



**Lemay-Yates
Associates
Inc.**

Yukon Telecommunications Development

-- *Final Report Findings* --

PREPARED FOR GOVERNMENT OF YUKON

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Yukon Telecommunications Development

Terms of Reference

- To build on Yukon Government's overall ICT Sector strategy, the Yukon Government recently initiated a Telecommunications Development consulting project.
- The goal of the project is to focus on a roadmap for Yukon telecom going forward building on past successes and considering the Yukon Government's role both as a telecom customer as well as in the context of economic development.
- LYA developed its Report over a three-phase project plan:
 - Phase 1 – Review – Setting the stage in terms of “Where are we today”
 - Phase 2 – Analysis – “Where do we want to go...”
 - Phase 3 – Recommendations – How to get “there...”



LYA Background

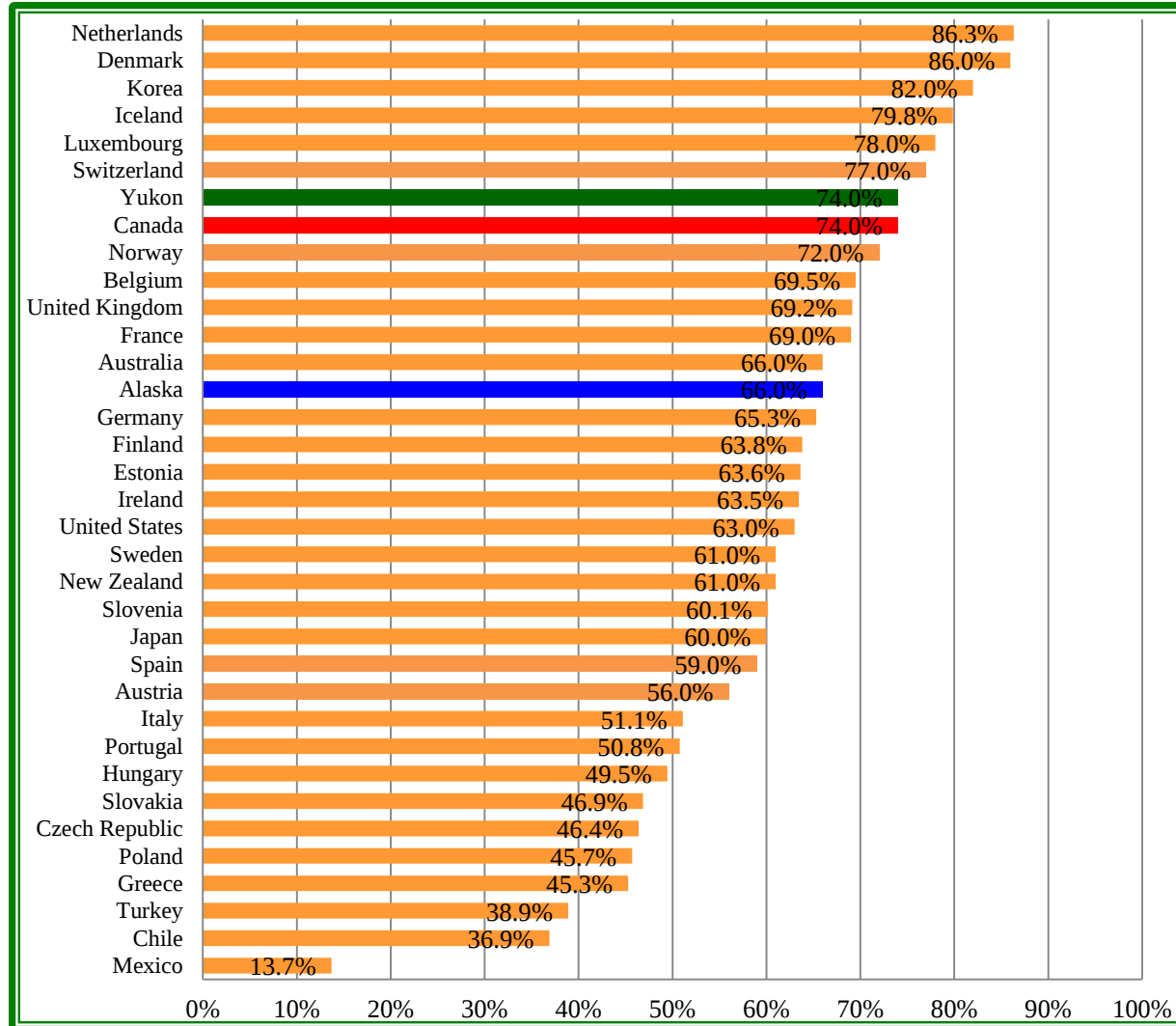
- Lemay-Yates Associates Inc. (LYA[®]) is a boutique consulting firm founded in February 1993 to provide management consulting services and market research to support the telecommunications industry at large.
- Our focus: Development and implementation of business strategy integrating market, technical, network, economic, regulatory and investment analyses... across the blurring lines of mobile-telecom-cable, as well as carriage-content, in a competitive environment that is increasingly dynamic, complex and risky
- Mandates fall into three broad categories:
 - Investment and financial analysis, due diligence, business plans;
 - Market research – quantitative including published *c-Ahead*[®] research reports;
 - Regulatory and policy support, expert testimony and spectrum auctions.



