Transforming Health for Everyone:
A Digital Vision for the Faculty of Medicine

Executive Summary

The Faculty of Medicine's vision, 'Transforming Health for Everyone,' is a call to action for faculty and staff to help create 'the pathways to better health for communities at home and around the world'.

Fundamental to realizing this vision is the use of digital technology to enable transformative education and research, which will lead to revolutionary change in health for the citizens of BC and beyond. Current and emerging digital technologies such as advanced data and analytics, mobile applications, cloud solutions, social media, and internet-connected 'smart' devices (Internet of Things) can assist our faculty in making remarkable discoveries and in transforming access to and delivery of healthcare delivery and education.

The Faculty must look beyond traditional 'IT as a service' models to building 'digital capabilities' – utilizing technology as a strategic enabler instead of an operational support function.

To take full advantage of digital technologies, the Faculty must look beyond traditional 'IT as a service' models to building 'digital capabilities' – utilizing technology as a strategic enabler instead of an operational support function. In developing these capabilities, the Faculty must leverage new skill sets and approaches to delivering technology, integrated with and led by faculty and research initiatives.

The shift in focus to digital capabilities is underway at other Universities and Faculties of Medicine. Stanford Medicine has embraced 'digitally driven' as one of three strategic priorities.[1] A 2020 study by EDUCAUSE found that 45% of responding institutions were undergoing a digital transformation or in the process of developing a digital transformation strategy, while another 38% were exploring it.[2]

In consultation with representatives from the Faculty's four strategic pillars (education, research, organization, and partnership), a number of digital capabilities were identified as being critical to the Faculty's vision –

- **Advanced data & analytics**: developing skills in data science to support research and the creation of new training platforms.
- **Educational innovation**: capabilities needed to support emerging pedagogies, such as online and blended learning, and educational technologies including artificial and augmented reality.
- **Differentiated services**: evolving digital services, including general research computing, the distributed educational model, and specialist educational technology and administrative tools.

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[1] Stanford Medicine. Integrated Strategy. [Cited 2020 Mar 19]. Available from: http://med.stanford.edu/isp.html.

[2] Brooks DC, McCormack M. Driving Digital Transformation in Higher Education. EDUCAUSE [Internet]. 2020 Jun 15 [Cited 2020 Jun 15]. Available from: https://library.educause.edu/resources/2020/6/driving-digital-transformation-in-higher-education.

- **IT Optimization**: using core digital services provided by the University such as end-user computing and infrastructure, in order to mitigate risk, ensure availability of key systems, and allow for scalability and adaptability in times of rapid change.

To deliver these capabilities, we must change the balance of activity across the three key modes of technology delivery at the Faculty, moving from a focus on 'operate' (maintaining the existing IT ecosystem and supporting clients) to growing our 'optimize' (improving current services) and 'transform' activities.

To maximize the potential of these capabilities, digital initiatives will be centrally driven by the Faculty in alignment with Faculty and University strategy and governance. Collaboration with partner organizations is critical for aligning on policies, standards, and

Figure 1: Shifting our Focus to 'Transform' and 'Optimize' Activities

technologies to enable access to data, digital tools, and skillsets where vital insights can be made. A new approach for the Faculty's IT model will include –
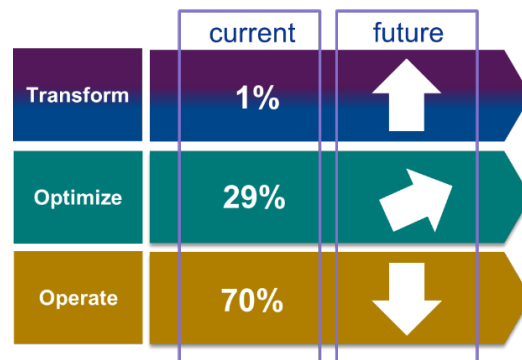
- **Increased use of shared services**: to reduce data security/privacy risk and provide capacity deliver the digital capabilities, the delivery of core IT services such as end-user support, storage, networking, and servers will be transitioned out of Faculty of Medicine units to UBC IT.
- **Centralized digital solutions**: development of a new organization under the leadership of the Deputy CIO Medicine, providing Faculty-wide digital solutions for education and research, strategic oversight for the Faculty's digital capabilities, and coordination with partner organizations and industry to develop new services and tools. This organization will be formed by repositioning and refocusing MedIT.

