	Technology Strategy 2018-2022
TO:	**Board of Directors**
MEETING:	February 28, 2018
FROM:	Steven Guiton
PURPOSE	Inform directors about the Corporation's updated Technology Strategy for 2018-2022
DATE	February 14, 2018

SIGNIFICANT POINTS

- The Corporation's Technology Strategy sets out the context, objective, target model, and roadmap that will support the transformation of CBC/Radio-Canada from conventional broadcaster to digital-first media company.
- The plan provides a broad and future-looking technology framework designed to help inform and support the development of Strategy 2025.
- The Technology Strategy was developed by MTIS with the input and collaboration of stakeholders form across the Corporation.
- Over the next few months, MTIS will be working with its media partners to further refine the strategy and ensure that it supports media business plans, content strategies, and Strategy 2025, as it is developed.

APPENDICES

1. CBC/Radio-Canada: Technology Strategy 2018-2022

CBC/Radio-Canada

Technology Strategy 2018-2022

Version 2.1 - February 2018

MTIS ISTM

MEDIA TECHNOLOGY & INFRASTRUCTURE SERVICES

INFRASTRUCTURE ET SERVICES TECHNOLOGIQUES MÉDIAS

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Introduction

CBC/Radio-Canada is in a period of transformation. Fundamental changes in media and consumer technology markets have required broadcasters to develop new content offers and to change the way they operate. These changes form the backdrop of the company's Technology Strategy, which sets out the context, objectives, target model, and roadmap that will guide technology-related decision-making in the years ahead.

This plan is intended to provide clarity of vision and a framework for priority setting, decision-making and business planning over the next five years. Through the collaboration between the stakeholders involved in creating and responsible for delivering on this plan, we will achieve the goals set out in this document and support the transformation of CBC/Radio-Canada from conventional broadcaster to “digital-first” media company.

Strategic Drivers

Digital-first

Several years ago, CBC/Radio-Canada unveiled *Strategy 2020*, a plan to transform the Corporation into a "digital-first" media company. This strategy sets the course for CBC/Radio-Canada to provide a comprehensive, multi-platform news, information and entertainment offering that puts primary focus on "over-the-top" (OTT), mobile and social media as the means of connecting Canadians with their public broadcaster and with each other. The Corporation's digital-first strategy also calls for letting go of the infrastructure, systems and processes that are less necessary in today's world in order to embrace flexibility, scalability, agility, simplicity, and partnership. CBC/Radio-Canada's Technology Strategy is anchored in and designed to further the objectives of our digital-first strategy.

Audience expectations

Social media, mobile devices, OTT services, connected cars, and, most recently, digital assistants and wearable technology have completely disrupted conventional radio and TV broadcasting. Consumers of media today expect an immersive, interactive, responsive social entertainment experience that traditional platforms cannot provide. CBC/Radio-Canada is responding to this new media reality by transforming its content creation and distribution models, and by reshaping the skills and expertise of its content creators. Adapting our technological infrastructure to the new digital ecosystem is critical to enabling our content creators, promoters and sales teams to succeed in this ever-evolving environment.

Employee expectations

Broadcast technology and consumer technology have converged. Consumer technologies have become essential tools for content creation and for content worker collaboration. Our people come to the job with workplace expectations that are based on their experience with consumer technology. They expect and need their workplace tools to operate as well as, or better, than the ones they use in their lives outside of work. This establishes a service expectation that requires continuous effort to meet.

Strategic Objectives

1/ Audience-driven agility

The move to a digital-first programming model calls for a transformation of the products, tools, equipment and systems that CBC/Radio-Canada uses to create, manage, and distribute our content to audiences.

Over the next five years, CBC/Radio-Canada will deploy a new technological backbone that will enable fast and affordable expansion and adoption of future technologies.

More agile operations and infrastructure will allow our content creators to get new products and services to audiences more quickly. It will improve the ability to test and adopt technologies and platforms as they emerge. It will improve workflows, support better collaboration, and allow for more innovative formats and forms. It will, ultimately, allow us to get more stories, from more sources, to more places.

Our new target model (defined in the section below) is anchored on Internet Protocol (IP), cloud, and commercial-off-the-shelf (COTS) technologies. These technologies are inherently more agile, scalable and future-proof than traditional vendor-centric, SDI-based broadcast infrastructure (see Appendix 3 for further information on these enabling technologies). This target model will exponentially broaden our ability to respond to audience expectation and demand.

