TELUS

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2017 ANNUAL REPORT

Management's discussion and analysis

Caution regarding forward-looking statements

This document contains forward-looking statements about expected events and the financial and operating performance of TELUS Corporation. The terms *TELUS*, *the Company*, *we*, *us* and *our* refer to TELUS Corporation and, where the context of the narrative permits or requires, its subsidiaries.

Forward-looking statements include any statements that do not refer to historical facts. They include, but are not limited to, statements relating to our objectives and our strategies to achieve those objectives, our targets, outlook, updates, and our multi-year dividend growth program. Forward-looking statements are typically identified by the words *assumption*, *goal*, *guidance*, *objective*, *outlook*, *strategy*, *target* and other similar expressions, or future or conditional verbs such as *aim*, *anticipate*, *believe*, *could*, *expect*, *intend*, *may*, *plan*, *predict*, *seek*, *should*, *strive* and *will*.

By their nature, forward-looking statements are subject to inherent risks and uncertainties and are based on assumptions, including assumptions about future economic conditions and courses of action. These assumptions may ultimately prove to have been inaccurate and, as a result, our actual results or events may differ materially from expectations expressed in or implied by the forward-looking statements. Our general outlook and assumptions for 2018 are presented in *Section 9 General trends, outlook and assumptions* in this Management's discussion and analysis (MD&A).

Risks and uncertainties that could cause actual performance or events to differ materially from the forward-looking statements made herein and in other TELUS filings include, but are not limited to, the following:

- Competition including: our ability to continue to retain customers through an enhanced customer service experience, including through the deployment and operation of evolving wireless and wireline networks; the ability of industry competitors to successfully launch their respective platforms and to combine a mix of residential local voice over Internet protocol (VoIP), long distance, high-speed Internet access (HSIA) and, in some cases, wireless services under one bundled and/or discounted monthly rate, along with their existing broadcast or satellite-based TV services; the success of new products, new services and supporting systems, such as Internet of Things (IoT) services for Internet-connected devices; continued intense rivalry across all services among wireless and wireline telecommunications companies, cable-TV providers, other communications companies and over-the-top (OTT) services, which, among other things, places pressures on current and future average revenue per subscriber unit per month (ARPU), cost of acquisition, cost of retention and churn rate for all services, as do customer usage patterns, flat-rate pricing trends for voice and data, inclusive rate plans for voice and data and availability of Wi-Fi networks for data; mergers and acquisitions of industry competitors; pressures on high-speed Internet and TV ARPU and churn rate resulting from market conditions, government actions and customer usage patterns; residential and business network access line (NAL) losses; subscriber additions and retention volumes, and associated costs for wireless, TV and high-speed Internet services; and our ability to obtain and offer content on a timely basis across multiple devices on wireless and TV platforms at a reasonable cost.
- Technological substitution including: reduced utilization and increased commoditization of traditional wireline voice local and long distance services from impacts of OTT applications and wireless substitution, a declining overall market for paid TV services, including as a result of content piracy and signal theft and as a result of a rise in OTT direct to consumer video offerings and virtual multichannel video programming distribution platforms; the increasing number of households that have only wireless and/or Internet-based telephone services; potential wireless ARPU declines as a result of, among other factors, substitution to messaging and OTT applications; substitution to increasingly available Wi-Fi services; and disruptive technologies such as OTT IP services, including Network as a Service in the business market, that may displace or re-rate our existing data services.
- Technology including: subscriber demand for data that may challenge wireless networks and spectrum capacity levels in the future and may be accompanied by increases in delivery cost; our reliance on information technology and our need to streamline our legacy systems; technology options, evolution paths and roll-out plans for video distribution platforms and telecommunications networks (including broadband initiatives, such as fibre to the premises (FTTP), wireless small-cell deployment, 5G wireless and availability of resources and ability to build out adequate broadband capacity); our reliance on wireless network access agreements, which have facilitated our deployment of wireless technologies; choice of suppliers and those suppliers' ability to maintain and service their product lines, which could affect the success of upgrades to, and evolution of, technology that we offer; supplier concentration and market power for network equipment, TELUS TV and wireless handsets; the performance of wireless technology; our expected long-term need to acquire additional spectrum capacity through future spectrum auctions and from third parties to address increasing demand for data; deployment and operation of new wireline broadband networks at a reasonable cost and availability and success of new products and services to be rolled out on such networks; network reliability and change management; self-learning tools and automation that may change the way we interact with customers; and uncertainties around our strategy to replace certain legacy wireline networks, systems and services to reduce operating costs.
- Capital expenditure levels and potential outlays for spectrum licences in spectrum auctions or from third parties, due to: our broadband initiatives, including connecting more homes and businesses directly to fibre; our ongoing deployment of newer wireless technologies, including wireless small cells to improve coverage and capacity and prepare for a more efficient and timely evolution to 5G wireless services; utilizing acquired spectrum; investments in network resiliency and reliability; subscriber demand for data; evolving systems and business processes; implementing efficiency initiatives; supporting large complex deals; and future wireless spectrum auctions held by Innovation, Science and Economic Development Canada (ISED). Our capital expenditure levels could be impacted if we do not achieve our targeted operational and financial results.
- Regulatory decisions and developments including: the potential of government intervention to further increase wireless competition; the CRTC wireless wholesale services review, in which it was determined that the CRTC will regulate wholesale GSM-based domestic roaming rates and the setting of such rates charged to wireless service providers (WSPs); the Governor in Council's order to the CRTC to reconsider whether Wi-Fi networks should be considered a home network for WSPs seeking mandated roaming; future spectrum auctions and spectrum policy determinations, including the recently announced repurposing of 600 MHz spectrum (and including limitations on established wireless providers, proposed spectrum set-aside that favours certain carriers and other advantages provided to new and foreign participants, and the amount and cost of spectrum acquired); restrictions on the purchase, sale and transfer of spectrum licences; the impact of the CRTC's wireline wholesale services review, with a formal review of rates for wholesale FTTP access still to be commenced for TELUS; disputes with certain municipalities regarding rights-of-way

bylaws; and other potential threats to unitary federal regulatory authority over telecommunications, including provincial wireless legislation; the potential impacts of the CRTC's decision to require pro-rated refunds when customers terminate their services; the CRTC's proposed phase-out of the local service subsidy regime and corresponding establishment of a broadband funding regime to support the enhancement of high-speed Internet services focusing on underserved areas in Canada; the impact of the review of the Minister of Canadian Heritage's new Creative Canada policy framework announced on September 28, 2017; the CRTC's consultation and report on distribution models of the future; vertical integration in the broadcasting industry resulting in competitors owning broadcast content services, and timely and effective enforcement of related regulatory safeguards; the review of the *Copyright Act* scheduled to begin in early 2018; the federal government's stated intention to review the *Broadcasting Act* and *Telecommunications Act* as announced in the March 22, 2017 federal budget; TELUS' applications for renewal of its broadcasting distribution licences; the North American Free Trade Agreement renegotiation; and restrictions on non-Canadian ownership and control of TELUS Common Shares and the ongoing monitoring and compliance with such restrictions.