The new model provides a number of benefits in addition to improved management of security, including: increased consistency in end-user support and digital solutions; shared platforms which provide the foundation for further integration with the health system; and estimated cost savings of $1.5M annually.

In transforming the Faculty to a digitally-enabled organization, we will review and align funding and operating models to support the new approach. A full budgetary analysis and proposal will be undertaken to align with the revised Faculty strategy targeted for fall 2020. In the interim, initial steps have been taken to pilot digital services for research to determine potential cost models. Proposals for work intake and prioritization in line with the Faculty strategy are under preparation.

As a critical intersect for health scholarship in the province, the Faculty is uniquely positioned to take a lead role in facilitating world class-research and education, driven by data and enabled by digital technology. To do so, we must act now to build our digital capabilities and skillsets. Executive sponsorship and support are key to the ability of the Faculty to embrace our new capabilities.

Introduction

The Faculty of Medicine's vision, 'Transforming Health for Everyone,' is a call to action for faculty and staff to help create 'the pathways to better health for communities at home and around the world'. In it, Dr. Kelleher asks us to consider the question, 'How can we be extraordinary together?'

Fundamental to realizing the Faculty's vision is the use of digital technology to enable transformative education and revolutionary change in health. Current and emerging digital technologies such as advanced data and analytics, mobile applications, cloud solutions, social media, and internet-connected 'smart' devices (Internet of Things) can assist our faculty in making remarkable discoveries.

> *How can we be extraordinary together?*
> *– Dr. Dermot Kelleher*

Digital technology is evolving at a pace beyond our imagining even 10 years ago when Graeme Wood wrote, 'Change has never happened this fast and it will never be this slow again.' From how and where we train health professionals and scientists, to how we support research and administrative activities, digital technology is essential for enabling new and enhanced disciplines across the Faculty.

Collaboration technology gives us tools to care for our citizens in their communities even as demographics increase population to health professional ratios. The same technology enables us to train health professionals among the people for whom they will care. Preparing our learners to deliver care via telehealth, as well as discovering ways to enhance its application, will be transformative in care settings. Massive computing power through the cloud, data science, and analytical capabilities allow us to develop insights into health impacts and outcomes

Building on data we and our partners already possess and our own curiosity, we will be able to build models to predict health outcomes and develop new care, therapeutics and precision medicine – leveraging massive investments in quantum computing[3] – enabling us to create new preventative, diagnostic and curative models, transforming how we deliver health and improving the lives of our communities.

In order to realize that vision and answer Dr. Kelleher's question, we must move beyond our traditional 'IT as a service' model and toward supporting our faculty in utilizing 'digital capabilities' – leveraging technology as a strategic enabler instead of an operational support function.[4]

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[3] Gibney, E. Quantum gold rush: the private funding pouring into quantum start-ups. Nature [Internet]. 2019 Oct 2 [Cited 2020 Feb 18]. Available from: https://www.nature.com/articles/d41586-019-02935-4

[4] The difference between 'IT as a service' and 'digital capabilities' can be illustrated by the example of traditional hotel chains versus Airbnb. Traditional hotels use technology to enhance their existing operations, such as enabling online booking. Airbnb has used the capabilities of digital technology to transform the hotel business model: it has the largest number of room listings in the world but only owns a handful of properties.

Background

Imperatives for Change

Significant changes in population, technology and research capabilities, and pedagogy are driving the transformation of healthcare globally.