Projects and initiatives

- Maison de Radio-Canada (MRC) project
- Cloud-based OTT solutions
- Archive digitization
- Remote control rooms
- Containerization and virtualization
-
- Media Asset Management (MAM)
- Very Small Aperture Terminal (VSAT) transmission
- Modernization of newsgathering tools and technology etc)

2/ Sustainability

Balancing finite financial resources with the need to modernize our technology to meet evolving audience expectations and business requirements is a key strategic challenge.

The Corporation must invest in new tools and technology to enable its digital-first strategy while sustaining the operations and infrastructure related to conventional TV and radio broadcast services. Add to this the fact that the IT hardware replacement cycle (5 years) is much shorter than it was for conventional broadcast equipment (10-15 years).

Over the next five years, MTIS will improve its business and capital planning processes, vendor relations, workflows, and organizationational design to ensure the long-term financial sustainability of technology investments.

Also challenging is the rent-instead-of-buy model towards which the media industry is moving. This trend means that CBC/Radio-Canada is becoming increasingly dependent on vendors whose business is shifting from selling hardware, to selling services that generate ongoing, annual subscription-based revenue. The result is that technology support costs are increasing year-over-year, as dollars move from paying in-house support staff to paying external vendor fees.

Projects and initiatives

- Enterprise Resource Planning (ERP) system implementation (beginning with the HR Information System - HRIS)
- Satellite transponder reduction
- Virtualization
- Next Generation Converged Network (NGCN) 2.0 (the fiber optic network that connects all CBC/Radio-Canada facilities)
- Reduction/elimination of legacy applications
- Standardization of data storage services

3/ Cyber Security

Broadcast technology has evolved from dedicated hardware operated by specialists to commercial computing infrastructure understood by the broader IT community. This has exposed media companies to ever-increasing cyber risks.

Ensuring the security and resiliency of our systems, platforms, and applications is an ever-present concern and a top priority for the Corporation's technology teams.

Projects and initiatives

- Gap analysis of broadcast and digital systems
- Deployment of Advanced Threat Analytics System
- Deployment of Advanced Threat Protection
- Deployment of Privileged Access Management System
- Review of governance structures related to security management across the Corporation
- Implementation of revised security policies and protocols
- Employee awareness campaigns

4/ Empowerment

Of employees: Our content creators and overall staff expect and need effective and user-friendly tools that allow them to work efficiently, with more mobility, and provide value-added to their efforts.

Over the next five years, CBC/Radio-Canada will modernize its applications portfolio and create governance structures, policies and processes that support the easy procurement and setup of systems and tools.

Of the organization: In an increasingly "software-as-a-service" (SaaS) environment, teams and departments across the Corporation need a governance and technological framework that allows them to source their own tools and systems while remaining consistent with the Corporation's technology objectives, architecture and security protocols. Systems will be built with the capacity for individual components and departments to quickly self-initiate projects, allowing teams across the organization to quickly ramp up and down system capabilities as required, on a self-serve basis.

Projects and initiatives

- Implementation of workplace strategy as opportunities arise
- Mobility contract renewal
- Google Next Mile
- Enterprise Resource Planning System implementation (which will enable self-service by departments and individual employees)
- WiFi enhancements
- Evaluate and exploit cloud platforms such as Amazon Web Services (AWS), Google Cloud Platform (GCP) and/or Microsoft Azure

Target Model

1/ Digital at the core

- All processes and media products should be built to deliver content to digital devices as the primary target platform.
- We will build our systems optimized for digital and adapt them at the edge to comply with the requirements of the legacy broadcast system.
- We will build systems that facilitate the quick and efficient adoption of technologies and platforms as they emerge.

2/ Audience-driven

- Technology infrastructure will be designed and deployed to enable our business and programming strategies, not dictate them.
- Workflows and interfaces will be designed to enable content creators to focus energy on delivering value to audiences. The burden of complexity will be carried by the systems rather than the user.

3/ Alignment of workflows and platforms

- We will define a standardized workflow for managing the lifecycle of media through our infrastructure.
- MTIS will encourage the use of common platforms and workflow harmonization between services.
- We will reduce the overall number of systems and workflows that must be supported, which will lead to a reduction of operating costs.
- By leveraging equipment pooling, we will increase cost effectiveness and help increase our ability to adapt to market demands.

4/ IP-based broadcast infrastructure

- MTIS will deploy an IP-based infrastructure that will “future-proof” our technological backbone, facilitate the ongoing virtualization and centralization of our our broadcast infrastructure, as well as the potential transition to High-Definition (HD) or Ultra-High-Definition (UHD) radio.