- Human resource matters including: recruitment, retention and appropriate training in a highly competitive industry, and the level of employee engagement.
- Operational performance and business combination risks including: our reliance on legacy systems and ability to implement and support new products and services and business operations in a timely manner; our ability to implement effective change management for system replacements and upgrades, process redesigns and business integrations (such as our ability to successfully integrate acquisitions, complete divestitures or establish partnerships in a timely manner, and realize expected strategic benefits, including those following compliance with any regulatory orders); the implementation of complex large enterprise deals that may be adversely impacted by available resources, system limitations and degree of co-operation from other service providers; our ability to successfully manage operations in foreign jurisdictions; information security and privacy breaches, including data loss or theft of data; intentional threats to our infrastructure and business operations; and real estate joint venture re-development risks.
- Business continuity events including: our ability to maintain customer service and operate our networks in the event of human error or human-caused threats, such as cyberattacks and equipment failures that could cause various degrees of network outages; supply chain disruptions; natural disaster threats; epidemics; pandemics; political instability in certain international locations; and the completeness and effectiveness of business continuity and disaster recovery plans and responses.
- Ability to successfully implement cost reduction initiatives and realize planned savings, net of restructuring and other costs, without losing customer service focus or negatively affecting business operations. Examples of these initiatives are: our operating efficiency and effectiveness program to drive improvements in financial results, including the future benefits of the immediately vesting transformative compensation initiative; business integrations; business product simplification; business process outsourcing; offshoring and reorganizations, including any full-time equivalent (FTE) employee reduction programs; procurement initiatives; and real estate rationalization. Additional revenue and cost efficiency and effectiveness initiatives will continue to be assessed and implemented.
- Financing and debt requirements including: our ability to carry out financing activities, and our ability to maintain investment grade credit ratings in the range of BBB+ or the equivalent.
- Ability to sustain our dividend growth program through 2019. This program may be affected by factors such as the competitive environment, economic performance in Canada, our earnings and free cash flow, our levels of capital expenditures and spectrum licence purchases, acquisitions, the management of our capital structure, and regulatory decisions and developments. Quarterly dividend decisions are subject to assessment and determination by our Board of Directors (Board) based on the Company's financial position and outlook. Shares may be purchased under our normal course issuer bid (NCIB) when and if we consider it opportunistic, based on the Company's financial position and outlook, and the market price of TELUS shares. There can be no assurance that our dividend growth program or any NCIB will be maintained, not changed and/or completed through 2019.
- Taxation matters including: interpretation of complex domestic and foreign tax laws by the tax authorities that may differ from our interpretations; the timing of income and deductions, such as tax depreciation and operating expenses; changes in tax laws, including tax rates; tax expenses being materially different than anticipated, including the taxability of income and deductibility of tax attributes; elimination of income tax deferrals through the use of different tax year-ends for operating partnerships and corporate partners; and tax authorities adopting more aggressive auditing practices, for example, tax reassessments or adverse court decisions impacting the tax payable by us.
- Litigation and legal matters including: our ability to successfully respond to investigations and regulatory proceedings; our ability to defend against existing and potential claims and lawsuits, including intellectual property infringement claims and class actions based on consumer claims, data, privacy or security breaches and secondary market liability; and the complexity of legal compliance in domestic and foreign jurisdictions, including compliance with anti-bribery and foreign corrupt practices laws.
- Health, safety and the environment including: lost employee work time resulting from illness or injury, public concerns related to radio frequency emissions, environmental issues affecting our business including climate change, waste and waste recycling, risks relating to fuel systems on our properties, and changing government and public expectations regarding environmental matters and our responses.
- Economic growth and fluctuations including: the state of the economy in Canada, which may be influenced by economic and other developments outside of Canada, including potential outcomes of yet unknown policies and actions of foreign governments; future interest rates; inflation; unemployment levels; effects of fluctuating oil prices; effects of low business spending (such as reducing investments and cost structure); pension investment returns, funding and discount rates; and Canadian dollar: U.S. dollar exchange rates.

These risks are described in additional detail in *Section 9 General trends, outlook and assumptions* and *Section 10 Risks and risk management* in this MD&A. Those descriptions are incorporated by reference in this cautionary statement but are not intended to be a complete list of the risks that could affect the Company.

Many of these factors are beyond our control or our current expectations or knowledge. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also have a material adverse effect on our financial position, financial performance, cash flows, business or reputation. Except as otherwise indicated in this document, the forward-looking statements made herein do not reflect the potential impact of any non-recurring or special items or any mergers, acquisitions, dispositions or other business combinations or transactions that may be announced or that may occur after the date of this document.

Readers are cautioned not to place undue reliance on forward-looking statements. Forward-looking statements in this document describe our expectations and are based on our assumptions as at the date of this document and are subject to change after this date. Except as required by law, we disclaim any intention or obligation to update or revise any forward-looking statements.

This cautionary statement qualifies all of the forward-looking statements in this MD&A.

we will be similarly affected. The presentation on the statement of income and other comprehensive income required by the new standard will result in most non-executory lease expenses being presented as amortization of lease assets and financing costs arising from lease liabilities, rather than as a part of goods and services purchased; reported operating income would thus be higher under the new standard.

Relative to the results of applying the current standard, although the actual cash flows will be unaffected, the lessee's statement of cash flows will reflect increases in cash flows from operating activities offset equally by decreases in cash flows from financing activities. This is the result of the payments of the "principal" component of leases that would currently be accounted for as operating leases being presented as a cash flow use within financing activities under the new standard.