Changing demographics in British Columbia and beyond will exert significant stress on the healthcare systems for the foreseeable future. British Columbia's population continues to age, with the province's dependency ratio (ratio of non-working to working population) predicted to rise over the next 20 years.[5] Aging and marginalized populations particularly in rural areas will need enhanced healthcare while retirement rates of health professionals will further reduce practitioner to population ratios.[6] British Columbia faces additional challenges due to vast land areas and geographical remoteness, exacerbating the issue of underserved communities.

At the same time, expectations of people regarding healthcare continue to evolve. Access to online, mobile, social, and video-enabled technology and their ease of use is driving acceptance and expectation of virtual- and tele-health[7], with a recent study indicating that two-thirds of Canadians would use virtual care if it was provided in their employee benefit plan.[8]

> *The need for institution-wide skills in data and analytics will be a defining feature of the future higher education workforce.*
> *— Christopher Brooks & Mark McCormack*

Digital technologies are creating new opportunities in research and health. Electronic health record implementations, such as the Clinical & Systems Transformation[9], continue to increase the amount of health data across the province. The emergence of analytics and data sciences – the combining, analysing, modelling and visualizing of data – has the ability to augment the capabilities of the Faculty's world class research community. The Strategy for Patient-Oriented Research, the BC SUPPORT Unit, and other initiatives are working to increase patient-oriented research.[10] With advances in 'multi-omics' (genomics, proteomics, metabolomics, etc.) and the proliferation of data sources, there is significant opportunity to deliver insight into the cause and potential therapies for disease, and ultimately for the creation of precision health and translational medicine. In a 2020 study for EDUCAUSE, Christopher

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[5] BC Stats. People 2013: BC Sub-provincial Population Projections [Internet]. 2013 Sept 12 [Cited 2019 July 5]. Available from: http://www.bcstats.gov.bc.ca/

[6] Hedden L, Lavergne MR, McGrail KM, Law MR, Cheng L, Ahuja MA, Barer ML. Patterns of physician retirement and pre-retirement activity: a population-based cohort study. CMAJ [Internet]. 2017 Dec 11 [Cited 2019 July 5]; 189(49): E1517-E1523. Available from: http://www.cmaj.ca/content/189/49/E1517

[7] American Hospital Association. On-demand virtual care is rising…and so are consumer expectations. [Cited 2020 Feb 3]. Available from: https://www.aha.org/aha-center-health-innovation-market-scan/2019-10-28-demand-virtual-care-rising-and-so-are-consumer.

[8] Canadian Healthcare Technology. Majority of Canadians eager to use virtual visits. 2018 Dec 19 [Cited 2020 Jul 10]. Available from: https://www.canhealth.com/2018/12/19/majority-of-canadians-eager-to-use-virtual-visits/.

[9] Clinical & Systems Transformation. About CST. [Cited 2020 Mar 18]. Available from: http://cstproject.ca/about-cst.

[10] PopData BC. The BC Support Unit and Strategy for Patient-Oriented Research. [Cited 2020 Mar 18]. Available from: https://www.popdata.bc.ca/projects/BCSUPPORTUnit.

Brooks and Mark McCormack, state that 'the need for institution-wide skills in data and analytics will be a defining feature of the future higher education workforce.'[11]

The increased reliance on digital technologies and data for health and research comes with an increased vulnerability to cybersecurity risks. The COVID-19 pandemic has seen warnings from the Canadian government regarding potential cyber-attacks focused on gaining intellectual property such as medical research or the use ransomware to withhold critical medical/research data until a ransom was paid.[12]

The training of health practitioners is also undergoing a significant shift. A move to team- and competency-based training methods are driving a need to develop new models of educational delivery. New approaches to training are being seen as a response to changing demographics: life-long learning, micro-credentialing and blended and online learning are emerging as tools for the Ministry of Advanced Education, Skills & Training to achieve its Service Plan.[13] Additionally, in response to the Truth and Reconciliation commission, the Faculty of Medicine has committed to increasing the accessibility of training on culturally safe practices, and creating opportunities for health professional education in Indigenous communities.[14] Learners expectations are also changing: a 2017 survey by Ellucian found that three quarters of college students want their colleges to use personal information to customize their educational experience, and 87% considered the "tech savvy" of their college when applying.[15]