5/ Cloud-first orientation

- MTIS recognizes a general industry orientation towards remotely managed virtual infrastructure and applications, aka cloud solutions.
- MTIS will continue to test the marketplace by assessing the economics of a cloud solution for individual projects, when one is readily available.
- The ultimate decision will be based on overall economic analysis, which may assign a value to flexibility in terms of shorter commitment and reduced risk of stranded capital.

6/ Effective cyber security posture

- /

7/ Virtualized application-based solutions

- / MTIS will prioritize applications-based solutions as the first option to meet our needs.
- / MTIS will assemble a hardened Commercial-Off-The-Shelf computing platform to support the applications layer.
- / Computing resources will be virtualized and shared.
- / Storage will be multi-tiered and centrally managed.
- / Network connections will be redundant and self-healing.

8/ Binary centralization of technology infrastructure

- / MTIS will operate with centralized systems, built around two technology hubs--Montreal and Toronto--to ensure business continuity.
- / End users, nationally and regionally, will access core systems using thin clients, including where possible, mobile applications.
- / MTIS will assess a future model of operations which will consider a prime and backup model with principal operations being centered in Toronto, Montreal or in a cloud environment.

9/ Buy and configure rather than build and customize

- / MTIS will approach business requirements by configuring market solutions, without customization. The burden of proof will be to show that market solutions will not meet the the business needs of the organization.
- / Workflows that cannot be supported by market solutions will be identified to senior management and will be challenged. Customized solutions will require senior executive support.
- / MTIS will develop bridges between systems, using established Application Programming Interfaces (APIs) to execute workflows that reflect the needs of the English and French Services.

10/ No automatic refresh of technology infrastructure

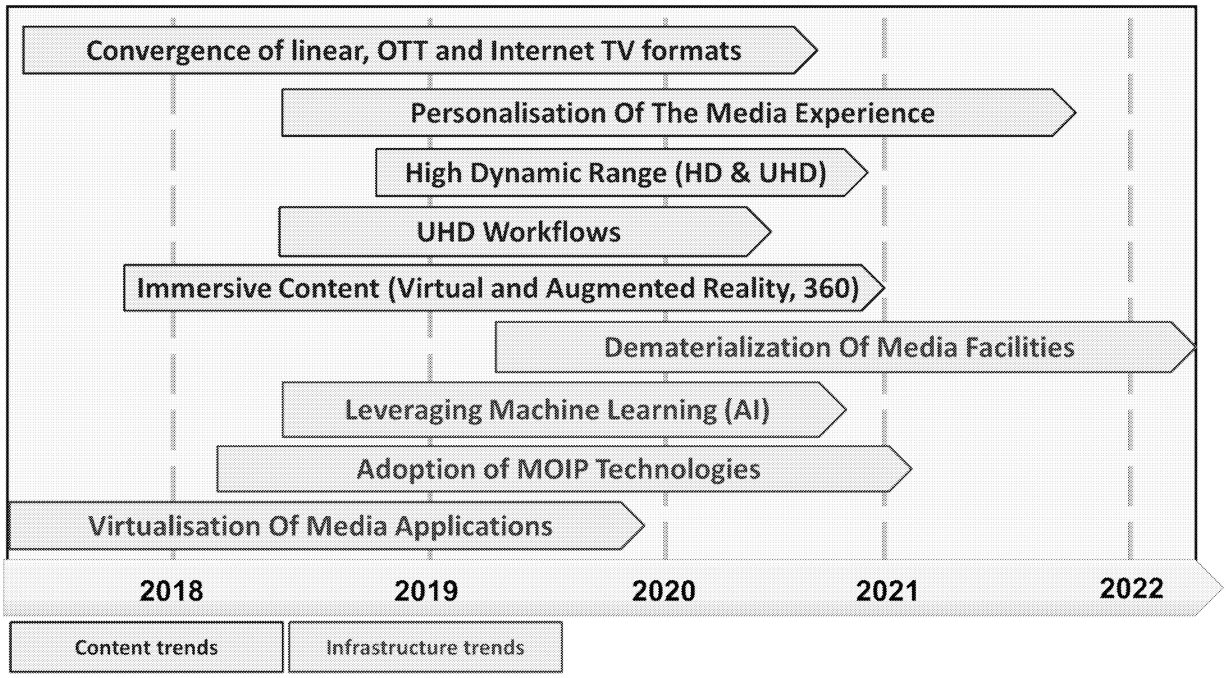
- / Systems will not automatically be refreshed.
- / The continued need for a system or process will be challenged using a zero-based budget approach.

