Harry Walker, Leslie.
- Yonge and Davis just because of everything that's going on there, how can you push to make it bigger?
- The places that don't get it are really going to be at a disadvantage.
- What about the Magna complex? (Magna Corporation)
- If we're doing it, let's do it where people need it.
- If we're going to start with a small corridor, choose a place where you can subsequently demonstrate return on investment.

II. CCE INNOVATION TEAM – CIVIC AND HEALTHCARE PERSPECTIVE

Civic perspective

- I'm not satisfied with us just being one of the 1.3 million. We're going to turn into a bedroom community.
- People are looking for something to brag about, looking for a vision.
- Hospital needs to become more about health entrepreneurship, we need to find ways to create our own income – there's a group of doctors that need to start developing programs, then lets market that and take some percent.
- The connectivity can become important if we're going to attract international business.

Southlake Perspective

- To the extent that we would be directly involved in something is a little bit uncertain. The hospital could participate in supporting a local neighborhood to get engaged, to get passionate, to create a sense of urgency...that's something we may be able to do.
- Gigabit community isn't a specific driver for the hospital; our principal mission is not that, though we are happy to be a support to the town.
- Our physician group being able to connect to the institution is important now and will continue to be important.
- We need our patients to be connected because increasingly that is going to be the immediate push and the new demand for services. We are engaging in strategies right now to enable our patients to be able to connect online. From a simple transaction of appointment booking to much more demanding bandwidth applications to exchange large data files . . .we as an organization are beginning to contemplate that already. Staff connectivity is important, patient connectivity probably even more important.

III. BUSINESS PERSPECTIVE - TECHNOLOGY SOLUTIONS PROVIDER (NOT ISP)

Q. What is the benefit to your company if Newmarket gains ultra-high-speed connectivity?

- There is tremendous value to that. In our world, everything is going IP, everything is becoming centralized.
- Video is becoming the standard. Not just a nice-to-have or for Fortune 100 companies. That is a huge keynote to the whole initiative—we're having video collaboration discussions with everyone who is a client or prospective client.
- If you'd have asked the question 6 years ago, I would have said that would be kind of nice. Now it's mission critical.
- Bandwidth-sucking applications—that's what we do. That's what Avaya does. That's what Cisco does. That's the business we're in. Somewhere there has to be pipe to support all that. And it has to be managed. You need to be able to control the service level.
- As a Newmarket resident it's awesome, as a Newmarket business it's 100x more awesome.

Q. Can and will the private sector provide what you need?

- Maybe at some point, it's certainly not going to come at the rate that our company will need it. 6 years from now maybe Rogers will step up and put all sorts of stuff in here. But the key word is maybe.
- That's an awesome thing that brings a ton of value [if the town decides to expand the infrastructure]. Maybe in a decade, I'll be able to take our business to the next level. But a decade isn't working for me. This business changes so fast, I need to be thinking 2-3 years out.
- Any business that has a dispersed business. If you have 2-3 offices, you need the bandwidth—voice, apps, data and the whole video thing that's coming screaming onto the field.

Q. What are the biggest obstacles to the community taking action?

I don't know how prepared the town is as far as existing infrastructure. I don't know if it's a hopscotch leap or a rocket shot across the Grand Canyon. You've got to have buy-in from the community.

Q. What should the timeframe of Newmarket taking action be?

- I don't know. Is this something that could be accomplished in 2 years? 1 year, 2 years – that starts to sound rational to me. My business plans don't last for 90 days now. I'm finding that the best of intentions aside, When I see a 3 year plan I put stock in it, when I see a 10 year plan I don't think it means much.

Q. What impact could this have on people working in Newmarket?

- Remote employees—de facto standard now. More and more companies want to do that. Everyone that we talk to – they want as many soft phones, mobility devices. They all live here. It's not just the bandwidth at your business, but you need to have it where they hang their hat.
- A huge trend for businesses is to encourage the remote worker. They want their employees to be able to work from home. They need to be able to do the voice and video and collaborative applications . . . guess what, half their employees may be working from home.
- Hypothetically, I have a business in Richmond Hill but I have a lot of employees in the Newmarket area in fact, I'd be encouraging new employees coming in from out west to live in Newmarket.



BUSINESS CASE

International Perspective

A variety of technology related movements have sprung up around the world to address issues of globalization, sustainability, innovation and the growing demands placed upon governments as urban populations increase. These initiatives include the Smart Cities, Intelligent Communities, Smart and Connected Communities, Gigabit Cities, and the Broadband Community movement. Although each may have a different perspective or operating philosophy, they all are ultimately focused on improving quality of life through the thoughtful inclusion of technology to drive socio-economic impact. Cities involved in these initiatives include Amsterdam, London, Barcelona, San Francisco, Singapore, Kansas City, Hyderabad, Songdo, and the Toronto Waterfront project.

Singapore

Most noteworthy of the aforementioned initiatives is Singapore's effort, led by The Singapore IDA. Since originally developing a network to interconnect public sector facilities back in the mid-1990s, the IDA has catapulted forward with an impressive infocomm development plan to integrate holistic ICT planning and associated infrastructure build-outs, with educational and leadership planning for all aspects of residential, business, and organizational life. Recently, the IDA announced plans to develop the first Smart Nation ecosystem strategy. "Our goal is to establish Singapore as a smart nation that taps the potential of infocomm and media (ICM), and that nurtures innovative talent and enterprises. In this way, the ICM sectors can bring about economic growth and social cohesion, and better living for our people," said Dr. Yaacob Ibrahim, Minister for Communications and Information.

"Our goal is to establish Singapore as a smart nation that taps the potential of infocomm and media (ICM), and that nurtures innovative talent and enterprises"
– Dr. Yaacob Ibrahim, Singapore Minister for Communications and Information (July 2014)

The economic implications are staggering as Singapore leaders move away from the legacy industrial ecosystem toward an information-based ecosystem at a national level. This initiative easily places most North American cities almost ten years behind Singapore's digital effort. However, it is also a great moment of opportunity for the Town of Newmarket, in that Newmarket has prepared well by working closely with the ICF, I-Canada, and CATA. Newmarket has already assessed its broadband environment, partnered with local organizations (Innovation Team and CreateITNow), and set a foundation from which to nurture digital enterprise and talent, as well as bring about economic growth, social cohesion, and a better quality of life.

Chattanooga and Kansas City

Particularly unique to Gigabit City initiatives in the U.S. is their focus on entrepreneurship as a pathway to innovation and job creation. Chattanooga and Kansas City, described below, posit that long-term economic impact will come primarily through the creation of new technology companies which impact community and local and state governments (bottom-up); whereas, the Singapore IDA initiative represents a high-level approach to planning from the city and state government levels, which includes programs for entrepreneurship (top-down).

Chattanooga

Forty years ago, the U.S. industrial city of Chattanooga, Tennessee, was voted the dirtiest city in the country, but today it is attracting the sort of business investment that makes other cities envious.

The Electric Power Board EPB, Chattanooga's non-profit electricity provider, built a fibre optic communication system with \$111.5 million in stimulus funds that anchor the city's smart grid. The grid includes one-Gigabit internet service to its entire population with an accompanying high-speed wireless service, making it one of the fastest cities in the world.

According to the city's chief information officer Mark Keil, "Gigabit has been a key element in the region's ability to attract investment from companies such as Amazon, which has offered 1,500 jobs so far at two massive new distribution centers being built in the region." The German automaker Volkswagen has also opened a manufacturing plant in Chattanooga.

"It is very hard to find a global industry that doesn't think in terms of technology, so that does sweeten the pie by having technology as part of your ingredients," Keil said, adding that he had also been in discussion with other well-known high-technology companies. Furthermore, in a recent interview **Keil also acknowledged that it was important to move quickly.**

In addition, Chattanooga has benefited from visits from municipal utilities, government officials, community leaders, and private companies from around the globe, including Japan, Australia, New Zealand, Israel, Ireland, Brazil, and cities throughout the USA. These groups are all looking at EPB as a model for a successful, sustainable Gigabit network combined with a Smart Grid electric distribution system.

"Amazon has cited Chattanooga's world-leading networks as a reason for locating a distribution center in the area, as has Volkswagen when it chose Chattanooga as its headquarters for North American manufacturing." – Tom Wheeler, FCC Chairman (June 2014)

Since Gigabit connectivity was made available to all city residents and businesses, **it has begun to transform Chattanooga's economic profile**, attract new companies, and enliven the city's entrepreneurial culture — which has emerged as a haven for innovative and next generation businesses, with programs like GigTank, that welcome entrepreneurs and startups to stay and work in the city.