Universities and Faculties of Medicine in North America are embracing these changes and transitioning to digitally-enabled organizations. Stanford Medicine has embraced 'digitally driven' as one of three strategic priorities.[16] The 2020 EDUCAUSE study found that 45% of responding institutions were undergoing a digital transformation or in the process of developing a digital transformation strategy, while another 38% were exploring it. The study also identified COVID-19 as accelerating factor: 'What [COVID-19] has done…is move colleges and universities into digital transformation faster and more directly than we could have ever imagined.'[17]

> *What [COVID-19] has done…is move colleges and universities into digital transformation faster and more directly than we could have ever imagined.*
> *– Karen Wetzel*

[11] Brooks DC, McCormack M. Driving Digital Transformation in Higher Education. EDUCAUSE [Internet]. 2020 Jun 15 [Cited 2020 Jun 15]. Available from: https://library.educause.edu/resources/2020/6/driving-digital-transformation-in-higher-education.

[12] Canadian Centre for Cyber Security. Cyber Threats to Canadian Health Organizations. [Cited 2020 Apr 9] Available from: https://www.cyber.gc.ca/en/alerts/cyber-threats-canadian-health-organizations

[13] Ministry of Advanced Education, Skills and Training. 2019/20 – 2021/22 Service Plan. Feb 2019 [Cited 2020 Feb 4]. Available from: https://www.bcbudget.gov.bc.ca/2019/sp/pdf/ministry/aest.pdf.

[14] UBC Faculty of Medicine. The UBC Faculty of Medicine Response to the Truth and Reconciliation Commission of Canada Calls to Action. Draft document [Cited 2020 Feb 4].

[15] Ellucian. Students are Looking for Personalized Digital Experiences. [Cited 2020 June 29]. Available from: https://www.ellucian.com/assets/en/white-paper/whitepaper-students-are-looking-personalized-digital-experiences.pdf

[16] Stanford Medicine. Integrated Strategy. [Cited 2020 Mar 19]. Available from: http://med.stanford.edu/isp.html.

[17] See reference 10.

The Faculty's vision of transforming health for everyone recognizes these drivers of change, and the need to harness them in order to fulfil our contract with society. Among the actions the Faculty is proposing take are: the establishment of a new Academy for Translational Medicine, which aims to use a cross-disciplinary approach to reduce the time required to move discoveries through the development pipeline and into the clinic; the development of Medicine 1 (MED-1), a new flagship building at the UBC Vancouver Campus which will expand the Faculty's capacity to drive interdisciplinary translational research initiatives; and the adoption of a new a Clinical Education Support Network to enhance our ability to provide high-quality clinical education in a way that is sustainable for preceptors. Defining the digital capabilities required for these transformative activities is critical to enabling the Faculty to deliver on its vision.

Visioning Process

The process of defining a digital vision started by developing a deeper understanding of the goals for each of the Faculty's four strategic pillars – education, research, organization, and partnership. Focus groups and interviews were held for each pillar involving participants from across the

Figure 2: Digital Vision Development Process

Faculty who were nominated by the Dean's Executive and IT Committee.[18] Sessions explored current and possible future states, and were focused on desired outcomes not possible technology solutions.

Following these sessions, a second set of consultations was held with IT leadership representatives from UBC[19], including the Faculty of Medicine and Office of the CIO. These sessions focused on how digital technologies could help enable the outcomes identified in the pillar sessions.

The findings from both sets of consultation sessions were then used to formulate the digital vision presented in this document. A summary of the consultation findings can be found in the next section.