11/ Modernized workplace

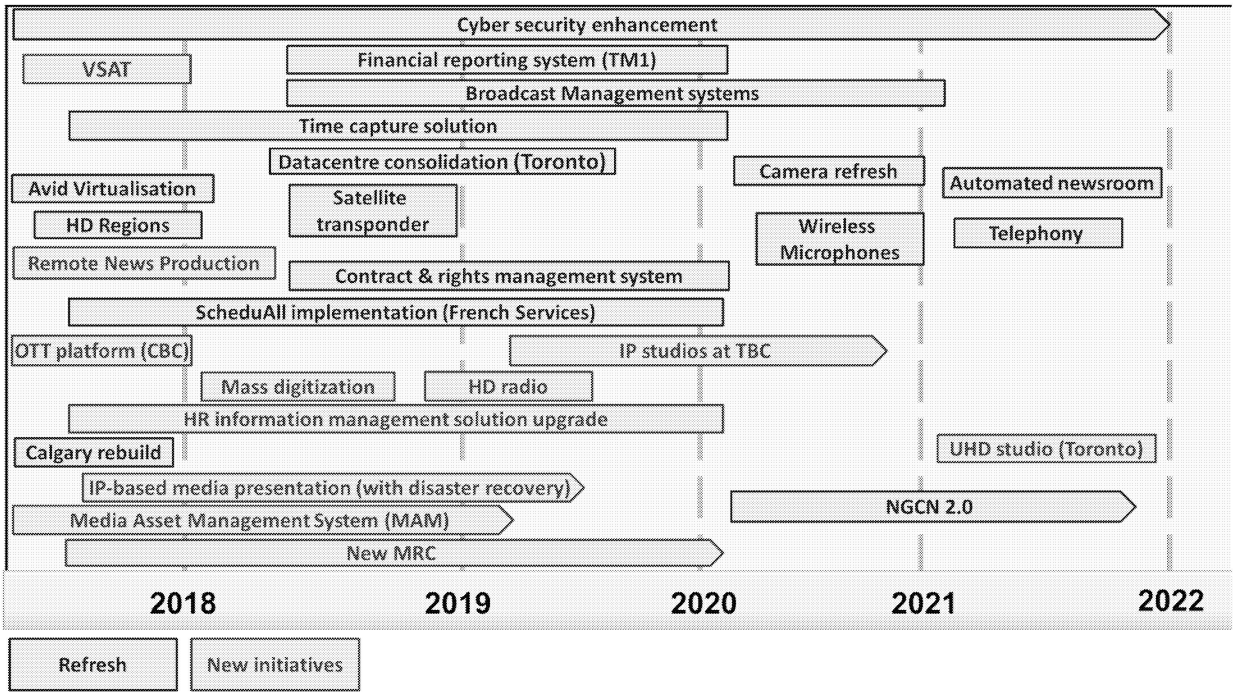
- / We will pursue the implementation of new workplace standards as opportunities arise.

Technology Roadmap: 2018-2022

A- Technologies & Trends



B- Projects & Initiatives



APPENDICES

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3 - Technologies and Trends

4 - Gaps and Challenges

5 - Technology Governance

APPENDIX 1
Technology at CBC/Radio-Canada

1.1 Scope of technology infrastructure

At March 31, 2017, CBC/Radio-Canada's asset base was valued at $2.1 billion. The Corporation's capital asset pool size has been trending downward since 2013 due to production centralization strategies and write-downs of several major assets (i.e. analogue TV, shortwave radio and owned buildings).

The company's infrastructure is purchased and refreshed with an annual capital base budget of approximately $93M, supplemented annually by OPEX to CAPEX transfers and/or asset sales. The total budget for Fiscal 2017/18 is

Technology Infrastructure is managed primarily through the Media Technology and Infrastructure Services (MTIS) Department, which has an annual operating budget of MTIS represents of CBC/Radio-Canada's overall operating budget of (F2017-18).

1.2 Categories of technology

1- Media Technologies

These are the systems and tools with which we:

- Acquire, produce and distribute content (cameras, production vehicles (satellite & microwave trucks), studios, control rooms, editing systems, graphics systems, data centres, presentation systems, etc.);
- Manage our media operations (plan, schedule and monetize content).

2- Enterprise Technologies

These are the tools and systems with which we manage:

- The corporate environment (HR, finance, legal, real estate, regulatory, etc.);
- The end-user environment (messaging, collaboration, endpoint devices, help desks, etc.);
- Information security and information technology general controls

Most of this technology is required today by all companies, in all sectors. There is, as such, a wide range of off-the-shelf solutions available in the marketplace to serve the Corporation's need. That translates into opportunity to improve service, user experience, and functionality at equal or lesser cost to in-house solutions.