Furthermore, Tennessee Governor Bill Haslam and Volkswagen Group of America officials announced in July that the company would expand its sole U.S. manufacturing facility in Chattanooga, Tennessee. Volkswagen would add an additional manufacturing line and create the National Research & Development and Planning Center of Volkswagen Group of America. Volkswagen's total global investment for the expansion will be \$900 million, with \$600 million invested in Tennessee and 2,000 new jobs being created in Hamilton County.

IMPORTANT NOTE: Chattanooga built out a Gigabit network as an operational improvement to the utility and to provide Gigabit service as an economic development initiative. Conversely, the Google Fibre initiative in Kansas City is a residential, next-generation cable television rollout, which makes use of utility and telecom infrastructure to reach its customers. Kansas City community leaders then responded with a variety of economic development initiatives centered on entrepreneurship.

Kansas City

In March of 2011, Google announced Kansas City as the first market selected to receive Google Fibre. Then two months later Kansas City Missouri followed as the second Google Fibre City and within three years the fourteen surrounding municipalities.

However, by the summer of 2011, both Kansas City Mayors decided to create The Mayor's Bi-State Innovation Team from which to determine a plan and roadmap to drive the long term economic development of Google Fibre. Then in June of 2012 the playbook, *Playing to Win in America's Digital Crossroads*, was released.

“As part of the Greater Kansas City Chamber of Commerce’s ‘Big 5’ initiative, Kansas City Mayors Sly James and Joe Reardon have declared that Kansas City should be ‘America’s Most Entrepreneurial City.’” – Kauffman Foundation

Noteworthy of the Playbook was a recommendation for a regionally collaborative effort to take advantage of KC’s unique infrastructure and establish Kansas City as a global leader in digital innovation. KC Digital Drive is charged with the implementation and stewardship of *Playing to Win in America’s Digital Crossroads*, the digital playbook produced by the Mayor’s Bi-State Innovations Team.

Other key Playbook Initiatives that KC Digital Drive is collaborating with includes LaunchKC, Digital Sandbox, KC Startup Village, US Ignite, Code for America and K-20 Librarian all aimed at developing the greater Kansas City innovation community and accelerating the development of successful start-ups. KC Startup Village is a growing cluster of Google Fibre-minded tech startups in a Kansas City, Kansas neighborhood near 45th Avenue and State Line Road. It has captured the fancy of numerous newspapers and tech blogs covering the November lighting up of Google’s Internet network. Examples include The Wall Street Journal, GigaOM, VentureBeat and Mashable, not to mention the onslaught of local media coverage.

Current Kansas City Economic Impact

Kansas City Google Fibre is a very large scale Gigabit build-out which encompasses two cities and fourteen municipalities over a wide service area and will take several more years to complete. Construction over the last three years has been focused on residential build-out and not focused on an innovation district or a specific corridor. As a result, current economic impact centers on the development of numerous initiatives such as KC Start Up Village, LaunchKC, Digital Sandbox, Kansas City Startup Village, US Ignite, Code for America and K-20 Librarian all aimed at developing the greater Kansas City innovation community and accelerating the development of successful start-ups.



“The mission of Digital Sandbox KC is to provide proof-of-concept resources to support early-stage commercialization processes including access to technology, business and market experts and funding for early stage market validation, prototyping and beta testing services”.

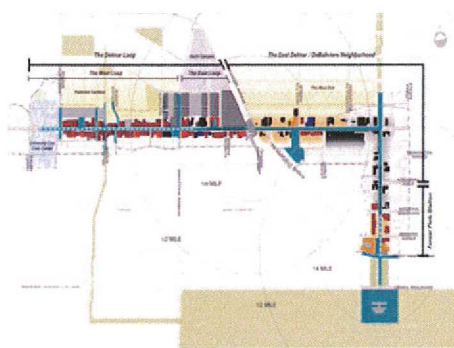
Current Kansas City Construction Impact

Currently there are over 1,000 people working on the project in Kansas City Missouri now. These include employees of three general contractors and over fifty subcontractors from seventeen states. Google also has approximately one hundred Google Fibre service vehicles on the road every day. PAR Electric estimates they will have replaced 8% of Kansas City Power & Light's utility pole infrastructure by the end of the Google Fibre project. Construction is nearing completion in the central portion of the project and is underway in the north and south portions of the city at this time. Suppliers have leased warehouses in Kansas City Missouri to serve the project.

Given the rapidly developing Smart and Gigabit City global business case perspective and Newmarket's success with planning for and implementing infrastructure investments over the last ten years, Newmarket is well positioned to propose a pilot project.

The goals of the pilot project should be to: 1) stimulate the development of the local innovation economy through demonstration, 2) allow business and residents the opportunity to interact with high speed ICT technologies and 3) allow local residents, businesses and organizations to experience the benefits and challenges high speed ICT technologies might have on local business, social and cultural ecosystems.

ST. LOUIS AREA - LOOP DATA RAIL



The combination of the proposed, 1Gbps high speed, fibre optic networking capability for businesses in the University City Loop, along with the inclusion of an expected local area wireless network targeted at supporting smartphones and other connected devices in the local consumer population, will create a new and technologically sophisticated state of the art environment in the city, that when implemented, will likely be the first of it's kind in the region.

On a smaller scale, the Loop Media Hub, will be the technologically equivalent peer, yet dramatically lower cost peer of Kansas City's highly profiled Google project effort. Based on the smaller size, more defined scope and the current highly collaborative environment, the Loop may well be in production long before the Kansas City project is complete.

In terms of the capabilities under consideration, it is appropriate to place these local efforts in a more global context in order to better understand the reach, reality and possibilities of what is currently under consideration. In November 2011, the UK announced a publicly subsidized, national effort to build similar high-speed networks in their major cities. This program was specifically aimed at making the UK the technological hub of Europe. The first of these cities to be connected under this program will be Belfast, with an identical target speed (1Gbps) to that being proposed in the Loop. The expectation from the UK is that this effort will place their cities on at least equal footing with the most advanced localities in Asia.

Impact

Leveraging this type of capacity, **the Loop Media Hub has the potential to significantly redefine the overall economic development opportunities within the community over both the intermediate and long term.** When the project is completed, the new Loop Media Hub Ecosystem, will provide numerous potential benefits for University City, it's residents and local institutions as well as the greater St. Louis Metropolitan Area.

At the higher orders, these capabilities should entice, new high tech businesses to the area, which based upon recent history in other locations such as San Francisco, New York, Boston and Chicago, has demonstrated the potential to create substantial economic value.

"In addition, we see the opportunity for a dynamic work force expansion in our area as new companies would see the advantages of locating along Delmar to access the Gigabit fibre. It could be the demand driver that we have been looking for to fully develop the Delmar corridor east of Skinker. Our firm would certainly be willing to pay to have access to a manifold increase in internet speed. We are looking forward to a successful effort to bring this high-tech tool to the Loop".

- Dave Mastin CEO St. Louis Design Alliance.

Entrepreneurship is already an area of growing strength within the region that should be fortified by a connectivity initiative of this nature. There is a flurry of startup activity occurring across Missouri in general and the St. Louis area in particular. According to the annual Kauffman Index of Entrepreneurial Activity, Missouri currently ranks 6th nationally for entrepreneurial activity. The state overall has risen rapidly up the ranks in terms of this measurement. As may be expected, the greater St. Louis area is instrumental in shaping this trend. In the latest annual report published by the St. Louis County Economic Development Counsel, St. Louis County, St. Louis City and St. Charles County hold down the number 1, 3 and 4 spots statewide in terms of new business starts, accounting for roughly 70% of the activity across the top four spots.

Furthermore the area is directly adjacent to Washington University in St. Louis and The Skandalaris Entrepreneurial Institute as well as home to other creative, innovative and artistic organizations. Moreover in the last seven years, this part of town has also been a home to Twitter and Square (both billion dollar companies) and Answers.com a rapidly growing search engine business and other successful start-ups. **Moreover, because of the known history of this corridor as a successful creative community, we are able to project the following economic development impacts:**

When projected forward over the next five years for similar types of economic activity in the project corridor, here are the reasonable estimate economic impact numbers for St. Louis City and St. Louis County only:



- 1,000 high tech jobs (i.e. computer programmers, software development) paid at industry standard
- 972 additional jobs across a number of industries including real estate, employment services, food service & drinking establishments, hospitals/healthcare providers, telecommunications and wholesale trade
- \$132,590,000 in wages and benefits
- \$172,227,000 in additional economic benefit (i.e. sales, rents, services, etc.)
- Total annual economic output in excess of \$265,000,000

Further information regarding the original report can be found at loopdataarail.org

NEWMARKET PERSPECTIVE

The Town of Newmarket has a small town charm, with big city conveniences. Newmarket's close proximity to Toronto makes it attractive to investment, business growth and residents. A gentle blend of land-uses makes Newmarket a perfect location for young families and professionals alike. Newmarket is the home of primary economic drivers -- York Regional Government headquarters and operations; and Southlake Regional Health Centre. Its proximity to the Holland River Trail System and Fairy Lake allows for recreational, cultural and arts activities. Local businesses provide boutiques, patio eateries, live theatres and a seasonal farmer's market in a vibrant setting.