Why are we here...

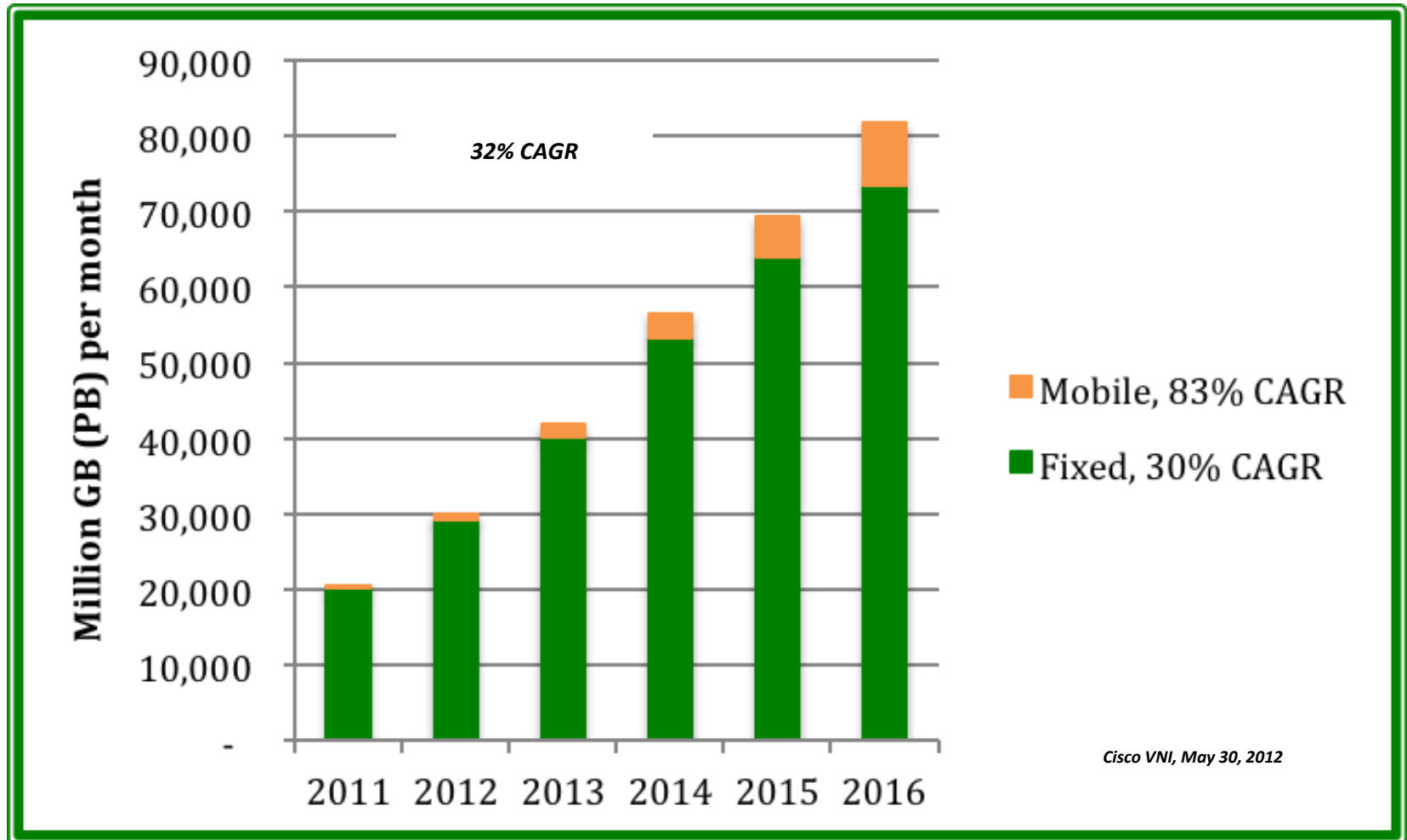


Broadband Penetration