APPENDIX 2
The Maison Radio-Canada (MRC) project

A unique strategic opportunity

In April 2017, the Government of Canada approved a project to construct a new state-of-the-art broadcast centre in Montreal. The proposed timeline calls for the new Maison de Radio-Canada to be completed by late 2019, with a move-in date in 2020. The MRC is an ambitious, once-in-a-generation project that will underpin investments in and implementation of technology infrastructure over the next three to five years. It is also, given the blank-slate nature of the project, a unique opportunity to accelerate the replacement of major portions of our legacy infrastructure with new technologies, thereby quickly advancing many of the Corporation's strategic technology objectives.

Modernization and future-proofing of technological backbone

- Full IP-based production infrastructure
- Mass digitization of archives
- Leveraging of cloud-based technologies
- Energy efficiency: reduction of heat island effect; high-efficiency water and energy management

Reduction of technological and real estate footprint

- 418,000 square feet
- One studio and multipurpose sets for the newsroom
- One large, modern, versatile TV studio for non-news production
- One large open-plan multiplatform space
- Seven radio studios
- Consolidated broadcast/IT data centre facilities
- Equivalent to Silver LEED certification

Advancement of workplace strategy

- A dynamic, stimulating, technology-enabled working environment that fosters collaboration and innovation

APPENDIX 3
Technologies and Trends

3.1 Internet Protocol (IP) for Broadcast

What is it?

Originally regarded as an IT-only transport technology suitable for data and email transfer, IP has quickly become the dominant standard for all types of communications. IP transport is flexible, cost efficient, and widely available via IP networks that are now ubiquitous across North America.

IP technology is making it possible for broadcast, media and entertainment production to move away from dedicated equipment - in which specific functions take place on a single piece of equipment and content is moved via Serial Digital Interface (SDI) from device to device - to a virtual environment, in which production can take place anywhere and content can be stored anywhere. The ability to share assets quickly and efficiently on a shared IP network infrastructure can unleash unprecedented collaboration, efficiency and agility throughout the entire broadcast chain.

IP: ready for prime time

Until recently, broadcasters have not considered IP ready to support “mission critical” real-time video services. While IP networks played a role in content acquisition and production processes, they typically were reserved for non-real-time applications. But thanks to recent advances, concerns about IP networks’ ability to support the quality and resiliency demands of real-time video have been addressed. Broadcasters now have the opportunity to leverage IP in order to transform production, post-production, contribution and distribution of core media assets.

Future proofing core infrastructure

The deployment of IP for broadcast also has the strategic advantage of “future proofing” infrastructure. Although challenging and expensive to implement, once an IP-based infrastructure is in place, future upgrades to capabilities no longer require infrastructure upgrades. Access to, and distribution of, content is as simple as connecting the appropriate level of storage and computing capability to the network. As for the imperative to deliver content over

multiple platforms and multiple screens, IP provides a common framework for easily adapting and distributing TV services for any platform or device.

The plan

The design and implementation of IP-based broadcast infrastructure is central to the achievement of the Corporation's strategic goal of enhancing scalability and agility. CBC/Radio-Canada therefore intends to:

- Implement a fully IP-based broadcasting infrastructure at the new MRC.
- Implementation to begin in 2018. Ready for operation in 2020.
- Lessons learned from MRC will inform development of IP-based infrastructure for the Toronto Broadcast Centre.

3.2 Cloud (aka "as a service")

What is it?

It's become very challenging for organizations to keep pace with change and with user expectation by managing and operating all of their technology needs in-house.

Scalable, adaptable and dependable, cloud-solutions have become important levers in delivering CBC/Radio-Canada's strategy to reduce and modernize its infrastructure footprint.

Cloud solutions come in many different flavours:

- Private cloud solutions: in-house, centralized computing infrastructure
- Infrastructure as a Service (IaaS): The most basic external cloud-service model is that of providers offering computing infrastructure as a service to subscribers (think outsourced data centre)
- Software as a Service" (SaaS): A software distribution model in which a third-party provider hosts applications and makes them available to customers over the Internet (think Google applications).

All flavours of cloud offer the same basic advantages:

- Reduce the burden of operating complex, often outdated systems;
- Improve flexibility and scalability of systems;

- Allow faster response to market developments;
- Improve reliability of systems;
- Support Strategy 2020 objective to reduce technology infrastructure footprint.

Cloud solutions do not:

- Eliminate the need to configure solutions to align with CBC/Radio-Canada workflows;
- Eliminate the need to manage the data sets;
- Eliminate the responsibility of setting proper security parameters.