Newmarket is also in the early stages of developing an attractive, innovation ecosystem which has three major components:

- **The first being an innovative and creative business area along Main Street.** It has a unique experience with early 1800s styled historic architecture, streetlights, and custom grown flower barrels gives Main Street a very real sense of place and neighborhood amenities that would be highly attractive to innovative, creative, cultural, media and arts oriented businesses. The Main Street area is particularly important as the street, its collection of small business fronts, restaurants, cultural organizations and easy access to the trail system will be attractive to entrepreneurs and small business startups.
- Together the aspects of community along Main Street will provide a cultural cross roads and social fabric from which more conversations take place, ideas created and inspirations experienced which ultimately will result in the formation of more companies. As it has been said, "high impacts Gigabit Cities are 90% sociology and 10% infrastructure" and in the beginning, Main Street's social and cultural fabric will drive the expansion of the overall Innovation Ecosystem Corridor.

NEWMARKET INNOVATION ECOSYSTEM CORRIDOR



FIGURE 2 INNOVATION ECOSYSTEM CORRIDOR

The second component is the Southlake Regional Health Centre. Southlake is a full-service hospital with a regional, clinically advanced focus. As a regionally designated site, Southlake is responsible for developing and providing advanced levels of care to the more than one million people. Southlake also has almost 200 clinical trials underway, and is connected to both of Canada's research and education networks Orion and Canarie. In addition to its world-class healthcare, Southlake Regional has developed the CreateITNow incubator. Located in a large 60,000sf warehouse with 5,000sf presently allocated to CreateITNow, the incubator serves as a business, educational and mentoring center for developing medical or life sciences related technologies or devices and network access point to Southlake Regional's partner research and education networks.

The third component is the business/industrial park area at Leslie Street and Harry Walker Parkway. This area is an ideal location for light or advanced manufacturing, call center operations, and technology companies.

Together, when combined with Gigabit Internet infrastructure, these three areas potentially form an emerging Innovation Ecosystem. This ecosystem would have the ability to attract and create high value jobs, increase real-estate values and generate new public-private partnership opportunities.

For example, with Gigabit infrastructure in place, small creative, media and culturally oriented businesses would naturally be attracted to the availability of lower cost, high speed Internet in combination with the local neighborhood amenities and the social, cultural and recreational fabric around Main Street. As these businesses grow, some will develop a need for advanced manufacturing and/or assembly operations in nearby locations taking advantage of ease of access and high speed connectivity. This combination makes the Main Street – Leslie Street combination more attractive and scalable.

Southlake Regional's CreateITNow incubator provides the capacity to incubate and accelerate new technologies for the healthcare or life sciences industries. With the advantages of Gigabit infrastructure in place, these new businesses have the ability to grow quickly and expand office operations to the Main Street area or manufacturing/assembly facilities in the Leslie Street/Harry Walker Parkway corridor.

When all three components are combined as an Innovation Ecosystem, they have the ability to attract economic investment and high value jobs. As jobs are created and innovative businesses thrive within the ecosystem, residents will reap the benefits of greater opportunities, stronger real-estate values, improved public and private sector opportunity and improved quality of life.

Area of Pilot's Next Progression

As discussed previously, the three areas combined would form the initial Innovation Ecosystem Corridor. As the development of the ecosystem progresses and small companies grow, the areas along Davis Drive and Yonge Street will become attractive to companies as they begin to look for more office space to grow their businesses. In particular, as work along Davis Drive and Viva transit complete, the ecosystem will mature and expand making Davis Drive and Yonge Street part of a growing ecosystem. Companies that look towards the Davis Drive and Yonge Street area (and south to Newmarket's border) will be attracted to office space that has either flexible or innovative work space options nearby quality neighborhood amenities.

ESTIMATE OF NEWMARKET ECONOMIC DEVELOPMENT IMPACT

Purpose

A major component of this study is to estimate the economic impact of a publicly led project to install and activate lower cost, Gigabit level Internet system to a select number of business and economic activity locations. The economic impact estimate generated in this study would be used to:

1. inform local decision-makers of the potential short-term and long-term economic return on investment in a lower cost, Gigabit level Internet system deployed within designated areas of the community;
2. determine which areas of deployment would generate the greatest of economic benefit; and
3. provide local officials with preliminary benchmarks for tracking future economic activity.

While the estimated economic impact provides guidance to and justification for future investment in Internet infrastructure, the process and final calculations has many limitations. These estimates are based upon a series of assumptions developed through project research, informational meetings with stakeholders, one-on-one interviews, and target area tours along with prior experience and expertise of the evaluation team. Any of decisions made by local officials and/or decision-makers must take into account the large number of economic variables, future policy decisions and local/regional economic initiatives that will influence the final economic output from any infrastructure investment.

Methodology

During the site visit (May 27 – 30, 2014) the evaluation team was provided a wealth of information about the Town of Newmarket and future development plans. The evaluation team also participated in a series of stakeholder meetings along with a tour of the primary business corridors. Based upon the information collected, the evaluation team quickly recognized several Gigabit-related economic opportunities within Newmarket. The evaluation team received permission to consider a number of different deployment scenarios with reasonable limitations on the project timing, scope, size or cost.

While having multiple economic opportunities is a positive for Newmarket, they created a serious test for the evaluation team. Each potential option brings new and multiple variables that will affect the economic impact estimate. When combined with factors related to the timing on deployment and activation of the system, the economic impact estimate has the potential of ranging widely.

With these conditions in mind, the next step was to select an appropriate economic impact model to provide the most accurate analysis. There are standard tools used in North America for economic impact analysis. Each brings a number of advantages and limitations depending upon certain key elements, including the project location and impact area, quality of the inputs (i.e. predicted number of jobs, estimated wages, and forecasted capital investment), and interpretation of the results. Another issue related to this study is Newmarket's location in a major metropolitan area with an interdependent economy and labor market. The evaluation team conferred with Town representatives in June regarding these issues/concerns and agreed upon a reasonable economic impact strategy that would account for these elements.

The evaluation team selected the RIMS regional input-output (I-O) multiplier tool to calculate the economic impact estimate. RIMS (Regional Input-Output Modeling System) provides the ability to identify and isolate economic benefit for Newmarket through to use of individual industry multipliers. (see appendix for further explanation.) The final report data – estimated earnings, economic activity, and jobs – was produced using the following steps:

1. Defining the pilot project area(s);
2. Modeling potential economic development projects with timeline for economic activity;
3. Entering project parameters – capital investment, jobs, wages – into RIMS economic multiplier tool; and
4. Comparing data results to similar projects and evaluation team experience to ensure relevance and appropriateness for the decision-making process.

The evaluation team is fully aware that results from this multi-step process will be heavily influenced by a multitude of factors, many of which are beyond the scope of and control by this study. ¹

Project Assumptions

Location(s): The evaluation team first considered two prime areas for broadband deployment: (1) Davis Drive west of Prospect Street; and (2) the Yonge Street Business Corridor. In both cases, the evaluation team concluded that these areas were not suitable for a Phase One pilot project. As for Davis Drive, the team observed large scale infrastructure development was underway, including the installation of new roads, a rapid transit lane, pedestrian walkways, and streetscape. A recommendation to install new Gigabit level infrastructure in this area would clearly cause project disruption and delays in completion. The incumbent internet service providers had planned to upgrade their existing systems with dominant position on new utility poles and control of underground conduit.

The Yonge Street Business Corridor was at the other end of the redevelopment spectrum. The Town's secondary plan indicated large scale redevelopment in the near future within the corridor. The redevelopment would include significant infrastructure upgrades, vertical development to accommodate higher population densities, and a planned shift from "big box" retail to pedestrian friendly commercial/retail districts. Again, the evaluation team concluded that any new Gigabit level infrastructure within this corridor should coordinated with these future redevelopment activities and conducted in cooperation with the Regional Government and public transportation agency.