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[18] Forty-two people participated in pillar focus groups and interviews, representing 22 Faculty of Medicine units and 3 University groups. All regional sites were included, as were the medical program, health professions, departments/schools, research centres, learners, and central administrative units.

[19] Twenty-two people participated in the IT leadership sessions, including representatives from the Faculty of Medicine, Office of the CIO, UBC IT, UBC Library, Centre for Teaching Learning & Technology, Enrolment Services, and Development & Alumni Engagement.

Consultation Findings

Of particular interest was the consistency in desired outcomes across the four strategic pillars. Key themes that emerged included:

- **Importance of the individual** – both the patient and people who are healthy – in formulating our digital capabilities;
- Need for **collaboration** across the Faculty, University, and our health and academic partners;
- Criticality of **data and analytics**, including the importance of information flow and sharing across organizational boundaries;

Figure 3: Selected Themes from Pillar Consultations

- Opportunities to support creativity and risk-taking to enable **innovation**;
- Desire for our professionals (e.g., researchers, educators, clinicians) to spend **less time negotiating administrative complexity**, enabling more time to focus on their areas of expertise; and
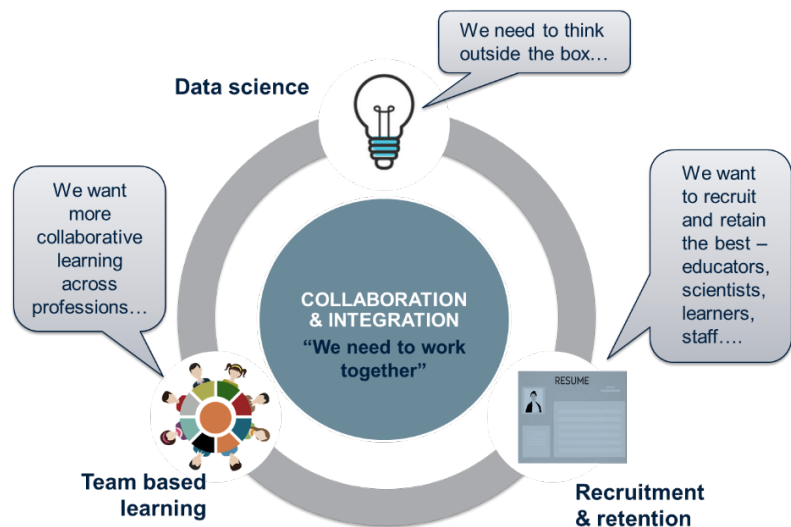- Need to ensure that stakeholders have **access to the tools** they required to do their work.

Key themes from the consultation sessions are described in greater detail in Appendix A. These findings formed the basis of the digital capabilities presented in the next section.

Building Our Digital Capabilities

Transforming health starts with supporting our learners as they become health professionals, researchers and thought leaders in their fields. Translational and precision medicine will be based on insights gained by our world class researchers, utilizing data platforms built in collaboration with our partners.

One of the most pressing priorities for our Faculty is to develop our capabilities in end-to-end health science data and analytics – integrating the journey from pure science to commercialized health offerings, and measuring the impact of both our educational and research initiatives on health outcomes.

Meanwhile we need to be at the forefront in the delivery of teaching and learning through multiple channels and formats, simulating real life environments and interactions.

The development of new collaborative models and use of digital tools is imperative – working with our peers in multidisciplinary modes, and with partners within and outside our own institution. In order to be able to share and integrate our processes we must unify policies, standards and practices, developing trust relationships and leveraging core expertise across the institution and beyond. We also need to utilize technology to enhance our communications and collaboration.

Digital Capabilities

The Faculty's future digital capabilities can be grouped under four main categories: advanced data & analytics, educational innovation, differentiated services, and optimized IT.