CBC/Radio-Canada's first major foray into the "as-a-service" world was the adoption of Google suite of applications in 2013. Since then, we've successfully integrated several new cloud solutions into our technology ecosystem. Today, CBC/Radio-Canada uses more than 25 cloud-based services. For example:

Media:

- used for spinning up/spinning down big, temporary programming initiatives like election coverage and the Olympics.
- used to distribute our web content.

Enterprise:

- used by the Finance component to manage purchases and invoices, procured goods and track spending.
- used by the People and Culture component to manage the posting of jobs, applications, and support the workflow for hiring.
-

The plan

Scalability

As per our strategic goal to increase the agility and scalability of CBC/Radio-Canada's technological infrastructure, the Corporation intends--given the many advantages cited above--to implement service-based architecture whenever and wherever relevant.

Cost

Despite the advantages, cloud-solutions are not a panacea for all infrastructure challenges facing the Corporation. This is because they come at a cost, and with some security risks which must be properly evaluated and managed on a case-by-case basis. For this reason, the Corporation's roadmap for migrating technology infrastructure to the cloud are different when it comes to enterprise systems and broadcast systems.

Total Cost of Ownership (TCO) remains the key strategic driver for migrating services to the cloud. TCO must include a clear understanding of governance structures, inventory, usage (actual and forecast) and upgrade/replacement roadmap.

Security
Central to our cloud strategy are security considerations. By contracting a SAAS solution, the Corporation remains accountable for its data, even if the SAAS provider becomes responsible for a significant portion of the security aspects. Interfacing our networks with those of our partners also introduce a new factor of risk. IT teams play an important role in providing our security requirements to the provider and ensuring they are enforced.

3.3 Artificial Intelligence and Machine Learning

What is it?

Software-based services that perform judgement based tasks based on related values and prior patterns.

The plan

Initial deployment will be in partially automating and augmenting the media cataloging process. Media recommendation engines and automated digital presentation curation will read electronic media records to select content for audiences.

3.4 Consumer Technology in the Workplace

What is it?

The advancement of consumer technologies has revolutionized the way content is found, shared and consumed.

On the audience side, technologically enabled consumer demand has produced revolutionary changes in the business.

On the production side, consumer technologies have become essential tools for content creation and for content worker collaboration. Capable

now of producing broadcast quality video and audio, consumer-grade smartphones and cameras are changing the newsgathering paradigm. Compact, user-friendly, cheap and effective, they have become a key tool in the advancement of the Corporation's mobile-first strategy.

On the distribution side, continued innovation in digital media forms and platforms continues to provide new ways of reaching audiences. Facebook Live and Snapchat are two current innovations that CBC/Radio-Canada is engaging with.

The plan

The integration of consumer technology tools and platforms into the broadcast chain has become a strategic imperative. This is an ongoing effort that involves creating governance structures, policies and processes that support:

- Easy procurement and setup of digital tools;
- Effective inventory and lifecycle management of devices;
- The integration and alignment of various platforms and devices (i.e. Apple, PC; Android, iOS);
- A secure operating environment.

3.5 Workplace Design

What is it?

In 2017, CBC/Radio-Canada set out to create an enterprise-wide workplace strategy to align the Corporation's values, goals and desired work patterns with the design of the work environment.

This means fostering a workplace that:

- Empowers a collaborative and flexible work culture to promote cross-platform content creation;
- Aligns the work environment with the Corporation's digital-first strategy;
- Facilitates the attraction and retention of top-talent;
- Offers greater choice and flexibility to support individual and group work styles;
- Reinforces and reflects employee pride of being Canada's public broadcaster.

The plan

- Since 2012, the Corporation has introduced new collaborative workspaces in 15 locations, covering about 155k sq/ft, or 4% of the Corporation's real estate portfolio
- Given the prospect of the MRC project and the ongoing re-stacking at the TBC, CBC/Radio-Canada engaged the design and architecture firm Gensler to develop a new workplace strategy for the Corporation.
- Now complete, the new strategy provides an enterprise-wide set of parameters that will guide our workplace design projects going forward.
- Combined, the MRC and TBC projects will result in the implementation of new workplace standards for approximately 6000 employees by 2020.

3.6 Digital Media Supply Chain (aka Workflow Automation)

What is it?

Digital Media Supply Chain (DMSC) is the term used to refer to a complete system that automates, controls and provides visibility in digital file based workflow. DMSC provides the intelligence layer to automate and orchestrate business processes and increase efficiency of our digital pipeline. The addition of a corporate enterprise Media Asset Management (MAM) system to our production systems provides a foundation for DMSC.