After careful analysis and lengthy discussion, the evaluation team recommended a multi-phase pilot project focused on three target areas: (1) **Main Street Business District** from Davis Drive to Water Street; (2) the **Davis Drive Health/Life Sciences Corridor**; and (3) the **Leslie Street/Harry Walker Parkway Business Corridor**. All three target areas present unique and high potential opportunities for economic growth based upon increased access to lower cost, Gigabit level Internet service. The following is a summary of these advantages as identified by the evaluation team and Newmarket representatives:

Main Street Business District:

- Community's historic business district and traditional gathering place for social activities and celebrations;
- Eclectic commercial, retail and office space attractive to highly desirable "creatives" and new economy entrepreneurs looking to enjoy a unique work/lifestyle environment;
- Highly integrated residential areas accessible to a wide range of income levels, family sizes and lifestyle choices;
- Access to local and regional transportation systems, including highways and mass transit; and
- Highly desirable "live and play" amenities with restaurants, coffee shops, bakeries, library, cultural centers, recreation areas, government services, bike/walking trails, etc.

These factors may include, but not limited to, (1) Aggressive Timeline – the willingness of decision-makers to move forward quickly on implementation of the pilot project(s); (2) Supporting Economic Development Initiatives and Programs such as availability of and access to investment incentives, public-private partnerships, advanced transportation systems, high quality educational assets, and trained labor availability/cost; (3) Growth Oriented Policy Policies – regulatory and permitting process that encourage development; (4) External Economic Factors – a vibrant regional/national economy with growth opportunities; and (5) Regional Competition – the ability to establish and retain a market leader position within the region's economy.

Davis Drive Health/Life Sciences Corridor:

- Primary east-west corridor through the community with multiple mass transit stops and nearby light rail station;
- Location of Newmarket's largest employer, Southlake Regional Health Centre, with significant growth potential in both capital expenditures and employment;
- Area identified in previous studies to entice, capture and retain healthcare related innovation and economic activity complementary to Southlake's mission;
- Location of the CreateIT Now business incubator with existing access to Gigabit level Internet service; and
- Experiencing a multi-million dollar infrastructure redevelopment project that will spur private sector redevelopment and new vertical construction in the near future.

Leslie Street/Harry Walker Parkway Business Corridor:

- Newmarket's primary business park for light manufacturing/assembly, distribution and/or service sector firms with highway access requirements;
- Only location of "greenfield" industrial property within Newmarket;
- Wide variety of building types/sizes available for rent and purchase;
- Immediate access by two interchanges to Highway 404; and
- Active employers located within the corridor with opportunities to grow and increase local investment.

Potential Economic Opportunities: Within each of the pilot project areas there are a wide range of development activities with associated economic impacts. The evaluation team, for the purpose of this analysis, focused on businesses most likely enticed by lower cost, Gigabit level Internet service. For example, an engineering firm with an international client base would value access to high speed Internet connections for communications and document exchange. A security alarm services firm would utilize high speed connections to monitor real-time video and data from customer sites. Other prospects include Internet publishing firms, independent music labels, photography studios and concert/event promotion companies which use high speed connectivity to transfer images and work collaboratively with artists, clients and/or customers. The following is a list of businesses with potential Gigabit needs along with a targeted location and industry averages for employment/wages:

Businesses with Potential Gigabit Needs	RIMS Code	Targeted Pilot Area(s)	Industry Average Employment and Wages (Annual) ¹
Accounting	541200	Main Street/Davis Drive	4 -- \$261,712
Audio Production Studio	512200	Main Street/Davis Drive	2 -- \$71, 048
Concert/Event Promotion	711A00	Main Street/Davis Drive	3 -- \$85,971
Data Processing/Hosting Services	51A000	Davis Drive/Leslie-Harry Walker	8 -- \$571,432
Diagnostic/Medical Laboratory	621511	Davis Drive	8 -- \$495,000
Engineering	541300	Main Street/Leslie-Harry Walker	7 -- \$557,291
Internet Publishing	541511	Main Street	2 -- \$131,492
Laboratory Testing Services	621B00	Davis Drive	11 -- \$651,959
Management Consulting	550000	Main Street	2 -- \$114,280
Market Research	5419A0	Main Street	3 -- \$150,114
Medical Device Manufacturing	339112	Leslie-Harry Walker	106 -- \$9,203,662
Music Production (Independent Label)	512200	Main Street	3 -- \$203,880
Photography Studio	541920	Main Street	1 -- \$22,456
Scientific Research and Development	541610	Davis Drive	14 -- \$1,417,360
Security Alarm Services	561600	Davis Drive/Leslie-Harry Walker	11 -- \$515,361
Sports/Celebrity Agency	711A00	Main Street	1 -- \$37,995
Telemarketing/Call Centre	561400	Davis Drive/Leslie-Harry Walker	19 -- \$444,353

Estimated Economic Impact Scenario: After an extensive review of the research materials, interview notes, real estate data, and locational analysis, the businesses listed above are prime candidates for locating within the relatively small pilot project area. The evaluation team, based upon a small investment pilot project within the three target areas and timeframe presented, estimated the following initial economic impact directly in Newmarket:

FIVE YEAR PILOT PROJECT (2015 -2019)

- 17 new firms with 205 employees
- Annual wages at \$14,935,366.
- 126 in-direct jobs generated across the community
- \$13,174,963 of additional economic output value as a result of wages spent.

The value and appropriateness of these estimates must be taken within the context of the planned initiative. As stated in 2005 journal article on the impact of broadband deployment, "Broadband does not act on the economy in isolation, but as a complement to other information technologies."

These same circumstances apply to Newmarket and its efforts to generate economic impact leveraged through a small investment pilot projects. To maximize the economic impact of broadband deployment within the next five years, the following additional actions are recommended:

1. The Town of Newmarket immediately proceeds with an investment project leading to the installation of Gigabit level Internet service within the three pilot project areas;
2. Building owners and developers within the pilot project areas receive encouragement and/or incentives to connect existing physical spaces to the new system;
3. Through partnership with the Town, Gigabit level Internet provider(s) within the pilot project areas offer the end-user an attractive offering;
4. Newmarket officials and Innovation Team develop programs and services to attract, sustain, and retain firms seeking market advantage through Gigabit level Internet services; and
5. City officials, Innovation Team members, and Chamber leaders develop a strategy to expand lower cost, Gigabit level internet services into additional pilot areas (i.e. Davis Drive West and Yonge Street Business Corridor) and, eventually throughout the full community.

If this aggressive plan is followed, the evaluation team believes the City of Newmarket would have the opportunity to easily increase the estimated economic impact by threefold.

Summary: As stated earlier in this section, the purpose of this analysis is to provide an estimate of economic impact that will guide decision-makers on the question of investing in Gigabit level Internet infrastructure. The evaluation team is convinced that any investment to provide lower cost, Gigabit Internet service to areas within Newmarket will produce net new investment, job creation and economic activity beneficial to the community. In addition, businesses and residents within the project areas will also reap economic and quality of life benefits from the investment.

Special Note: *Given that Southlake has two hundred clinical study trials in process, the chances are good that this activity will generate new economic movement which draws benefits from a proactive Gigabit deployment strategy. CreateltNow at the Southlake Innovation Incubator and business landing/launching areas along Main Street and Leslie Street/Harry Walker Parkway Business Corridor also provide significant opportunities to capture this activity. Moreover, having the pilot led by a community leadership organization which combines "intentional focus" with an effective community engagement and market communications process during the term of the pilot enhances those opportunities.*

"A successful Internet economy is 90 percent sociology and 10 percent technology."

Kansas City Playbook – Playing to Win in America's Digital Crossroads.

² IBISWorld – Industry, Company and Business Research Reports (inflation adjusted 2014 dollars)

³Adjusted multiplier (0.48)

⁴Ibid

⁵"Measuring Broadband's Economic Impact" by William Lehr, Carlos Osorio, and Sharon Gillett (MIT) in collaboration with Marvin Sirbu (Carnegie Mellon University)

HYDRO DILIGENCE

Local utilities can be a source of high speed Internet connectivity either through pole attachments, ducts with conduits or a combination of both. Since the local utility is owned by The Town of Newmarket and The Township of Tay, the possibility exists for Hydro to be used for pole attachments or duct access on a pilot or long term basis. Since the focus of this document is short term in nature with pilot areas along Main Street to Davis, and along Davis towards the business park, a request was submitted to Hydro to determine what infrastructure might be available on a short term or pilot basis.