ADVANCED DATA & ANALYTICS

We will leverage advanced data & analytics tools to build foundational and advanced health data skills at the Faculty, supporting research and the creation of training platforms for the future. As a Faculty we will develop deep capabilities in data science: data modelling, artificial intelligence, predictive analytics, machine learning, and data visualization. In close alignment with the Strategy for Patient Oriented Research, PopData BC, Advanced Research Computing (ARC), Office of the Vice President Research and Innovation (VPRI), health authorities, Ministry of Health, and UBC Health, we will work to create prototypes to support our key research.

Figure 4: Digital Capabilities for Transforming Health

EDUCATIONAL INNOVATION

We will build on our expertise in developing health professionals in the communities where they are needed, and our skills in simulation and augmented and virtual reality. In collaboration with the Hackspace for Innovation and Visualization in Education (HIVE), Centre for Teaching, Learning and Technology (CTLT), Emerging Media Lab (EML) and the Ministry of Advanced Education, Skills & Training, we will work to develop blended, online, team-based and interprofessional offerings as well as training methods for telehealth in order to support the learning and care needs of our communities.

DIFFERENTIATED SERVICES

We will continue to evolve specialized digital services at the Faculty of Medicine; services which cannot be provisioned centrally, delivered in collaboration with our academic and health authority partners. These include general research computing, our world-class distributed educational model, specialized educational technology, and specialist administrative tools. We will extend and expand those specialized services and develop new operating models to support those services as they become established. We will build any differentiated services off core capabilities in order to leverage best practice (see Optimized IT below).

OPTIMIZED IT

We will utilize the digital capabilities of the University as far as possible in order to mitigate risk, reduce the resource and cost overhead in provisioning core IT activities, and allow for scalability and adaptability in times of rapid change.[20] Core capabilities include foundational administrative systems
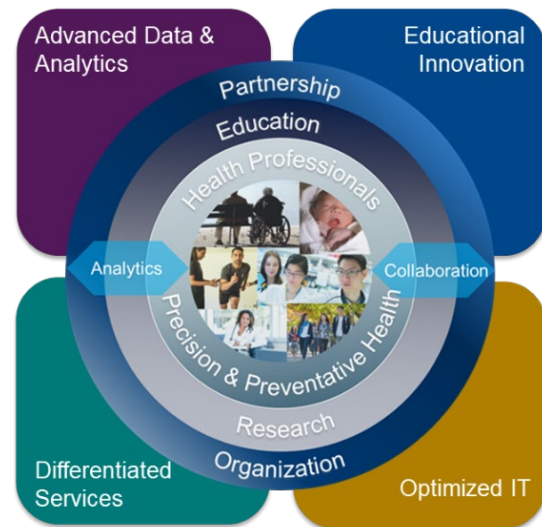
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[20] An example of the rapid scalability of core IT capabilities is the selection and implementation of Zoom as UBC's conferencing tool at the start of the COVID-19 pandemic. The University was able to move quickly to secure a tool for the entire University and the overall cost was likely lower than if licenses had been purchased by units individually.

(Workday, SalesForce, Enterprise Maintenance Management System, Mulesoft), research & educational technology (Digital Research Infrastructure, Canvas, Tableau, Redcap), end-user computing (desktop & laptop) and infrastructure (networking, data storage, Zoom). We will rationalize our digital portfolio – reducing duplication of applications and services, focusing on differentiators, and moving undifferentiated services to the most appropriate support model.

Increasing Transformational Activity

To deliver the digital capabilities outlined above, we must change the balance of activity across the three key modes of technology delivery at the Faculty. IT is currently focused primarily on 'operate' (maintaining the existing IT ecosystem and supporting clients) with some 'optimize' (improving current services) and a small amount of 'transform' activities. This balance of activity reflects the positioning of IT as a service provider. To enable our digital capabilities, we must increase both 'transform' and 'optimize' activities and decrease 'operate' activities.
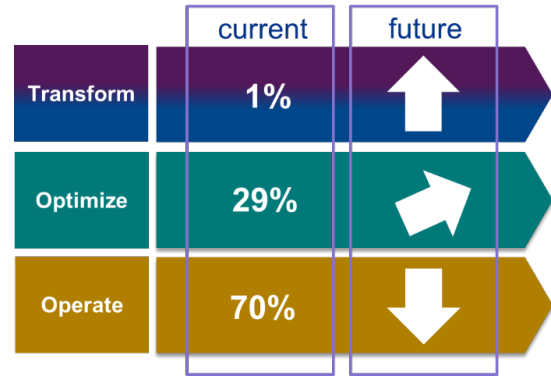