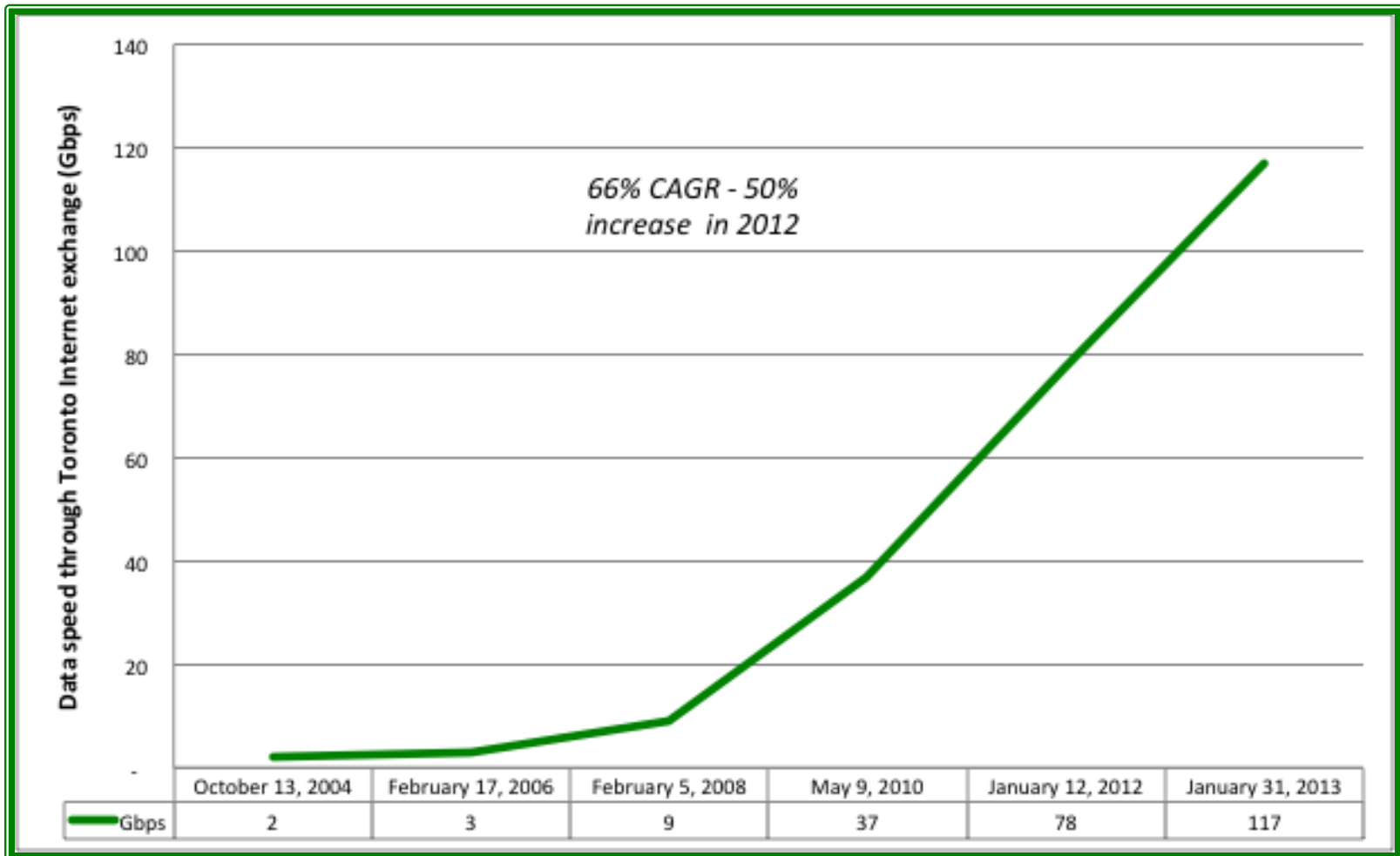
Broadband usage... reflected in data growth...