Implementation

As a transitional practical expedient permitted by the new standard, we do not expect to reassess whether contracts are, or contain, leases as at January 1, 2019, using the criteria of the new standard; as at January 1, 2019, only contracts that were previously identified as leases applying IAS 17, *Leases* and IFRIC 4, *Determining whether an Arrangement contains a Lease*, will be a part of the transition to the new standard. Only contracts entered into (or changed) after January 1, 2019, will be assessed for being, or containing, leases using the criteria of the new standard.

Other issued standards

Other issued standards required to be applied for periods beginning on or after January 1, 2018, are expected to have no significant effect on our financial performance or disclosure.

9 General trends, outlook and assumptions

This section contains forward-looking statements, which should be read together with the *Caution regarding forward-looking statements* at the beginning of this MD&A.

9.1 Telecommunications industry in 2017

We estimate that Canadian telecommunications industry revenues (including TV and excluding media) grew by approximately 3% to approximately $62 billion in 2017. Wireless and data services continue to drive ongoing industry growth. Consumer communication and entertainment consumption behaviours continue to demonstrate a strong preference for data-rich applications and data-intensive smartphones and tablets.

TELUS' revenues of $13.3 billion represented approximately 21% of industry revenues, with wireless products and services representing 57% of our total revenues. In our wireline business, growth in high-speed Internet access, enhanced data, TV and business process outsourcing services has more than offset the decline in demand for legacy services.

Wireless

Based on publicly reported results and estimates, in 2017, the Canadian wireless industry experienced network revenue growth of approximately 7% and EBITDA growth of approximately 7%. TELUS wireless network revenue growth was 6.5%, and TELUS wireless Adjusted EBITDA grew by 5.2%.

We estimate that the Canadian wireless industry added approximately 1.3 million new subscriber units in 2017, compared to approximately one million in 2016. This was supported by immigration and population growth; the trend toward multiple devices, including tablets; the expanding functionality of data and related applications; and mobile adoption by both younger and older generations. The wireless penetration rate increased to approximately 86% in Canada, with further increases in penetration expected to continue in 2018. By comparison, the wireless penetration rate in the U.S. is well over 100%, while in Europe and Asia it is even higher, suggesting an opportunity for continued growth in Canada.

In 2017, the wireless market was characterized by heightened retention and acquisition activity and the associated high costs of device subsidies on two-year contracts, a heightened level of competitive intensity, and the continued adoption of higher-value, data-centric smartphones. While higher handset costs, increased subsidies and the frequency of customer device upgrades put pressure on industry margins, adoption of the latest smartphones generally has a positive impact on average revenue per subscriber unit per month (ARPU) and churn rates. Blended ARPU also continues to increase as data consumption on 4G LTE and LTE advanced (LTE-A) devices and networks rises, and as consumers continue to adopt higher bucket and shared family data plans, as well as Premium Plus rate plans, which offer higher device subsidies upfront for a higher recurring monthly fee.

The Canadian wireless industry continues to be highly competitive and capital-intensive. In March, BCE acquired Manitoba Telecom Services (MTS). At the same time, TELUS acquired a portion of MTS' postpaid wireless subscribers and dealer locations in Manitoba. Both companies committed to incremental investments in the province of Manitoba. TELUS has invested more than $70 million in Manitoba over the past two years.

In June, Shaw Communications announced the divestiture of its U.S. call centre subsidiary, and used a portion of the proceeds to fund the acquisition of the 700MHz and 2500 MHz spectrum licences from Quebecor Media Inc. Shaw's Freedom Mobile has since focused on the build-out of an urban LTE network in major cities in Alberta, B.C. and Ontario. Shaw reached an agreement with Apple Inc. enabling it to offer iPhone products beginning in December 2017. Shaw's re-farming of AWS-1 spectrum and deployment of 2,500 MHz spectrum is expected to be completed in 2018, and will make older smartphone versions (iPhones and Galaxy) compatible with Freedom's LTE network.

Wireline

Canada's four major cable-TV companies had an estimated base of approximately 4 million telephony subscribers at the end of 2017. This represents a national consumer market share of approximately 42%, up from approximately 40% in 2016. Other non-facilities-based competitors also offer local and long distance voice over IP (VoIP) services and resell high-speed Internet solutions. This competition, along with technological substitution to wireless services, continues to erode the number of residential network access lines and associated local and long distance revenues, as expected.

Although the consumer high-speed Internet market is maturing, with a penetration rate of approximately 85% in Western Canada and 83% across Canada, subscriber growth is expected to continue over the coming years. The four major cable-TV companies had an estimated 6.7 million Internet subscribers at the end of 2017 (50% market share), up 3% from approximately 6.5 million at the end of 2016. Telecommunications companies had approximately 6.5 million Internet subscribers (48% market share), up 3% from approximately 6.3 million at the end of 2016. We continue to make moderate market share gains, due to the expansion of our fibre-optic network and the pull-through of subscribers from our IP-based TELUS TV service.

While Canadians still watch traditional TV, digital platforms are playing an increasingly important role in the broadcasting industry. Popular online video services are providing Canadians with more choice about where, when and how to access their video content. In 2017, Canadian IP TV providers increased their subscriber base by an estimated 6% to 2.7 million through expanded network coverage, enhanced differentiated service offerings, and marketing and promotions focused on IP TV. Despite this IP TV growth, combined cable-TV and satellite-TV subscriber penetration was flat. We estimate that the four major cable-TV companies have approximately 5.8 million TV subscribers or a 52% market share, consistent with 52% at the end of 2016. The balance of industry subscribers were served by satellite-TV and regional providers.

In 2017, our primary Western Canadian cable-TV competitor, Shaw Communications, launched BlueSky TV, based on Comcast's X1 TV platform, offered alongside larger Internet data plans introduced in the second half of 2016. Both Rogers and Quebecor have announced their intention to adopt the Comcast X1 TV platform in 2018. Our IP-based Optik TV platform continues to have numerous service leadership advantages over this cable platform, including: flexible pricing, plans and packaging available to all customers; picture clarity and quality; content depth and breadth, including 4K content, as well as more HD, video on demand, sports, multicultural and OTT content, such as 4K Netflix and the latest YouTube app, that can be paired with a smartphone or tablet to allow casting; and the number of ways customers can access content, including wireless set-top boxes, Restart TV, higher capacity PVR and Optik TV on the go with two times the number of live TV channels compared to our cable competitor.