HYDRO ROUTES EXPLORED

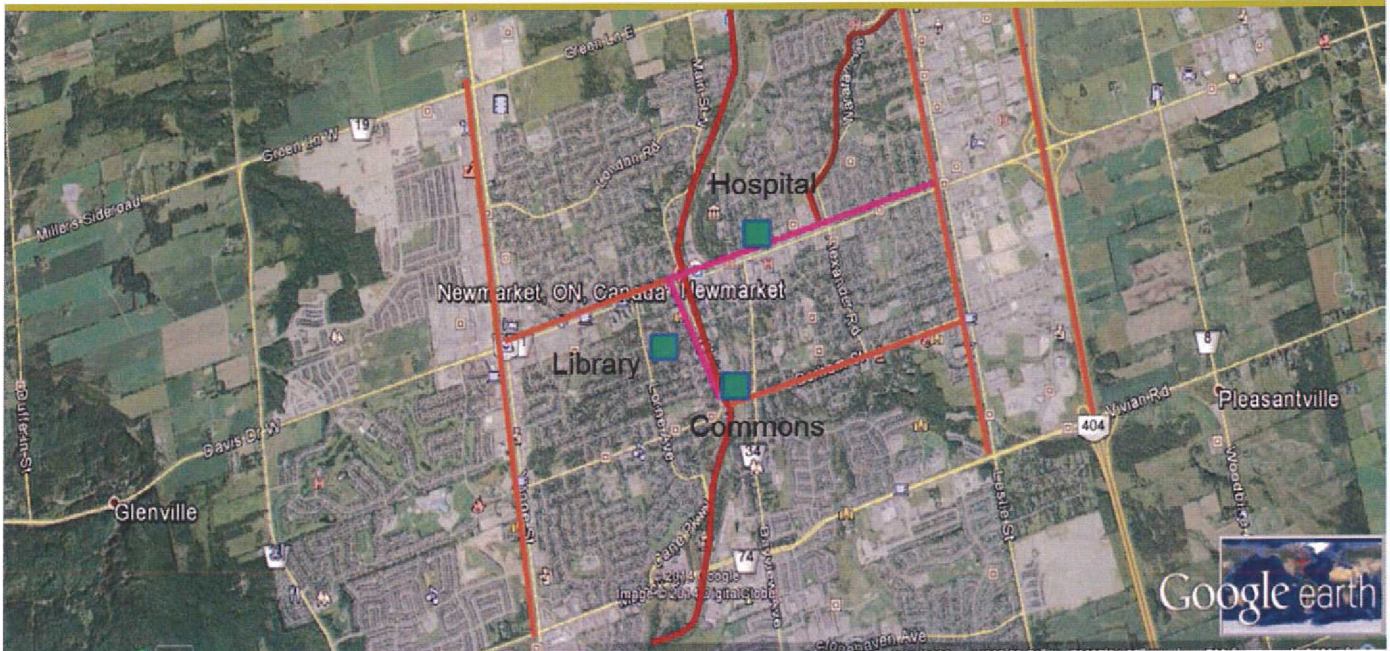


Figure 3 Hydro Routes Explored

Main/Davis to Main/Water

This is a much older section of infrastructure with minimal opportunity to attach to existing poles.

Davis/Leslie to Davis/Roxborough

North Side: No poles Leslie to Hamilton, then several poles, one joint use Atria, until Davis new re-build/re-design by Rogers not yet complete, nothing in place until Roxborough.

South Side: poles along the south side until new re-build/re-design section of Davis, no joint use available, Shaw/Rogers/Atria, unless agreement to lash onto existing provider.

° In some cases the existing provider may allow another provider to attach (lash) onto existing fibre, however Hydro cannot cause them to do so. Also, in some locations there are two registered providers, Rogers, and/or Shaw, or Atria taking up two joint use positions. Rogers now owns Shaw and Atria. A request could be made where Rogers could combine existing two joint use positions into one and open up space on pole. Again, subject to negotiations, could save them some joint use costs or cost to re-locate.

Leslie/Greenlane South to Leslie/Davis

East Side: pole line until Janette St, combination of joint use already in place with Atria (Rogers) and Bell, no additional space available unless an agreement could be arranged to lash onto existing provider. West Side: pole line all the way, however no space available unless agreement* to lash onto existing provider.

Davis/Roxborough to Davis Main Street

New re-build/re-design with no opportunity to attach to new super poles as per York Region. There is a need to determine from York Region if any spare communication ducts have been installed or opportunity to access current providers, (Bell/Rogers/York Region). There appears to be no provision for radial take off points.

There are no pole attachments available in the short term along the route of interest due to the time and cost associated with lashing existing providers together. It would be helpful to develop a matrix of actual expiration/renewal dates for the pole positions and whether there are any options to re-patriate the spaces (legal or financial).

Actual study route data can be found in the Appendix.



GENERAL RECOMMENDATIONS

Ducts

Ducts are the most common vehicle for delivering fibre optic cables around the world. They are inexpensive and long lasting and whenever the opportunity arises should be installed in or along city right of way. Ducts can also be installed anytime there is a street, sidewalk or street light replacement program.

“Compared again with the slowest type of broadband, FTTH consumers spend 49 fewer annual hours waiting for things to load. FTTH users work from home more often and enjoy a home value premium of over \$5,000 versus other types of broadband”. – FTTH Impact and Data Report 2014

For example, The Town of Newmarket is the proud owner of more than 44 kilometers of walking and biking trails. The final portion of the trail was completed along the Nokiidaa Trail system linking more than 20 kilometers of trail from East Gwillimbury south to Aurora. The trail system right of way could be used for a duct system (fibre back bone or for trail Wi-Fi) to interconnect other areas or neighborhoods around Newmarket. The same system could also be used to interconnect Newmarket with other surrounding public or not for profit sector organizations.

Ducts can also generate revenue when leased to local providers or other significant organizations.

Street Lights

Street lights are also a valuable tool for placement of Wi-Fi access points since they can be easily integrated with LED lighting systems. As Newmarket upgrades its existing seventy five hundred light standards, Newmarket should also develop a plan to include Wi-Fi access points in Newmarket's LED based lighting systems.

Develop a policy in conjunction with local infrastructure providers for a common duct, hand-hole architecture and lease pricing. Once the policy is in place, procure and install the duct system along the 44 KM trail system right of way. As street lights are upgraded to LED standards, develop a plan to include Wi-Fi access points within street light enclosures.

Education

In September 2012, The Gigabit City Summit held a global roundtable regarding the need for Smart or Gigabit City education. Summit member locations included Greece, Switzerland, The Netherlands, Kansas City, St. Louis and Barcelona. During the session, the summit members concluded that the greatest need in moving Smart or Gigabit City initiatives forward was to address the lack of quality education related to regionally deployed technology and its socio-economic effects.

Uneven familiarity with technology related social, economic and educational impact, and sometimes a lack of awareness, speaks to a community's ability to embrace new tools, make use of new learning methodologies and participate in the workforce. Given the rapid pace of change and the inevitable arrival of a whole new realm of Smart and Gigabit related technologies and services, **pervasive and ongoing education will be the foundation upon which the Newmarket economy can grow.** An education plan should also be developed to bring all students into the technology education and socialization process starting at an earlier age. An ongoing educational program for community leadership and persons associated either directly or indirectly with business and economic development should also be developed. In other words, for cities to thoughtfully harvest the benefits of technology, education is needed across all sectors of the local economy and its leadership.

Develop the requirements for a continuing education program for all members of Newmarket government. Engage local educators to participate in the development of the requirements for the continuing education program.

Feasibility Study

It is common place for municipalities interested in developing high speed broadband infrastructure to develop a community engagement process and then make use of a traditional feasibility study process followed by releasing a RFP for services.

Our experience with these kinds of studies has led us to conclude that **they are generally not that effective at advancing a project**. They usually take a long time and they can be expensive. When the muni-broadband market was nascent, these studies were more important. But the market has evolved to a point where there's lots of prior work to draw from, and a short-list of models and approaches that have become commonplace.

Moreover, Newmarket has already done considerable work in key areas by working with the Intelligent Community Forum, is in the process of developing a Community Collaboration Ecosystem Innovation Team, participated in the York Region Broadband Strategy and has benefited from relationships with I-Canada and CATA. This work also now includes the results of this study and recommendations related to Community Visioning, Community Engagement, Realizing Economic Impact, Short Term Organization and Gigabit Pilot Areas and the Next Steps required to move forward.

Because Newmarket has already laid a foundation from which to move forward, we recommend a **clear and concise Phase II Implementation and Execution Plan** that will insure that the next steps moving forward ignite a natural and organic community based economic development process.

In addition, the **Phase II Implementation and Execution Plan** will help to insure that Newmarket enjoys the advantage of working with smaller, more easily executable bite size steps, each with a clear vision of goals and achievable economic development impact.

Accelerating Ecosystem Development

The purpose of a visioning and engagement strategy is to create a feedback loop which ensures the solutions you develop in building Newmarket's Internet ecosystem are both responsive to the wants and needs of citizens and aligned with the overall vision for the community held by community leaders, both political and otherwise.

Each of the three suggested target areas (Main Street, Southlake, Business Park) appeal to a unique constituency; a holistic strategy suggests visioning and engagement for these groups needs to assess each independently and on its own merits, but also with a combined view to maximize the impact on Newmarket as a whole and pave the way for broader expansion.