Massive Data Growth Driving the Industry

e.g. TORIX Peering Speed





Broadband and the Economy



Broadband and the Economy

- There is a growing recognition of the economic benefits of increasing broadband penetration and speed;
- *Improves digital connectivity and hence supports greater participation in the digital economy.*
- Economic impact that would add to gross domestic product (GDP). This was estimated for Yukon to be potentially 2.6%; equivalent to \$47 million in annual economic impact;
 - Based on increasing penetration and increasing service speed.



Increase in Economic Value comes from...

- Direct benefit of investments and direct labor;
- Increased employment in ICT sectors, increased participation by remote communities in the digital economy, increased use of government services in communities, support for new incoming investment, benefits to resource sector investments from availability of services, and increased ability to provide services such as tele-health and distance education.



Broader Public Sector Implications

- Further benefits can be achieved in the public sector through improved access to government programs and other public services, which can have a major economic impact.
- In Sweden, it has been projected that Internet usage relating to public services – i.e. interactions between citizens and government – will grow over time to be 50% of total Internet usage.
- Need “connectivity” and a lot of it...



Responding with Broadband Objectives

		Broadband Access	
		Date	Objective
CRTC objective	CANADA	2015	All Canadians to have access to speeds 5 Mbps down and 1 Mbps up
National policy	US	2020	100 Mbps down and 50 Mbps up available to 100M households
	Europe	2020	30 Mbps down available to all; at least half of households with at least 100 Mbps access

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Evolution...

- Is 100 Mbps fast enough... In the US the FCC recently has initiated a “Broadband Acceleration Initiative” and “Gigabit City Challenge” to stimulate development of at least one city per State with Gigabit per second speeds (i.e. 10 times the 100 Mbps objective).
 - This recognizes the increasing needs for speed given continued increases in Internet usage, connections of multiple devices per home and increasingly data-rich content.
- Connectedness is even more important in Canada’s North than elsewhere in the country, given the isolation of many communities and the lack of local services. The Internet is a vital lifeline for the North, providing connectivity for much of daily life.



State of Connectivity in Yukon



Indicators (1)

- Average Internet download speeds in the Yukon are lower than those seen in the rest of Canada and typically slower during peak usage times.
- Yukon consumers pay more for services with less capability. For example, for a 10 Mbps service Canadians elsewhere pay \$54 per month. Yukoners pay 40% more for a 5 Mbps service. In addition, Yukon consumers that exceed the usage included in their basic service package can pay three to five times more than their southern counterparts.
- And for high-end business service, the differential is even higher. A 50 Mbps IP-backbone service costs eight times more per month in Yukon than a similar service does in southern Canada.