9.2 Telecommunications industry general outlook and trends

Wireless

Wireless growth continues to be driven by increasing data usage and adoption, including: higher-value smartphones, shared family data plans and tablets, as well as growth in machine-to-machine (M2M) devices and the Internet of Things (IoT). In addition, consumers continue to replace wireline access with wireless access and related data services. These trends are expected to continue to increase the demand for wireless data for the foreseeable future. Industry ARPU growth is expected to continue, although perhaps at a more modest rate.

While LTE and LTE-A technologies increase download speeds, encourage data usage and improve the customer experience, increasing data traffic demands pose challenges to wireless networks. (See *High demand for data challenges wireless networks and may be accompanied by increases in delivery cost* in *Section 10.3 Technology.*)

M2M and IoT technologies connect communications-enabled remote devices via wireless networks, allowing them to exchange key information and processes. Advanced platforms and networks are already in place in industries such as utilities, agriculture and fleet management, with deployment ongoing in other industries such as vehicle insurance, retail, food services, consumer utilities and healthcare. These and other industries are looking to IoT, combined with other applications, to drive value from their connections. IoT represents a meaningful opportunity for growth in mobility products and services in terms of secure connectivity, customer value and efficiency. While M2M applications generally have lower ARPU, they tend to generate high service volumes with low or no subsidy costs, thereby supporting both revenue growth and margins.

Digital identity is the common enabler for online service delivery and a driver of Canada's digital economy. TELUS is taking a leadership position in this space, facilitating a user-centric, private and secure experience.

5G has begun to play a mainstream role in technology evolution and innovation globally. Investing in 5G will drive capex savings by allowing us to provide high-speed Internet services over wireless in less urban areas, as well as improved cost savings and innovative services in industrial automation, transportation and telehealth. Driven by significantly faster speeds, lower latencies, improved reliability and attractive economics, 5G will enable a host of new applications: for industries, remote operations, industrial control, and manufacturing automation; for consumers, home automation, autonomous vehicles, as well as wireless to the home connectivity with speeds comparable to wired networks; and for healthcare, converged solutions for hospitals, clinics and remote patient monitoring. 5G is essential to Canada's digital future and is expected to generate significant innovation, growth and productivity. Therefore, TELUS is requesting Innovation, Science and Economic Development Canada (ISED) and other policy makers to launch consultations as soon as possible on 3.5 GHz and mmWave spectrum so that Canada does not risk missing the early deployment of the next major technological evolution. Current trials show that mmWave delivers the richest 5G experience, albeit in a localized fashion, whereas 3.5 GHz is key for broader 5G coverage. TELUS maintains the world's fastest 5G network trial speed, at just under 30 Gbps.

Wireline

The traditional wireline telecommunications market is expected to remain very competitive in 2018 as technology substitution – such as the broad deployment of higher-speed Internet; the use of email, messaging and social media as alternatives to voice services; and the growth of wireless and VoIP services – continues to replace higher-margin legacy voice revenues. In our traditional operating areas of B.C. and Alberta, it is estimated that 45% of households no longer have a fixed line and 26% of households no longer have a broadcast TV service. Although we are a key provider of these substitution services, the decline in this legacy business continues as anticipated. Our long-standing growth strategy remains focused on wireless, data and IP-centric wireline capabilities.

The popularity of viewing TV and on-demand content anywhere, particularly on handheld devices, is expected to continue to grow as customers adopt services that enable them to view content on multiple screens. Streaming media providers continue to enhance over-the-top (OTT) streaming services in order to compete for a share of viewership in response to evolving viewing habits and consumer demand. Studies suggest that 41% of Canadian households had a subscription to Netflix at the end of 2017. Amazon Prime video streaming service launched in Canada in late 2016, and other streaming TV services are expected to follow with service launches in Canada.

TV providers are monitoring OTT developments and evolving their content and market strategy to compete with these non-traditional offerings. Bell Media offers a content streaming service through Crave TV. We view OTT as an opportunity to add increased capabilities to our linear and on-demand assets, provide customers with flexible options to choose the content they want and encourage greater customer use of the TELUS high-speed Internet and wireless networks. We continue to enhance our Optik TV service with additional content and capabilities, including ultra-high-definition 4K content, multi-cultural content and distribution deals with OTT content providers such as Netflix and Crave TV. In April, TELUS launched a new OTT-friendly basic TV offering called Pik TV, which allows customers to access live TV and streaming apps like Netflix and YouTube, flexibly and affordably, through a self-install media box.

Telecommunications companies continue to make significant capital investments in broadband networks, with a focus on fibre to the premises or home (FTTP/FTTH) to maintain and enhance their ability to support enhanced IP-based services and higher broadband speeds. Cable-TV companies continue to evolve their cable networks with the gradual roll-out of the DOCSIS 3.1 platform. Although this platform increases speed in the near term and is cost-efficient, it does not offer the same advanced capabilities as FTTP over the longer term. Our Optik TV capable footprint covers more than 3 million households and businesses, with approximately 93% having access to speeds of at least 50 Mbps, enabling us to deliver a better customer experience. In addition, at the end of 2017, our fibre-optic network was available to approximately 1.44 million homes and businesses. Advances in LTE wireless technology and our extensive LTE network also increasingly allow us to target otherwise underserved areas with a fixed wireless solution.

Combining wireline local and long distance voice services with wireless and high-speed Internet access and entertainment services, telecommunications companies are focused on offering bundled products to achieve competitive differentiation and provide customers with more flexibility and choice on networks that can reliably support these services. Our broadband investments, including the build-out of our FTTP broadband network, our premium differentiated IP-based Optik TV service and integrated bundled service offerings, continue to enhance our competitive position and customer loyalty relative to our main cable-TV competitor.

As the industry moves to 5G wireless in the coming years, we expect to be operating on, and providing services over, a more converged network. The lines between wireline and wireless will continue to blur based on how we deliver services to customers and how customers use those services. As our broadband network continues to expand and 5G begins to be commercialized in the coming years, we expect to benefit from the flexibility of determining the most efficient way to deliver services across our footprint. We do not expect to have to build fibre to every home, but rather we believe that there will be options to support parts of our broadband footprint wirelessly with 5G.

TELUS is also a member of the Canadian Digital Supercluster and the Smart Agri-food Supercluster consortiums that have been shortlisted to phase two of the application process for funding through the federal government's Innovation Superclusters Initiative. The mission of the Supercluster consortiums with which we are involved is to leverage the power of data collection, analysis and visualization in order to realize innovations that deliver economic growth, new skilled jobs and improved health, social and environmental outcomes that benefit Canadians from coast to coast to coast.