Two additional approaches for pilot exploration, which can complement any of these deployments (but should be explored together), are

1. A neighborhood pilot, to identify one or several neighborhoods for a more traditional residential deployment; potentially using a community driven marketing approach like Google Fibre in Kansas City or C-Spire in Mississippi
2. Providing service to schools, libraries and health care institutions as a way to connect on a closed circuit with the neighborhood(s) and business district(s) selected above
3. It is important to strike a balance between this fibre effort bringing an exciting, forward-looking project to Newmarket that allows the community to pursue new strategies for community development and the appearance of launching something completely new. These new strategies should sit within (or at least comfortably alongside) existing strategies, programs and objectives. The visioning and engagement approach serves to calibrate how to balance this aspect by keeping the pulse of the community and giving members some ownership over the process.

A suggested visioning and engagement approach for Newmarket is outlined below. A similar process can be applied to another specified area, or alternatively a neighborhood/anchor institution model that covers Newmarket more comprehensively.

COMMUNITY VISIONING

Objective

Communities, like Newmarket, who take the initiative to gain access to ultra-high-speed Internet connectivity, have the opportunity to have greater influence and control over how that service is deployed to best fit its needs and interests. We believe a vital part of seizing that opportunity is to go through a community visioning process. This process serves to:

- A. Develop consensus on specific opportunities that exist—in the community as a whole, in specific geographic areas, and in specific market verticals—and plan/require that the installation be done in ways that allows those opportunities to be realized.
- B. Identify the critical success factors that need to be in place for the project to be successful. These can range from funding mechanisms to communication programs to institutions or persons that can serve as either facilitators or roadblocks to successful implementation. The visioning process works to understand the nature of these success factors and develop strategies to ensure they are in place or accounted for as the project moves forward.
- C. Prioritize the benefits that the community wants to obtain from the installations. The old saying is that you can have it fast, cheap, or good—pick any two. In fact, projects like this require even more nuanced balancing of costs and benefits. Gaining the perspective of significant stakeholder on how different elements should be weighted makes planning faster, and execution easier and implementation more likely to be successful.
- D. Build a platform upon which the community engagement phase can be carried out. If significant elements of the community have had an upfront say in providing the vision for how various elements of the projects should proceed, engaging the entirety of the community—whether that community be a neighborhood, a business district, or all the people of Newmarket—is much more easily done.

Process

THERE ARE TYPICALLY FOUR STEPS TO THE VISIONING PROCESS.

- 1. Work with the sponsoring organization to identify stakeholders for all elements of the project.
- 2. Do investigative work to determine the challenges, issues, and opportunities that stakeholders identify along with their opinions and attitudes. This typically involves both individual consultations and broader survey elements.
- 3. Using information and insights developed in steps 1 and 2, bring stakeholders together for ½ or full-day sessions to interactively and collaboratively brainstorm strategies and plans to accomplish A, B, C, and D.
- 4. Write and present to the community a report/blueprint detailing how the community's vision will be used to both guide the parameters of project development and move it forward toward successful implementation and execution.

One of the added benefits of these visioning sessions is they serve as natural opportunities for public relations initiatives to announce that Newmarket is moving to become a “Gigabit City” and a statement to the community that multiple and diverse viewpoints are being considered as plans are put together.

Community Engagement

The ongoing process, following the roadmap towards a community playbook, is the engagement process for the Newmarket Gigabit initiative. Once the roadmap is complete, initiative “owners” will convene appropriate parties to drill down more specifically, over time, into the community needs associated with that area. The nature and scope of these meetings may vary widely by initiative, and is designed to supplement existing activity around the topic area.

Goal: Program development with high degree of specificity for inclusion in community playbook.

Audience: Stakeholders from target initiative, including subject matter experts, customers/end users, relevant third party institutions, and creatives without domain expertise.

Content: Meetings and one-on-one conversations, largely led by community leaders, to be scheduled as needed based on existing community activity.

Output: One or more “plays” with institutional owner, timeline, success metrics and proposed funding mechanism for inclusion in playbook.

As an example, let's look at the Business Park area to better understand how the engagement process might work.

1. During Community Visioning, a concentrated need for certain high bandwidth services (cloud infrastructure, better access to high quality video conferencing) or simply service levels (lower latency, higher bandwidth, less downtime) are suggested/identified.
2. During the visioning session, an initial inventory of potential stakeholders (in addition to those already at the table) emerges, as well as existing activities/programs with some relevancy.
3. The initiative owner responsible for convening Business Park stakeholders creates a matrix of proposed solutions from the visioning work, along with potential users and vendors.
4. Collectively, the group assesses feasibility and appeal of the solutions. The group creates a plan and timeline for evaluation; or identifies other groups (e.g., a corporate partner, local business or institution, economic development official) already active in the space to carry forth the effort.
5. Results feed back into the community playbook and, more importantly, into an implementation cycle to ensure follow through on recommendations and continue to iterate to improve processes.

The Innovation Team/CCE is a natural candidate (or other not-for-profit or for-profit organization newly established for such purposes), to "own" the Visioning and Engagement work locally, and doing so will help this informal group gain credibility and build momentum within the community. This group has the flexibility to be nimble and the broad stakeholder inclusion to get community buy-in and move forward with the recommendation and implementation of a plan. By leading the Visioning and Engagement process, the Innovation Team is able to ensure that the community is supportive at each step along the way.

It is also critical that the Visioning and Engagement strategy be closely tied to the RFI process and be driven and informed by the scope and outcomes the community is likely to support.

REALIZING ECONOMIC IMPACT

The "window of opportunity" is very real and opens the door for establishing new local national and international relationships or partners **that would not have been possible otherwise**. The relationships or partners could then be used to develop additional market share for Newmarket and support existing community or business initiatives or create new ones. Newmarket should develop a set of economic development goals for the Innovation Ecosystem Corridor which is **attractive regionally, nationally and internationally**.

Furthermore, these partnerships will not develop from the presence of high speed Internet infrastructure alone. It will take intentional focus, organizational leadership and commitment to realize these outcomes.

Begin to identify regional, national and international partners that would have a mutual interest in the success of the Newmarket innovation economy.

Short Term Organization

The Innovation Ecosystem Corridor **could benefit from** an organization whose purpose is to accelerate the economic development of the corridor as well as to help facilitate the delivery of Internet services in conjunction with technology providers. By creating an independent organization, you can also mitigate the tension and political concerns that sometimes occur between community and technology providers.

Furthermore, a well-conceived organization would have a collaborative foundation by which to engage a wide range of regional stakeholders and thus help to realize the economic development potential of the Innovation Ecosystem Corridor.

The Innovation Team (originally conceived as the Community Collaboration Ecosystem or CCE and also the subject of a study done by the ET Group) would be worthy of consideration as the lead organization for the Innovation Ecosystem Corridor pilot, as would an alternative not-for-profit or for-profit organization newly established for such purposes.