Figure 5: Shifting our Focus to 'Transform' and 'Optimize' Activities

Strategic Objectives: First Two Years

In the first two years, development of the Faculty's digital capabilities will focus on the strategic objectives shown in Figure 6 and described below.
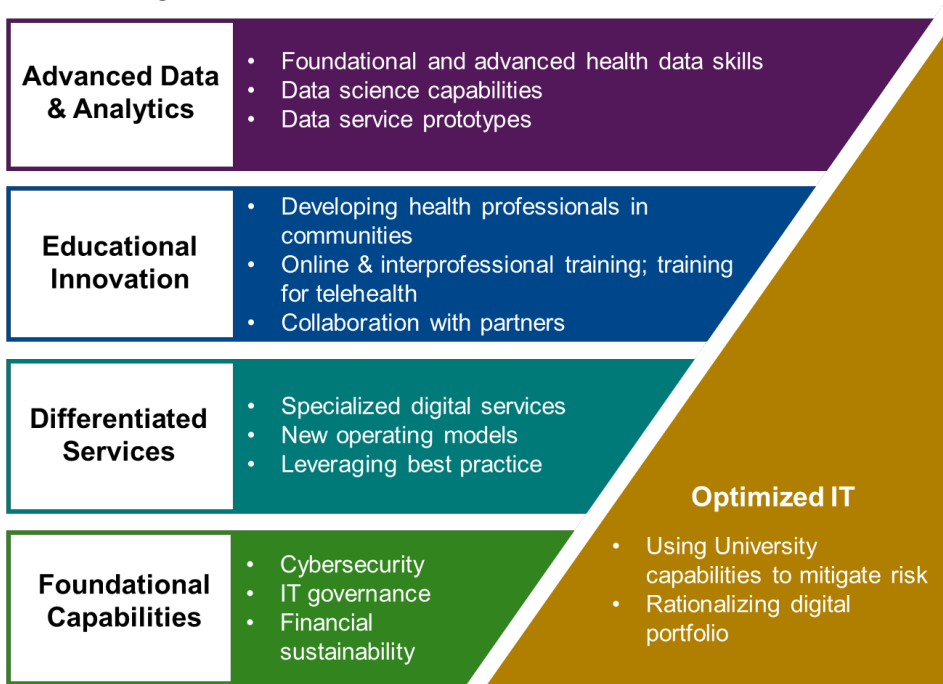

Figure 6: Strategic Objectives for the First Two Years of the Digital Vision

ADVANCED DATA & ANALYTICS

- Build **foundational and advanced health data skills** at the Faculty, supporting research and the creation of training platforms for the future.

- Develop deep capabilities in **data science**: data modelling, artificial intelligence, predictive analytics, machine learning, and data visualization.
- Create **data service prototypes** to support our key research in close alignment with the Strategy for Patient Oriented Research, PopData BC, Advanced Research Computing, health authorities, Ministry of Health, and UBC Health.

EDUCATIONAL INNOVATION

- Build on our expertise in developing health professionals in the **communities** where they are needed.
- Develop blended, **online**, team-based and **interprofessional** offerings as well as training methods for **telehealth**.
- Support the learning and care needs of our communities in **collaboration** with HIVE, CTLT, EML and the Ministry of Advanced Education, Skills & Training.