Additional wireline capabilities

In the business market (enterprise and small and medium-sized businesses, or SMB), the convergence of IT and telecommunications, facilitated by the ubiquity of IP, continues to shape the competitive environment, with non-traditional providers increasingly blurring the lines of competition and business models. Cable-TV companies continue to make investments to better compete in the highly contested SMB space. Telecommunications companies like TELUS are providing network-centric managed applications that leverage their significant FTTP investments, while IT service providers are bundling network connectivity with their proprietary software as service offerings.

The development of IP-based platforms providing combined IP voice, data and video solutions creates potential cost efficiencies that compensate, in part, for the loss of margins resulting from the migration from legacy to IP-based services. New opportunities exist for integrated solutions and business process outsourcing that could have a greater business impact than traditional telecommunications services. Data security represents both a challenge and an opportunity for TELUS to provide customers with our data security solutions. Increasingly, businesses are looking to partner with their communications service provider to address their business goals and challenges, and to tailor cloud-based solutions for their needs that leverage telecommunications in ways not imagined 10 years ago. Cloud computing is changing service delivery to always-on and everything-as-a-service, and strong growth is expected in this area. TELUS offers Network as a Service capabilities that provide businesses the option of an IT network as a service over the Internet, mirrored across multiple locations, based on a self-serve platform that reduces deployment cycles and reliance on IT specialists.

Healthcare is expected to be a growth area in future years, based on an aging population in Canada, an increasing emphasis on chronic disease management, and the potential benefits that technology can deliver in terms of efficiency and effectiveness within the sector. We are leveraging our expanding broadband network to increase the availability, integration and effectiveness of our innovative tools and applications across the primary care ecosystem in order to position ourselves to compete for the anticipated future growth in this sector. These tools include personal health records to facilitate self-management of healthcare data, electronic drug prescriptions with online insurance validation by the physician, and home health monitoring devices and data capture with caregiver oversight. The digitization of everyday functions in the healthcare ecosystem, combined with broadband network connectivity, provides an open platform that can support the development and delivery of even more advanced health applications. Our home health monitoring is being implemented in B.C. following a successful pilot which demonstrated reductions in hospitalizations, positive patient experiences and significant cost reductions. Pharma Space®, our online pharmacy service that helps patients manage their prescriptions through features like scheduling online reminders and automatic refills, is now being accessed by more than 300,000 customers. In 2017, TELUS commenced a partnership with Canada Health Infoway to develop and administer PrescribeIT, an open, national e-prescribing service. Our acquisition of Kroll Computer Systems enhanced geographic reach, expertise and the quality of our product offering as a national pharmacy management services provider. In 2017, we also launched MedDialog, a national clinical solution that allows doctors to communicate electronically with other physicians regarding care of their patients directly from their electronic medical records.

TELUS International (TI), our leading global business process and information technology (IT) outsourcing provider, continues its expansion

through organic growth and strategic acquisitions (see *Section 1.3 Highlights of 2017* for further details). From our successful inception 12 years ago in the Philippines, established to support TELUS' growing customer service needs, TI has grown exponentially in size, scope and geographic diversity to deliver exceptional customer experiences for some of the world's most iconic brands from sites in North and Central America, Europe and Asia. Notably, the acquisition of Xavient Information Systems, a global IT consulting and next-generation software services company, accelerates TI's ability to expand its global IT services offering with the addition of advanced, next-generation IT consulting and delivery capabilities, including Artificial Intelligence (AI)-powered Digital Transformation services, User Interface/User Experience (UI/UX) design, Open Source Platform services, Cloud services, OTT solutions, IoT, Big Data services, DevOps, and IT Lifecycle services, in order to provide a more comprehensive suite of services to existing and prospective clients. TI strengthens TELUS' ability to provide global clients with leading, differentiated services that align with our top priority of delivering the best customer experience to all our customers.

As technology in our industry continues to change rapidly and customer demand continues to grow, and as Canada evolves toward a more digital economy, we are committed to evolving our business to offer innovative and reliable services and thought leadership in core future growth areas that are complementary to our traditional business. This – along with our intense focus on leadership in delivering an enhanced customer experience – positions us for continued differentiation and growth.

9.3 TELUS assumptions for 2018

In 2018, we expect growth in both wireless and wireline EBITDA, driven by the continued high demand for data services and high-speed Internet access in our wireless and wireline products and services; our consistent strategic focus on our core wireless and wireline capabilities (see *Section 2.2 Strategic imperatives*, *Section 3 Corporate Priorities* and *Section 4 Capabilities*); significant ongoing investments in our leading broadband networks; continued efforts to enhance operational efficiency; and our sustained focus on an enhanced customer experience across all areas of our operations.

Our assumptions in support of our 2018 outlook are generally based on the industry analysis above, including our estimates regarding economic and telecom industry growth (see *Section 1.2 The environment in which we operate*), as well as our 2017 results and trends discussed in *Section 5*. Our key assumptions include the following:

- Slightly slower rate of economic growth in Canada in 2018, estimated to be 2.2% (3.1% in 2017). For our incumbent local exchange carrier (ILEC) provinces in Western Canada, we estimate that economic growth in B.C. will be 2.5% in 2018 (3.4% in 2017), and that economic growth in Alberta will be 2.4% in 2018 (3.9% in 2017).
- No material adverse regulatory rulings or government actions.
- Continued intense wireless and wireline competition in both consumer and business markets.
- An increase in wireless industry penetration of the Canadian market.
- Ongoing subscriber adoption of, and upgrades to, data-intensive smartphones, as customers want more mobile connectivity to the Internet.
- Wireless revenue growth resulting from growth in both postpaid subscriber loading and blended ARPU.
- Continued pressure on wireless acquisition and retention expenses, dependent on gross loading and customer renewal volumes, competitive intensity and customer preferences.
- Continued growth in wireline data revenue, resulting from an increase in high-speed Internet and TELUS TV subscribers, speed upgrades and expanding broadband infrastructure, as well as business outsourcing and healthcare solutions.
- Continued erosion of wireline voice revenue, resulting from technological substitution and greater use of inclusive long distance and lower wholesale volumes.
- Continued focus on our customers first initiatives and maintaining our customers' likelihood-to-recommend scores.
- Employee defined benefit pension plans: Pension plan expense of approximately $97 million recorded in Employee benefits expense and approximately $14 million recorded in employee defined benefit pension plans net interest in Financing costs; a 3.40% rate for discounting the obligation and a 3.50% rate for current service costs for employee defined benefit pension plan accounting purposes; and defined benefit pension plan funding of approximately $50 million.
- Restructuring and other costs of approximately $135 million for continuing operational effectiveness initiatives, with margin enhancement initiatives to mitigate pressures related to intense competition, technological substitution, repricing of our services, increasing subscriber growth and retention costs, and integration costs associated with the home security customer acquisition.
- Income taxes: Income taxes computed at applicable statutory rate of 26.7 to 27.3% and cash income tax payments of approximately $170 to $230 million (2017 – $191 million). Cash tax payments are expected to be relatively consistent with 2017.
- Further investments in broadband infrastructure as we approach nearly 50% of our targeted coverage footprint, including expanding our fibre-optic network and 4G LTE capacity expansion and upgrades, as well as investments in network and systems resiliency and reliability.
- No wireless spectrum auctions anticipated in 2018.
- Stabilization in the average Canadian dollar: U.S. dollar exchange rate (U.S. 77 cents in 2017).