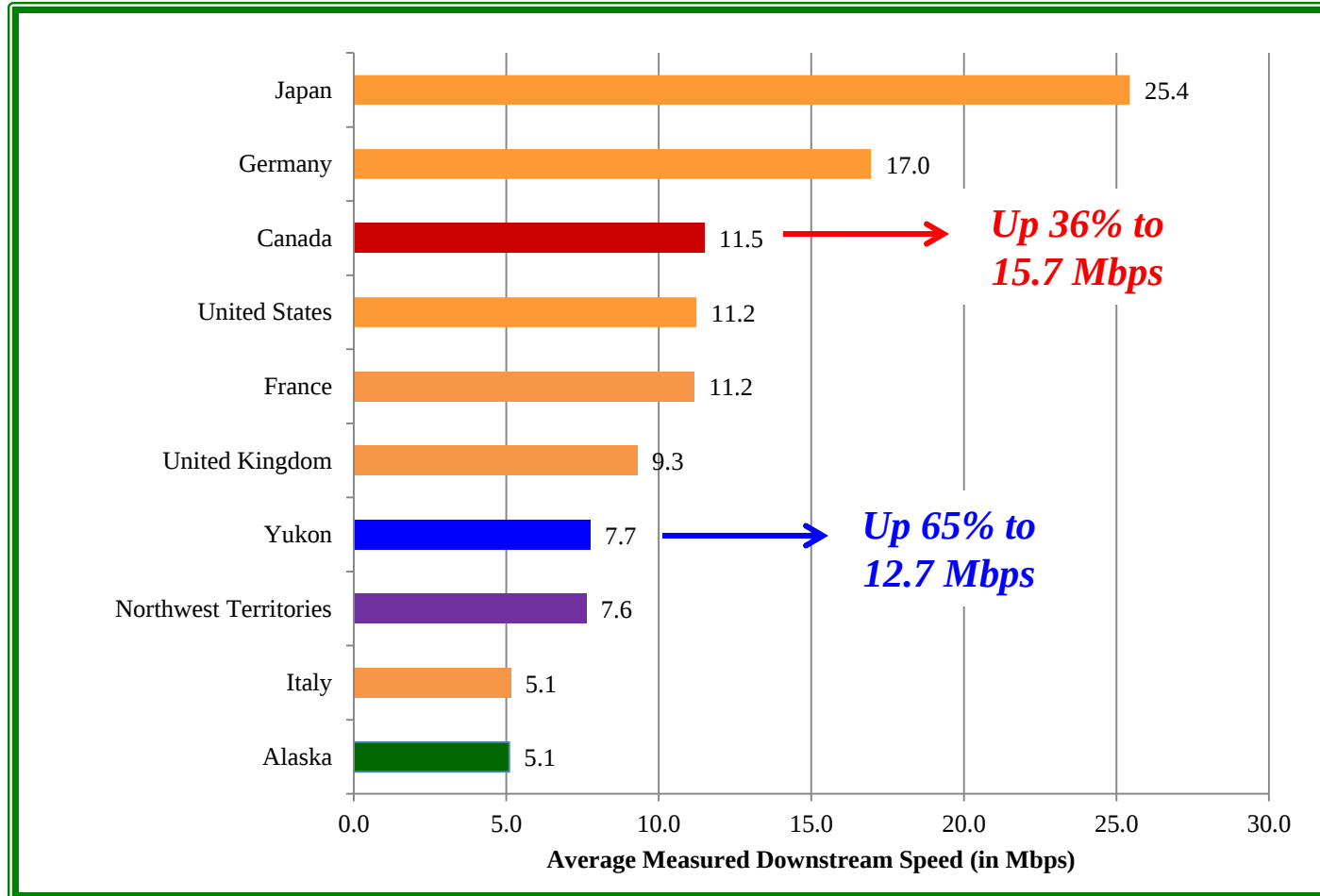


Indicators (2)

- Mobile service in the Yukon costs over double that seen in the rest of Canada, and there is very little geographic coverage, no highway coverage and less usage included in the packages.
- Service reliability is negatively impacted by the structure of the network backbone in Yukon since all traffic flows through a single point, Whitehorse, and there are many communities served by non-redundant links. These two factors mean that outages have a disastrous effect. Failure in a non-redundant link takes a community down in its entirety.



An Evolving Situation





Broadband Target

- Strive for “step function” increase to maximize benefits...
- For Yukon to get improved services along with an improvement to GDP, a broad policy goal should be established. In other words, service objectives should be put in place that are consistent with the needs of the digital economy and this in turn can be used to drive investments.
- For example, as a strawman target, a universal end-user service objective of 30 Mbps and 100 Mbps for the largest communities – similar to the broadband objective adopted in Europe – could be put in place. Supporting this would imply investments to yield a 4 to 5 fold increase in network backbone capacity in Yukon.