Some of the services that can be part of the DMSC:

- File transformation (Video & audio transcoding)
- Quality Control
- Third party services
- File acceleration
- Custom services

DMSC is at the core of our ability to support an ever-increasing demand in digital-file-based workflow and distribution. DMSC increases cost effectiveness by leveraging equipment pooling and helps increase our agility at adapting to market demands.

The plan

DMSC is an ongoing effort for any new services that we implement in file based production. This means fostering a system that:

- Facilitates workflow enhancements
- Increases business driven workflow decision
- Speeds up content automation and processing

APPENDIX 4
Gaps & Challenges

4.1 Financial	
Challenge	**Mitigation Strategy**
Shift from CAPEX to OPEX *Financial management/business planning* The CAPEX/OPEX shift poses challenges from a financial management point of view, particular for governmental/crown corporations who are funded on a CAPEX/OPEX model. Internal dynamics around who pays for what must also be carefully managed. *Governance* The shift to OPEX means that business units throughout the Corporation are increasingly paying their own technology bills, and as a result assuming increased accountability and decision making power of technology systems and vendor selection. Services can be purchased and operated without consulting technology teams, posing risk around security, compatibility and alignment with strategy.	⁄ Create financial policies which recognize the equivalence of recurring service fees and depreciation of comparable capital assets. ⁄ Effective governance structures around technology decision making and investment must be established and enforced, with the support of procurement departments and policy.
Financial sustainability As we move to an increasingly cloud-based model, we become increasingly dependent on vendors. This exposes us to the risk of service cost increases, and support and maintenance cost increases.	⁄ Foster multi-vendor supply models. ⁄ Use common service definitions to prevent vendor lock-in.
Replacement cycle The IT hardware replacement cycle is much shorter than it is/was for conventional broadcast infrastructure. This has a significant impact on capital planning and investment, workload, and operating costs.	⁄ Review depreciation policies ⁄ Stagger replacements to prevent clustered obsolescence date ⁄ Standardization to allow increased purchase lot sizes.

	⁄ Leverage opportunity presented by replacement cycle to enhance disaster recovery capability
4.2 Workforce	
Challenge	**Mitigation Strategy**
Competition for talent Skill sets are shifting from traditional broadcast engineering to a more IT-centric profile. Recruitment (given salary structure, work culture and environments) is a key emerging strategic issue. CBC/Radio-Canada now fishing from the same talent pool as companies like Shopify and Google. It's often difficult to attract the right talent given the deep pockets of the competition.	⁄ Increase attractiveness of a technical career at CBC/Radio-Canada: ○ Compensation ○ Career Path options ○ Technical Recognition ⁄ Implement workplace design strategy to modernize the physical workplace and make it more adaptable to changing technology and work processes. ⁄ Build succession planning, define retention targets, define external renewal targets. ⁄ Identify critical positions; develop departmental succession plans: ○ Maintain a centralized list of key resources; ○ Establish career planning moves to diversify the experience of key talent. ⁄ Enhanced recruitment strategy. ⁄ Strategic placement of postings (trade publications, industry associations). ⁄ Partner with universities and colleges.
Skills inventory profile	⁄ Refresh workforce skills, structure and culture to align with needs of a dominant digital production and distribution model by aligning

	internal structure with emerging industry structure: ○ Mix IT technical knowledge with Media domain knowledge to build an integrated modern media team. ○ Strengthen contract negotiations and management skills ○ Centralize licensing and contract management
4.3 Vendor management	
Challenge	**Mitigation Strategy**
Vendor agility The media/broadcast technology sector remains very vendor-centric. We are as such dependent on the pace at which our vendors evolve their platforms.	⁄ Maintain secondary vendor relationships and keep some internal expertise on alternate offerings. ⁄ Foster relationships with non-competitive broadcasters using common equipment to magnify our influence with key vendors.
Product offerings separation - Applications and Platform The media vendor community is in transition from selling dedicated solutions embedded in custom hardware, to software defined solutions delivered on industry standard computational platforms.	⁄ Alignment of our internal structure will need to continue to adjust to match the industry structure. ⁄ Applications management skills will need to have critical mass and mature. ⁄ Computer and Media Platform skills will converge and become more IP based.