9.4 Telecommunications industry regulatory developments and proceedings

Our telecommunications, broadcasting and radiocommunication services are regulated under federal laws by various authorities, including the Canadian Radio-television and Telecommunications Commission (CRTC), Innovation, Science and Economic Development Canada (ISED) and the Minister of Canadian Heritage.

The following is a summary of certain significant regulatory developments and proceedings relevant to our business and our industry. This summary is not intended to be a comprehensive legal analysis and description of all of the specific issues described. Although we have indicated where we do not currently expect the outcome of a development or proceeding to be material to us, there can be no assurance that the expected outcome will occur or that our current assessment of its likely impact on us will be accurate. See *Section 10.4 Regulatory matters*.

Radiocommunication licences and spectrum-related matters

ISED regulates, among other matters, the allocation and use of radio spectrum in Canada and licenses radio apparatus, frequency bands and/or radio channels within various frequency bands to service providers and private users. The department also establishes the terms and conditions attaching to such radio authorizations, including restrictions on licence

transfers, coverage obligations, research and development obligations, annual reporting, and obligations concerning mandated roaming and antenna site sharing with competitors.

600 MHz spectrum repurposing decision released

On August 14, 2015, ISED published *Decision on Repurposing the 600 MHz Band, SLPB-004-15*. In its decision, ISED announced its intention to jointly repack the 600 MHz band in line with the U.S. and to adopt the 70 MHz mobile band plan arising from the Federal Communications Commission (FCC) Incentive Auction. On August 4, 2017, ISED released a *Consultation on a Technical, Policy and Licensing Framework for Spectrum in the 600 MHz band* that proposed a 30 MHz set aside for facilities-based operators with less than 10% mobile subscriber market share. An auction of 600 MHz spectrum in Canada is not expected until 2019 and there is a high risk that the final rules favour certain carriers.

On June 5, 2017, ISED released a *Consultation on Releasing Millimetre Wave Spectrum to Support 5G*. It is expected that ISED will publish its decision on this consultation in 2018 and then consult on licensing frameworks (i.e. auction rules and conditions of licence) for the 28 GHz and 37–40 GHz bands. There is a risk that any auction rules favour certain carriers.

On October 6, 2017, ISED released a *Consultation on the Spectrum Outlook 2018–2022*. There is a risk that bands identified as promising for mobile service are not allocated for mobile service or are delayed in being allocated.

Regulatory and federal government reviews

The CRTC and the federal government have initiated public proceedings to review various matters. They are discussed below.

CRTC decision on Review of the Wireless Code

On June 15, 2017, the CRTC issued *Review of the Wireless Code, Telecom Regulatory Policy CRTC 2017-200*. The major changes to the Wireless Code relate to: (i) the removal of unlocking fees and the requirement to sell all devices unlocked as of December 1, 2017; (ii) changes to the bill management features about how the $50 data usage cap and $100 data roaming cap are calculated and how consent to obtain additional usage is obtained; and (iii) amendments to the mandated trial period for customers who obtain a postpaid wireless contract. Changes to the Wireless Code were to be implemented by December 1, 2017. On November 16, 2017, TELUS filed an application to the CRTC seeking an extension to the new bill management requirements to March 31, 2018. The CRTC has not yet ruled on this request, but we do not expect a significant impact on TELUS regardless of whether the extension is granted. TELUS completed its implementation process for all other requirements by the December 1, 2017 deadline.

CRTC decision to require pro-rated refunds

On May 5, 2016, the CRTC issued *Quebecor Media Inc. – Prohibition of 30-day cancellation policies – Application regarding pro-rated refunds for cancelled services, Telecom Decision CRTC 2016-171*, in which the CRTC, among other things, mandated that all service providers are to provide pro-rated refunds to customers who cancel telecommunications and broadcasting service contracts. This decision was unexpected, in that it was contradicted by guidance that TELUS and third parties had received from CRTC staff following a 2014 CRTC decision regarding prohibition of a notice period for cancellation of services and in light of past decisions on the Wireless Code and notice of cancellation policies that had not mandated pro-rated refunds. The decision impacts billing systems, with no transition period provided to implement the required changes. On July 4, 2016, TELUS filed an application with the CRTC seeking guidance and clarification that the decision does not apply with respect to wireless services with a subsidized device, usage-based services and local telephone service in non-forborne exchanges. TELUS also requested an extension of time to implement the decision. At the CRTC's request, TELUS filed further submissions on August 14, 2017, and September 5, 2017. The CRTC has yet to issue a decision on this matter. The potential impact of this decision is not expected to be material.

Wireline wholesale services followup

On July 22, 2015, the CRTC released *Review of wholesale wireline services and associated policies, Telecom Regulatory Policy CRTC 2015-326*. The major component of this decision was that the CRTC ordered the introduction of a disaggregated wholesale high-speed Internet access service for ISP competitors. This will include access to FTTP facilities. This requirement is being phased in geographically beginning in the largest markets in Ontario and Quebec (i.e. in the serving territories of Bell Aliant, Bell Canada, Cogeco, Rogers and Videotron). The CRTC initiated a followup proceeding to determine the technical configurations, appropriate costs and wholesale cost-based rates in those regions.