Role of Government

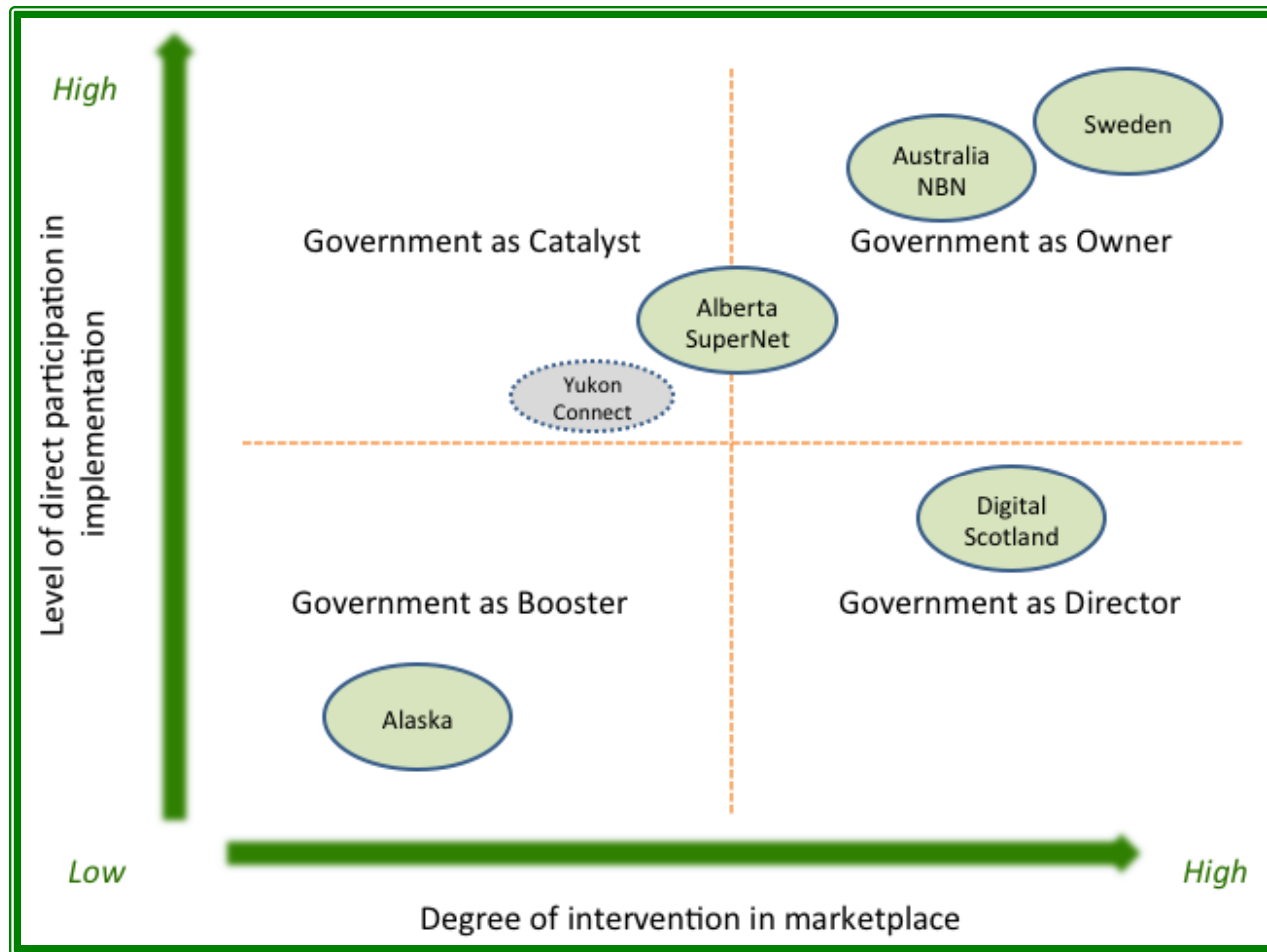


Role of Yukon Government

- Government can take on an enabling and proactive role to ensure that the economic benefits of broadband deployment are realized
 - Finds ways to get the 2% to 3% GDP increase;
 - Step function increases... to maximize direct and indirect benefits.
- Also since the Yukon Government is a very large customer for telecom and related services, it clearly can be an “anchor tenant” in any new initiative:
 - By consolidating voice and data services, Yukon Government could reduce direct monthly expenditures on ICT services, allowing it to invest the difference into improving the infrastructure in partnership with Northwestel or others.



Government Involvement in Broadband Plans



Take “best of” from approaches elsewhere and adapt to Yukon



Roadmap

- Challenge – Catch up while also building the Digital Economy.
- Requires overall plan and set of actions... dual objective to both fix what needs fixing while building for tomorrow.
- A starting point for this would be to develop a Yukon Telecom “Prospectus”.
 - This would address the “entire” investment model and identify anticipated economic benefits, with the starting point being a well-defined broadband speed objective (e.g. 30 Mbps universal service). The prospectus would then provide sound basis on which funding or other policy decisions could be made. The Prospectus would provide a set of projects, including initial scoping, and actions that the Yukon Government would undertake to promote and implement the overall plan.