Product pricing shift - Capex to Opex Many vendors are transitioning from selling solutions as a recurring service rather than a capital purchase. The technology vendor community is attracted by the stability of recurring revenue models and is actively working to shift its client base into longer term subscription arrangements.	⁄ Vendors are expected to continue to offer both capital purchase and subscription models. The flexibility of subscriptions to services is attractive but will require a realignment of how we internally account for depreciation and how we budget between capital and operating.
Vendor dependency CBC/Radio-Canada is very dependent on a small handful of technology vendors who supply and update mission critical platforms. This represents a risk. Some industry shakeout is expected during this transition. There are high barriers to exit of a relationship with a vendor. Their systems are deeply embedded in our workflows.	⁄ Maintain the viability of secondary vendors in each product category. ⁄ Maintain access to APIs and data models for all systems to facilitate future migration to alternate platforms. ⁄ Diversifying our portfolio, and moving increasingly towards COTS solutions is a priority. ⁄ Maintain minor network presence of viable alternate vendors: ○ Decouple our technology ○ Promoting cloud solutions, when the economics work ○ Define financial equivalency of Capital Depreciation Expense and Cloud Expense ○ Promote the implementation of COTS systems

APPENDIX 5
Technology Governance

CBC/Radio-Canada created in 2015 MTIS, a new media component responsible for managing all of the Corporation's technical and physical infrastructure. MTIS consists of about 900 employees, located in Toronto, Montreal and Ottawa.

MTIS' **mandate** is to:

- Create consistent media technology and infrastructure decision-making across the company to support content creation and the English Services/French Services programming strategies;
- Marshal CBC/Radio-Canada's resources around making smart technology and infrastructure investments, to the mutual advantage of both programming lines;
- Be more operationally efficient and deliver cost-savings by combining similar activities and common resources in all areas of media technology and infrastructure.

MTIS is also responsible for anticipating the business implications of emerging technologies and influence Corporate decision-making to best position CBC/Radio-Canada for success by preventing stranded investment and missed market opportunities.

MTIS consists of six **departments**:

1- Production Solutions, responsible for:

- Media presentation (content acceptance and preparation; master control, playout including live linear and video-on-demand (VOD) streams)
- Support of technology tools and systems
- Studio, equipment and production vehicle maintenance
- Transmission

2- Engineering Solutions, responsible for:

- Media and network engineering
- Infrastructure architecture
- New broadcast technology assessment
- Project management

3- Application Solutions, responsible for:

- Corporate ERP and HR capabilities
- Media inventory and schedule management
- Media asset management
- Applications architecture
- Application management
- Data management

5- Real Estate Solutions, responsible for

- Workplace and planning solutions
- Project and service tenant management
- Asset management
- Building operations and security management
- Real estate transactions

4- Information Security, responsible for:

- Information security risk assessments
- Vulnerability management
- Risk management and audit support
- Information security architecture (planning and deployment)
- Information security governance (Policies, directives, standards and controls)
- Information security awareness
- Information security monitoring and incident response management
- Disaster recovery planning and testing

6- Business Strategy and Operations, responsible for:

- Technology, Infrastructure and Workplace implementation strategy
- coordinated response to business and client needs.
- coordinating of business continuity and disaster recovery work

APPENDIX 6
Acronyms (Reference Guide)

- **AI:** Artificial Intelligence
- **API:** Application Programming Interface
- **AWS:** Amazon Web Services
- **ATA:** Advanced Threat Analytics
- **ATP:** Advanced Threat Protection
- **BMS:** Broadcast Management System
- **CAPEX:** Capital Expenditure
- **COTS:** Commercial-Off-The-Shelf
- **DMSC:** Digital Media Supply Chain
- **ERP:** Enterprise Resource Planning
- **GCP:** Google Cloud Platform
- **HD:** High Definition
- **HDR:** High Dynamic Range
- **HR:** Human Resources
- **HRIS**: Human Resources Information System
- **IP:** Internet Protocol
- **ISO:** International Organization for Standardization
- **IaaS:** Infrastructure-as-a-Service
- **IT:** Information Technology
- **ITGC:** Information Technology General Controls
- **LAN:** Local Area Network
- **LEED:** Leadership in Energy and Environmental Design
- **MAM:** Media Asset Management
- **MRC:** Maison Radio-Canada
- **MOIP:** Media-Over-IP
- **MTIS:** Media Technology and Infrastructure Services
- **NGCN:** Next Generation Converged Network
- **OPEX:** Operating Expenditure
- **OTT:** Over-The-Top
- **PAM:** Privileged Access Management
- **PaaS:** Platform-as-a-Service
- **SDI:** Serial Digital Interface
- **SaaS:** Software-as-a-Service
- **TBC:** Toronto Broadcast Centre
- **TCO:** Total Cost of Ownership
- **TV:** Television
- **UHD:** Ultra High Definition
- **VOD:** Video on Demand
- **VSAT:** Very Small Aperture Terminal
- **XaaS:** Everything/Anything-as-a-Service