The FTTP followup activities directed in *Telecom Policy CRTC 2015-326* remain ongoing. Associated tariff and cost study reviews have been completed for Bell, Rogers, Videotron and Cogeco and a decision is pending. For the second phase, which involves FTTP wholesale services for the rest of Canada (including TELUS' serving territories), a proceeding on technical configurations commenced in 2017, and the associated cost study and tariff review will follow. TELUS anticipates no material adverse impact in the short term from the CRTC's decision. Given the phased implementation of the mandated provision of wholesale access to our FTTP networks, it is too early to determine the impact this decision will have on TELUS in the longer term. The determination that the provision of access to unbundled local loops to competitors will no longer be mandated and will be phased out over a three-year transition period is not expected to have a material impact on TELUS.

Wireless wholesale services roaming tariffs

On May 5, 2015, the CRTC determined that it would regulate the wholesale GSM-based domestic roaming rates that TELUS, Rogers and Bell charge other wireless carriers. Proposed final tariff rates were filed by TELUS, Rogers and Bell on November 23, 2015, based on the CRTC's Phase II costing approach. A decision on the final rates from the CRTC is pending. Interim rates are currently in place. While TELUS does not currently expect that the decision will have a negative material impact, the impact will be assessed once the final wholesale roaming rates have been approved.

Governor in Council's order to the CRTC to reconsider wireless service providers' wholesale mobile roaming service tariffs

The Governor in Council has ordered the CRTC to reconsider *Wholesale mobile wireless roaming service tariffs – Final terms and conditions*, *Telecom Decision CRTC 2017-56*. The CRTC has been ordered to reconsider whether Wi-Fi networks could be considered as a home network for service providers seeking mandated roaming. The CRTC's reconsideration is to be completed by March 31, 2018. In response to this request, the CRTC has issued *Reconsideration of Telecom Decision 2017-56 regarding final terms and conditions for wholesale mobile wireless roaming service*, Telecom Notice of Consultation CRTC 2017-259, thereby initiating a proceeding to review this matter. Subsequent to the Governor in Council's order, TNW Wireless Inc. brought an application requesting the CRTC to

order TELUS and Bell Mobility to each provide wholesale roaming for a primarily Wi-Fi based service offering. The CRTC will render its decision in TNC 2017-259 and then consider whether TNW Wireless is entitled to mandated roaming. The proceeding initiated by TNC 2017-259 is now complete and a decision is pending from the Commission. It is too early to determine what impact a decision further to TNC 2017-259 may have on TELUS. This decision may broaden competition in wireless services if mandated roaming is allowed. The CRTC has stated that it will not rule on the TNW application until after it has rendered a decision in the proceeding initiated by TNC 2017-259.

Phase-out of local service subsidy regime

On April 6, 2017, the CRTC issued Telecom Notice of Consultation CRTC 2017-92, in which it sought comments on its proposed approach to the phase-out of the local service subsidy regime and associated policies. This notice is part of the followup activities resulting from *Modern telecommunications services – The path forward for Canada's digital economy*, *Telecom Regulatory Policy CRTC 2016-496*, issued on December 21, 2016. TELUS continues to have the obligation to provide local telephone service in all exchanges, which our competitors do not have. TELUS participated in this proceeding to seek greater pricing flexibility in regulated high cost exchanges if subsidies are removed and to ensure that we are compensated for any obligation to serve. TELUS and other parties filed their final comments in this proceeding on September 29, 2017. A decision is expected in 2018. It is too early to determine the potential impact of the proceeding on TELUS.

Development of the CRTC's new broadband funding regime

On April 25, 2017, the CRTC issued *Development of the Commission's broadband funding regime*, Telecom Notice of Consultation CRTC 2017-112. This consultation follows on the CRTC's *Modern telecommunications services* decision issued on December 21, 2016, in which the CRTC set a new universal service objective that included fixed and mobile wireless broadband Internet access services and stated that it would begin to shift the focus of its current regulatory frameworks from wireline voice services to broadband in order to assist in expanding the availability and adoption of broadband Internet access services. The CRTC also set out its preliminary views on the establishment of a new broadband funding mechanism in that decision. In Notice of Consultation 2017-112, the CRTC called for comments on the various issues pertaining to the establishment of the new broadband funding regime, including governance of the new fund, operating and accountability frameworks, as well as eligibility and assessment criteria for proposed projects. The CRTC also sought comments on its preliminary views on the new broadband fund set out in *Telecom Regulatory Policy 2016-496*. TELUS filed its final submission on December 18, 2017, and is now awaiting the CRTC's decision. It is too early to determine the potential impact that this proceeding may have on TELUS.

9-1-1 networks

On March 29, 2016, the CRTC issued *Establishment of a regulatory framework for next generation 9-1-1 in Canada*, *Telecom Notice of Consultation CRTC 2016-116*. The CRTC announced this proceeding to establish a regulatory framework for next generation 9-1-1 services that will take into account the evolving public safety needs of Canadians, in that next generation 9-1-1 services will provide access to new and innovative 9-1-1 capabilities. TELUS participated in an oral hearing phase of the proceeding in mid-January 2017 and filed its final comments on January 31, 2017. It is not expected that the CRTC's review will have a material impact on TELUS' operations.

Review of tariffs for aggregated wholesale high-speed access services

The CRTC is conducting a review of cost studies and rates associated with aggregated wholesale high-speed access services, which are services provided by incumbent local exchange carriers (ILECs) and cable companies on their respective DSL and cable facilities to ISPs, which then resell high-speed Internet services. Aggregated wholesale services are expected to be phased out once disaggregated wholesale services are in place. The review is now complete and a decision from the CRTC is pending. It is not expected that the outcome of this review will have a material impact on TELUS.

Broadcasting-related issues

Broadcasting distribution undertaking licences held by TELUS

TELUS' regional licences to operate broadcasting distribution undertakings in B.C. and Alberta were granted a series of administrative renewals, which extended the licence terms to May 31, 2018. TELUS has filed applications for new broadcasting distribution licences to serve markets in British Columbia and Alberta that exceed the 20,000 subscriber threshold for exemption, and a public hearing was held in October 2017 to consider these applications. TELUS' regional broadcasting distribution licence to serve Quebec expires in August 2018, and as part of the renewal process, TELUS has filed an application to return its province-wide regional licences in favour of operating on an exempt basis in each of its currently licensed serving areas in Quebec. In July 2014, the CRTC approved our application for a licence to operate a national pay-per-view service (scheduled to expire on August 31, 2020). TELUS' licence to operate a national video-on-demand service was renewed to August 31, 2023 as part of *Broadcasting Decision CRTC 2018-20*.