Top 10 “To Do’s”

- LYA developed an initial set of ten projects and recommended actions that should be considered;
 - Stemming from the analyses in the Report, integrating indicators, key telecom industry issues, how other countries are reacting, and from regulatory and stakeholder considerations.
- These should be taken together and form a roadmap for future development of telecom in Yukon.



1. Community Speed and Capacity Objectives

- Set Community Speed and Capacity Objectives including Upload
- Consistent with the Digital Economy context and the state of current infrastructure, which would set the specification and basic parameters going forward.
- As a strawman, an objective of 30 Mbps universal access and 100 Mbps to the largest communities should be “tested” for viability.



2. Act as Enabler of a New Utility Backbone Project

- Yukon Government could act as enabler of a New “Utility” Backbone Project for Capacity and Diversity
- Either by acting as a promoter, by aggregating funding and/or by taking a direct stake in an initial project to build additional fiber links.



3. Pro-actively Monitor Infrastructure Projects

- Yukon Government should actively monitor Infrastructure Projects – Mines, Roads, Electricity, etc.
- The objective would be to ensure that telecom needs are included in new projects – Backbone and Wireless Access.
- This could be done via maintaining oversight over developments or more directly as part of permitting or other administrative processes.



4. Role in Regulatory Proceedings

- Pricing of services is of global concern to Yukoners, whether it be regarding Internet “overage” charges for consumers or high-end high-priced MPLS services for businesses.
- The Yukon Government does not regulate Northwestel and does not have a direct role to play other than to exercise its purchasing power as a large customer.
- On the other hand, the CRTC has been taking a proactive role in addressing concerns over backhaul pricing and with its renewed focus on consumer issues, could possibly assist in addressing other pricing concerns in Yukon.



5. Identify and Scope New Enabling Projects

- Whether the Yukon Government takes a direct stake in projects or not, it should take a role in identifying and scoping new enabling projects, i.e. projects that are large enough in scope to have considerable direct impact as well as spin-off effects.
- The Yukon Government could lead the process to promote enabling initiatives and identify funding sources.



6. Promote Development of New Local Access Facilities

- Yukon Government could promote development of new Local Access Facilities and Increased Use of Existing Wireless Licenses;
- Initiatives could be focused on opportunities for new parties to build local access (e.g. SSI Micro, Ice Wireless, or others) and/or on development of community-based initiatives.



7. Help Pave the Way for Future Competition

- Government should consider policies and initiatives that pave the way for future competition.
- One such approach would be to facilitate Access for Third Parties to Government Tower and Power Assets.



8. Policy and Regulatory Objectives in the Digital Economy

- Define policy and regulatory objectives and priorities specific to and focused on Digital Economy developments, and related to the projects and actions identified herein
 - Broadband speed and capacity, “utility” backbone, infrastructure projects, community back-up, etc.
- This would complement the existing policy framework for participation in policy and regulatory matter to reinforce or shape positions in areas such as the subsidy system, Northwestel’s modernization plan, spectrum licensing, and the overall regulatory framework for the North.



9. Community Back-up and Diversity Plan

- Community Back-up and Diversity Plan, identifying the economic and societal impacts, on a community-by-community basis, of losing connectivity,
- Evaluate possible solutions, which could be via terrestrial facilities or through use of pooled satellite capacity, the cost of which could possibly be offset by “public benefits” funding from Telesat.



10. Human Resource Development

- Consistent with development of an overall plan... prepare human resources for full participation in the digital economy, implement a Community-level Approach for Services, Technical Training and Support.



Conclusion

- The ensemble of these projects and actions provides a clear roadmap for telecom development in Yukon. As part of the development of the Yukon Telecom Prospectus, specific projects should be reviewed for initial viability and scoping, and an overall timeline put in place to meet the broad objectives.
- For example, the goal of 30 Mbps universal access with 100 Mbps in the largest communities could focus on a full implementation horizon by 2020. This could be harmonized with an overall Canadian digital economy objective, should one be developed.



Questions and Discussion