GIGABIT PILOT

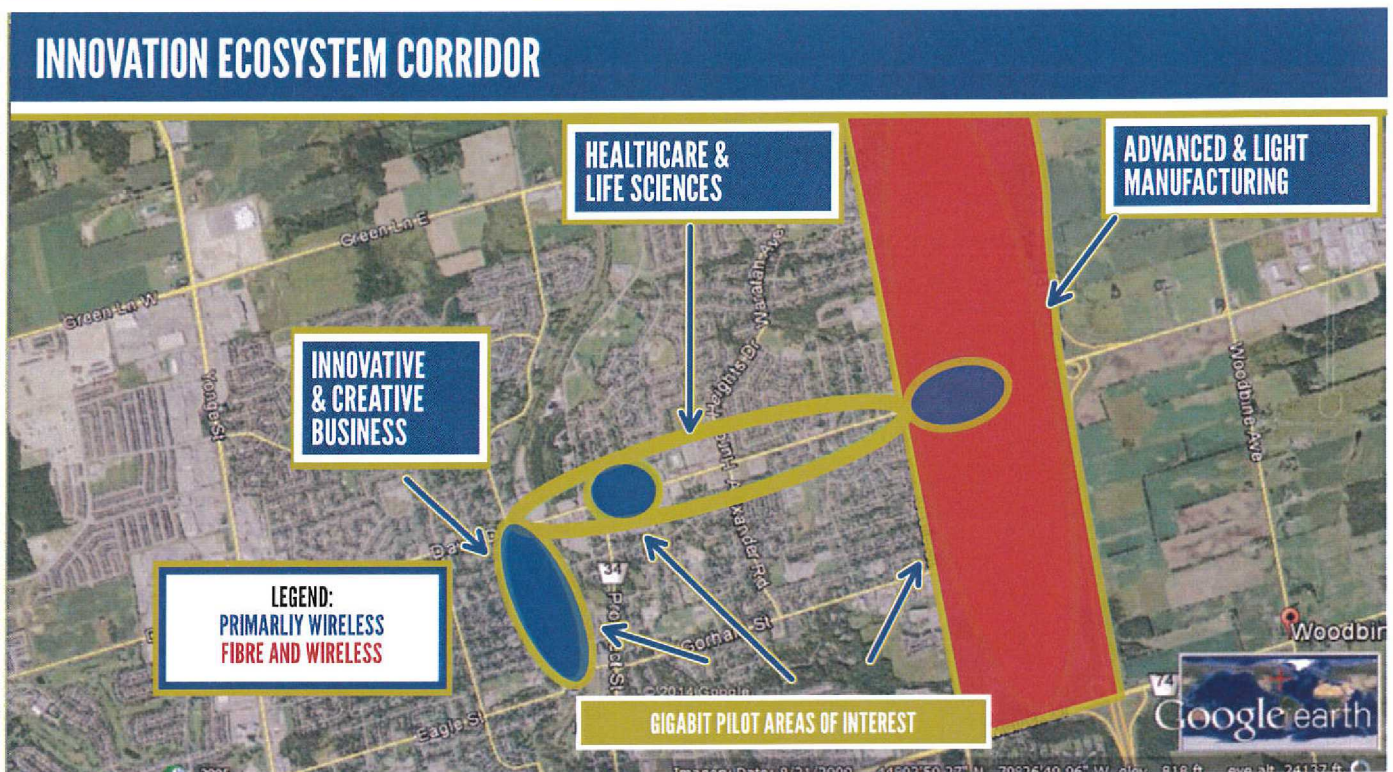


Figure 4 Innovation Ecosystem Pilot

Given that we now understand that an Innovation Ecosystem is a viable method of community revitalization provided the right combination of variables exist, and that its economic impact can be accelerated by the introduction of high speed Internet infrastructure technology, the purpose of the pilot is allow both the public and private sector to experience this capability from a variety of fixed and mobile locations. The public will be interested to experience the potential of speed and mobility and how it affects their application capabilities and productivity. The private sector will be interested to consider the pilot from an investment perspective either as a technology provider or from a business development or real-estate development perspective.

Newmarket Innovation Ecosystem Pilot - High Level Infrastructure Cost Projection				
Technology	Main Street	Hospital	Business Park	Totals
Fibre	\$400,000	\$150,000	\$300,000	\$850,000
Wireless	\$150,000	\$70,000	\$70,000	\$290,000
Wireless Only Total				\$290,000
Fibre Only Total				\$850,000
Estimated Range				\$290,000 - \$1,140,000

Figure 5 High Level Cost Projection

To solicit potential responses from providers who would participate in the pilot, a RFI would be used in conjunction with a community engagement and visioning process to generate interest. Since providers usually have very different technologies and infrastructure capabilities. **RFI responses will be quite different from one another** and will propose different ratios of fibre or wireless technologies **or in some cases make use of only wireless or only fibre technology or both**. Furthermore, some responses may address all aspects of the pilot, while it may also be necessary to make use of more than one provider to fulfill the RFI requirements, or consider some form of public – private participation.

Because of this, the report can only provide general cost guidelines for the pilot. In addition, keep in mind pricing is high level and could change significantly based on businesses proposals, volume, on site conditions and other variables.

PROGRESS TO DATE AND NEXT STEPS

Over the last ten years, Newmarket has enjoyed success implementing policies designed to encourage revitalization of the downtown area as well as with implementing city wide infrastructure upgrades.

Current Newmarket performance tracking shows that for every 1\$ the town invests in its downtown, Newmarket is generating \$3.50 of private sector investment. This is in part because of the use of the CIP funding program as well the Town's other investments in Riverwalk Commons, the Old town hall, etc. Newmarket is also often cited as an outstanding example of a successful CIP program for revitalizing downtowns.

In recent years the new global information economy clearly shows that new forms of technology infrastructure are shaping the future of successful information based communities which includes the use of high speed Internet. With that said, Newmarket has clearly been making strides in this area to encourage an innovative and creative economy for the Town of Newmarket as well as take further steps to achieve revitalization of the downtown area.

Recent planning in this regard includes Building a Community Collaborative Ecosystem or CCE (November 2013 –**now referred to as Innovation Team**) as well as participating in the York Region Broadband Strategy (January 2014).

Current work includes this study, an Initial Stakeholder Meeting and Economic Development Impact Statement – July 2014 whose primary purpose is ***to describe the economic development potential of a pilot and also to highlight a clear path of steps and recommendations from which to move forward.***

Phase 1 – General Recommendations

RECOMMENDATION #1 – CALL TO ACTION

Take advantage of the “window of opportunity”, ***realize the economic opportunity at hand*** and adopt the Innovation Ecosystem Corridor, as well as designate it the pilot area for Gigabit infrastructure. ***The time to act is now.***

RECOMMENDATION #2 – LEADERSHIP ORGANIZATION

Working in conjunction with the Town of Newmarket, the Innovation Team or other organizational alternative would lead the pilot for the Innovation Ecosystem Corridor.

RECOMMENDATION #3 – ECONOMIC DEVELOPMENT

Begin to identify regional, national and international partners that would have an interest in the success of the Newmarket innovation economy.

RECOMMENDATION #4 – EDUCATION

Develop the requirements for a continuing education program for Newmarket staff. Engage local educators to participate in the development of the requirements for the continuing education program and community outreach.

RECOMMENDATION #5 – ONGOING TECHNOLOGY

Develop a matrix of actual expiration/renewal dates for the pole positions and whether there are any options to re-patriate the spaces (legal or financial).

Develop a policy for common duct, hand-hole architecture and lease pricing in collaboration with local infrastructure providers. As street lights are upgraded to LED standards, develop a plan to include Wi-Fi Access points within the street light enclosures.

Phase 2 – Next Steps - Implementation and Execution Plan

GOAL #1 – LEAD WITH THE INNOVATION TEAM TO DEVELOP THE INNOVATION ECOSYSTEM CORRIDOR PILOT.

Step # 1 – The Innovation Team should engage the Community Visioning process to develop consensus on specific opportunities that exist—in the community as a whole, in specific geographic areas such as the Innovation Ecosystem Corridor, and in or across specific market verticals—and plan/require that the pilot be done in ways that allows those opportunities to be realized. Furthermore, based upon the findings of the Community Visioning process, refine the Community Engagement recommendation for pilot deployment.

GOAL #2 – THE INNOVATION TEAM SHOULD DEVELOP AND ENGAGE A RFI PROCESS FOR THE PILOT.

Step # 2 – The Innovation Team should develop a simple RFI and associated requirements document. In the RFI document set clear guidelines which will enable technology providers to propose innovative technical solutions or business proposals to fulfill the vision and requirements of the pilot.

Goal # 3 – Select the best response and develop a tactical pilot action plan.

Step # 3 – The Innovation Team will work with each provider to shape a formal recommendation and a clear and simple step wise plan with associated costs for review by the city council.

Goal # 4 – Develop community interest, economic impact and awareness – Community Engagement.

Step # 4 – The Innovation Team would implement the Community Engagement plan; monitor its progress and use this information to tune the pilot as it moves forward.

Goal # 5 – The Innovation Team would proceed to implement the Phase 2 pilot.

Step # 5 – Implement plan as described from the previous steps and selected RFI proposal. Retain relationship with industry experts to monitor, and guide the Innovation Team and pilot as it progresses.

Phase 3 – Town Wide Build-Out

Goal # 5

Given the results of the pilot, develop a strategy, a clear action plan and next steps that would lead to a build-out that would encompass the entire Town.

Keep in mind that the pilot (and the pilot's final report), will have a significant effect on determining how the city is eventually built out. Some longer term suggestions to keep in mind at this outset are that, 1) the pilot vendors and providers might be selected to build-out the entire city and 2) other vendors and providers may step in after the pilot and make a proposal to build-out the city or 3) the city might need to develop a public-private partnership.