Enforcement of vertical integration framework

In September 2011, the CRTC announced a policy framework to address concerns relating to the potential incentive for anti-competitive behaviour by companies that own both programming services and distribution networks (vertically integrated broadcasting companies). The CRTC subsequently introduced a new code of conduct through amendments to the various broadcasting regulations and exemption orders. Following the CRTC's "Let's Talk TV" proceeding in 2014, the CRTC further expanded its ability to deal with anti-competitive conduct by replacing the code of conduct with a new Wholesale Code that has been made enforceable by conditions of licence. This new Wholesale Code includes many new provisions to address abusive practices by vertically integrated broadcasting companies regarding the carriage of their programming services. In particular, the new Wholesale Code sets out a list of prohibited conduct and criteria to determine the fair market value of programming services in order to ensure that vertically integrated entities are prevented from artificially inflating the cost of services for their competitors. Bell Canada was granted leave to appeal the CRTC's decision relating to the new Wholesale Code and the appeal was heard at the Federal Court of Appeal November 14, 2017.

Without timely and strict enforcement of the vertical integration safeguards, there is a risk that vertically integrated competitors could unfairly raise programming costs for non-vertically integrated companies such as TELUS, and/or attempt to withhold content on digital media platforms, such as Internet and mobile platforms, or otherwise disadvantage us in our ability to attract and retain wireless or Optik TV customers. See *Vertical integration into broadcast content ownership by competitors* in *Section 10.2*.

Review of Canada's cultural policies

On September 28, 2017, the Minister of Canadian Heritage announced a new policy framework for a Creative Canada. This policy framework focuses on 1) investing in Canadian creators and cultural entrepreneurs; 2) promoting discovery and distribution of Canadian content at home and globally; and 3) strengthening public broadcasting and support for local news. The Minister has indicated in her official speech unveiling this new policy framework that the federal government would not support any new levy on Internet service providers, similar to the levy on broadcasting distribution undertakings. As a result, this new policy framework is not expected to have any negative material impact on TELUS.

Review and modernizing of the Broadcasting Act and Telecommunications Act

In its budget announcement on March 22, 2017, the federal government recognized the impact of the digital age on Canada's media and broadcasting industries and indicated its intention to review and modernize the *Broadcasting Act* and the *Telecommunications Act*, looking specifically at issues relating to content creation in the digital age, net neutrality and cultural diversity. This announcement dovetails with CRTC consultations regarding distribution models of the future, described below. It is not expected to have any material negative impact on TELUS.

CRTC ordered to report back to federal government on distribution models of the future

On September 22, 2017, the Governor-in-Council (federal cabinet) issued an Order in Council pursuant to section 15 of the *Broadcasting Act* to request that the CRTC hold hearings and report on distribution models of the future and how Canadians will access programming. The deadline for the CRTC's report back to the federal government is June 1, 2018. On October 12, 2017, the CRTC launched a two-phase consultation process, which began with a written process on December 1, 2017. TELUS participated in the first phase, and will participate in the second phase by the February 13, 2018, deadline. While the CRTC's report to the federal government will likely form part of the record for the parallel review of the *Broadcasting Act* and *Telecommunications Act*, it is not expected to have any negative material impact on TELUS.

Review of the Copyright Act and Copyright Board

The *Copyright Act*'s mandated five-year review was due in 2017 and the process for review was announced in December 2017. Hearings are to be conducted by the Standing Committee for Industry, Science and Technology, in co-operation with the Standing Committee on Canadian Heritage, and are expected to begin in early 2018. The policy approach for copyright has traditionally been based on a balance of interests of creators and consumers. As a result, changes to the *Copyright Act* are not expected to have any negative material impact on TELUS.

North American Free Trade Agreement Negotiations

The Office of the United States Trade Representative has released its summary of objectives for the renegotiation of the North American Free Trade Agreement (NAFTA) between Canada, the United States and Mexico. The United States government has identified a number of items, including trade in services (including telecommunications services), digital trade in goods and services and cross-border data flows, intellectual property (including copyright) and competition policy, among others, as potential items for negotiation. The Government of Canada has since outlined Canada's 10 priorities for NAFTA renegotiation, none of which include detailed telecommunications or intellectual property objectives. On the issue of cultural exemptions, the Government of Canada has clearly stated that it is committed to maintaining the current exemption for the cultural industries found in NAFTA. NAFTA negotiations have begun and are ongoing. It remains unclear what issues will be negotiated, the outcome of negotiations, and the potential impact that the NAFTA negotiations may have on TELUS.

10 Risks and risk management

10.1 Overview

In the normal course of our business activities, we are exposed to both risks and opportunities. Risk oversight and management processes are integral elements of our risk governance and strategic planning efforts.

Board risk governance and oversight

We maintain strong risk governance and oversight practices, with risk oversight responsibilities as outlined in the Board's and the Board committees' terms of reference. The Board is responsible for ensuring the identification of material risks to our business and overseeing the implementation of appropriate systems and processes to identify, monitor and manage material risks.

In addition:

- Risks on the enterprise key risk profile are assigned for Board or committee oversight
- Board committees provide updates to the Board on risks overseen by those committees based on their respective terms of reference
- Board or Board committees may request risk briefings by our executive risk owners. The Vice-President, Risk Management and Chief Internal Auditor attends and/or receives a summary of these briefings.

Risk governance and culture

We have a strong risk governance culture across TELUS that starts with clear risk management leadership and transparent communications, supported by our Board and Executive Leadership Team. Accountability for the management of risks and reporting of risk information is clearly defined through our approach to risk governance. Training and awareness programs, appropriate resources and risk champions help to ensure we have the risk management competencies necessary to support effective decision-making across the organization. Ethics are integral to TELUS' risk governance culture and our code of ethics and conduct directs team members to meet the highest standards of integrity in business decisions and actions.

Responsibilities for risk management

We use a multi-step approach to manage risks, with responsibility shared across the organization. The first line of defence is executive and operating management, whose members have integrated risk management into core decision-making processes (including strategic planning processes) and day-to-day operations. We have risk management and compliance functions across the organization, including Finance, Legal,