APPENDIX

Hydro Routes

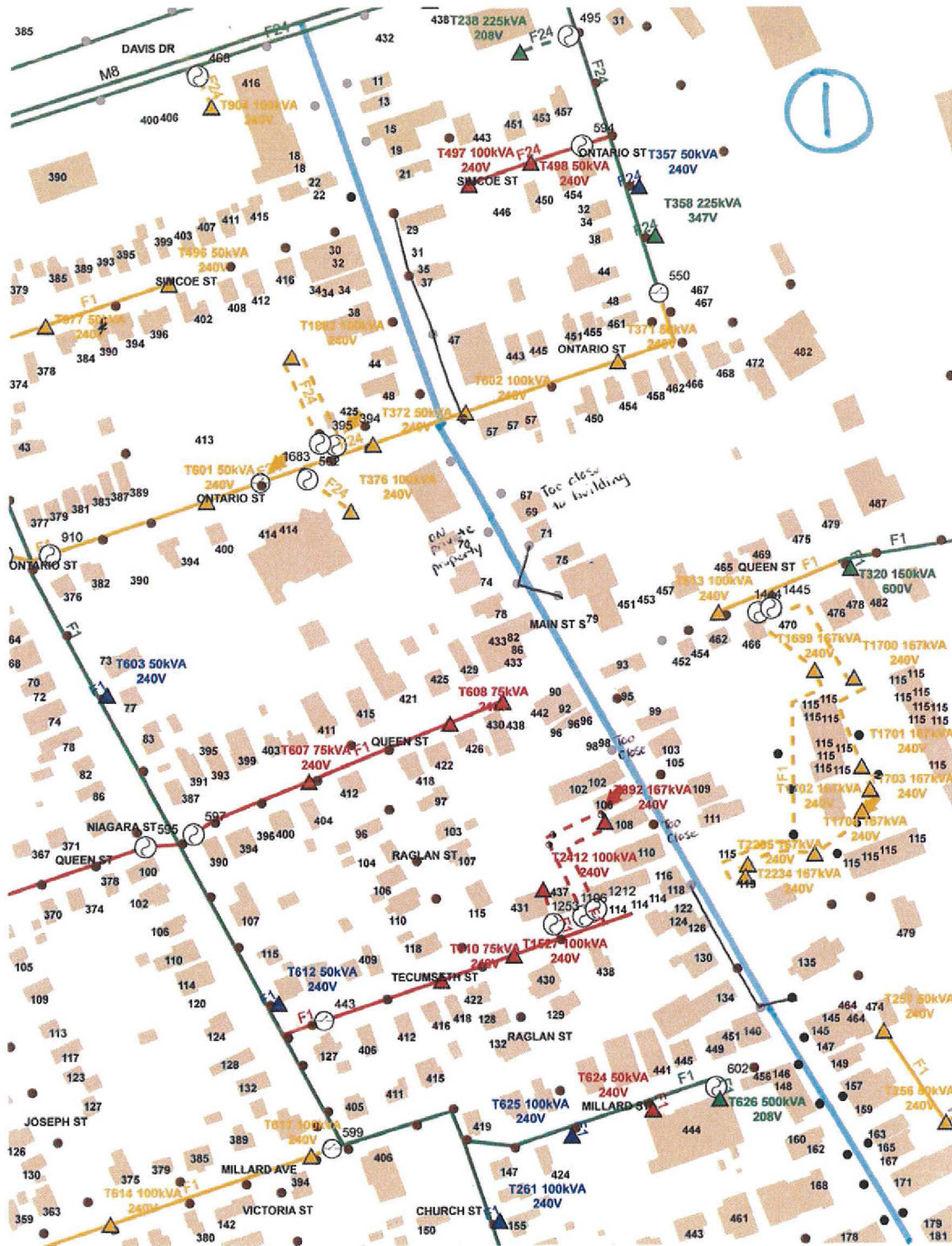


Figure 6 Main-Davis to Main-Millard



Figure 7 Davis-Leslie to Davis-Roxborough

3. The BEA determines how much the demand for each product is caused by the earnings paid to workers in each industry. The Total Requirements Coefficients for the production of \$1 of product X include estimates of the increase in demand for product X which is caused by earnings paid to employees of industry X as well as each of its supplying industries. Because these coefficients are dollar multiples of the initial dollar spent to produce a product, they are referred to as Output Multipliers.
4. The BEA also compiles wage and salary data for every county in the nation including the ratio of jobs to earnings in each region. This database is used to adjust the BEA's national input-output table to reflect each region's industrial structure and trading patterns. It is also used to determine Employment Multipliers.
5. Employment Multipliers estimate the number of jobs required in each industry which contributes to the production of \$1 million of each product. For example, for the production of \$1 million of product X, how many jobs are required in industry X as well as in each of its supplier industries?

Additional information is available from the U.S. Department of Commerce, Bureau of Economic Analysis, BE-61, Washington, DC 20230, 202-606-5343. The Bureau's website is located at www.bea.gov.

The following is a list of business types identified as seeking benefits of low-cost, Gigabit level internet services; the associated RIMS Code; potential pilot project area(s) within Newmarket and needs along with a targeted location and industry averages for employment/wages:

Business with Potential Gigabit Needs	RIMS Code	Potential Pilot Area(s)	Industry Average Employment and Wages (Annual) ²
Accounting	541200	Main Street/Davis Drive	4 -- \$261,712
Audio Production Studio	512200	Main Street/Davis Drive	2 -- \$71, 048
Concert/Event Promotion	711A00	Main Street/Davis Drive	3 -- \$85,971
Data Processing/Hosting Services	51A000	Davis Drive/Leslie-Harry Walker	8 -- \$571,432
Diagnostic/Medical Laboratory	621511	Davis Drive	8 -- \$495,000
Engineering	541300	Main Street/Leslie-Harry Walker	7 -- \$557,291
Internet Publishing	541511	Main Street	2 -- \$131,492
Laboratory Testing Services	621B00	Davis Drive	11 -- \$651,959
Management Consulting	550000	Main Street	2 -- \$114,280
Market Research	5419A0	Main Street	3 -- \$150,114
Medical Device Manufacturing	339112	Leslie-Harry Walker	106 -- \$9,203,662
Music Production (Independent Label)	512200	Main Street	3 -- \$203,880
Photography Studio	541920	Main Street	1 -- \$22,456
Scientific Research and Development	541610	Davis Drive	14 -- \$1,417,360
Security Alarm Services	561600	Davis Drive/Leslie-Harry Walker	11 -- \$515,361
Sports/Celebrity Agency	711A00	Main Street	1 -- \$37,995
Telemarketing/Call Centre	561400	Davis Drive/Leslie-Harry Walker	19 -- \$444,353

Comparable Region: To conduct the economic impact analysis of a pilot project(s) in Newmarket within the study timeframe, the evaluation team selected a comparable region with existing RIMS II data. The team selected the metropolitan division of Lake County, IL – Kenosha County, WI for the purposes of this analysis. Situated along the Illinois-Wisconsin border and bounded by Lake Michigan to the East, Lake County/Kenosha County is a northern suburb of the Chicago MSA. Similarities to York Region in population size, income distribution, and education attainment, development patterns made this U.S. metropolitan division a logical choice for this study.

Research/background materials used during project included, but not limited to, the following:

- The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data (Robert Crandall, William Lehr and Robert Litan)
- York Region Broadband Strategy – Final Draft – January 3rd, 2014
- The Contribution of Broadband to the Economic Development of First Nations in Canada (CSLS Research Report 2013-04)
- Town of Newmarket: Official Plan Amendment # 10 Draft Newmarket Urban Centres Secondary Plan and Associated Amendments to the Official Plan And Official Plan Amendment # 11 Active Transportation Network
- McKinsey Global Institute: “The great transformer: The impact of the Internet on economic growth and prosperity” by James Manyika and Charles Roxburgh (October 2011)
- Elsevier’s Telematics and Informatics Journal: “Businesses and the need for speed: The impact of broadband speed on business presence” by Elizabeth A. Mack (December 2013)
- Public Policy Institute of California: “Does Broadband Boost Local Economic Development?” by Jed Kolko with research support from Davin Reed (January 2010)
- Elsevier’s Information Economics and Policy 14 (2002) 75-93: “Strategic use of the Internet by small- and medium-sized companies: an exploratory study” by B.M. Sadowski, C. Maitland, J. van Dongen.

⁷ IBISWorld – Industry, Company and Business Research Reports (inflation adjusted 2014 dollars)

RELATED LINKS

[Kansas City Building the Gigabit City](#)

[Kansas City Building the Gigabit City 2.0](#)

[Chattanooga Gigabit Impact](#)

[The Economics of Google Fibre](#)

[Loop Data Rail – “Main Street” Prepares](#)

[Playing to Win in Americas Digital Crossroads](#)

[Google Fibre KC Product Launch](#)

[KC Digital Drive Homepage](#)

[Kansas City Startup Village](#)

[GigTank](#)

[Kansas City, City of Entrepreneurs Sketch Book](#)

(Footnotes)

- 1 IBISWorld – Industry, Company and Business Research Reports (inflation adjusted 2014 dollars)
- 2 IBISWorld – Industry, Company and Business Research Reports (inflation adjusted 2014 dollars)