DIFFERENTIATED SERVICES

- Continue to evolve **specialized digital services** which cannot be provisioned centrally: general research computing (GRC), support for the **distributed educational model**, specialized educational technology, and specialist administrative tools.
- Develop **new operating models** to support those services as they become established.
- Build differentiated services off core capabilities in order to leverage **best practice**.

FOUNDATIONAL CAPABILITIES

Establish the foundation required for the digital vision, including:

- Reduce and manage **cybersecurity** risk to the Faculty.
- Align **IT governance** across all organizational units in the Faculty of Medicine.
- Ensure **financial sustainability** of the digital vision.

OPTIMIZED IT

- Utilize the digital capabilities of the **University** as far as possible in order to **mitigate risk** and reduce the resource and cost overhead in provisioning core IT activities.
- **Rationalize** our digital portfolio – reducing duplication of applications and services, focusing on differentiators, and moving undifferentiated services to the most **appropriate support models**.

Critical Success Factors

In changing our focus from an IT service model to a digital capabilities model we cannot succeed without changes to our current paradigm. Our critical success factors include –

- **Faculty sponsorship**: Initiatives must be driven by the Faculty, with clearly defined strategic oversight and governance, a direct link to a strategic action item, and then completed as a partnership between the Faculty and IT. This is in contrast to our current IT-driven approach where requests are passed to IT and then implemented without a strong connection to strategic objectives or Faculty leadership.
- **A culture of collaboration**: Working with our peers at every level at the institution as well as across our partner organizations. This collaboration will include developing trust relationships particularly

in relation to data privacy and security so we can align policies, standards, and technologies to enable us to build our digital capabilities. We will enhance our existing partnership forums – such as the Joint Advisory Committees between UBC and the health authorities – with additional working groups to target specific topics. An engagement strategy must be developed to ensure that discussions are coordinated and remain aligned. Figure 7 shows some of the groups that are and will need be involved in the development and delivery of these capabilities.
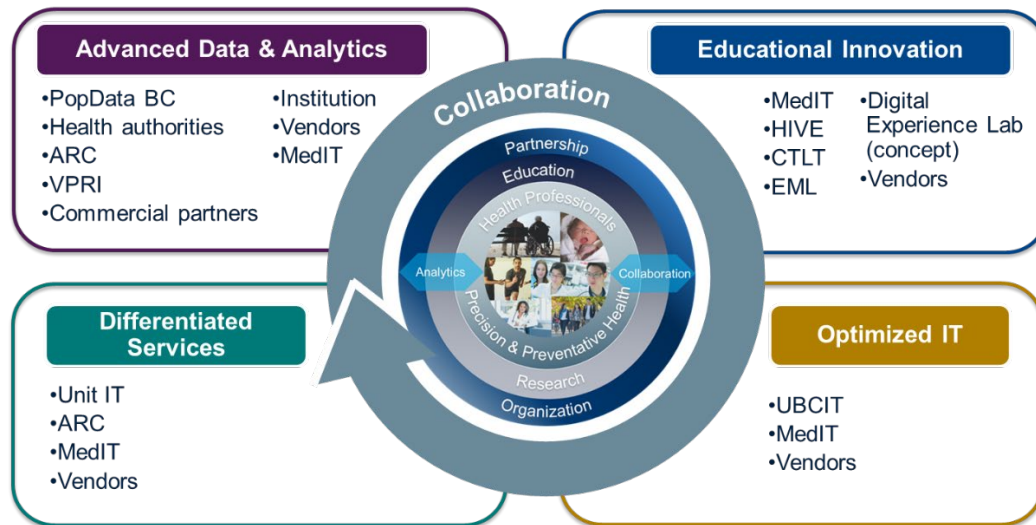

Figure 7: Key Stakeholders in the Delivery of Digital Capabilities

- **Clear governance:** Technology investments are subject to UBC Capital Projects Policy FM 11[21] and must align with Faculty strategic initiatives. In addition, technology must be designed and implemented following UBC's enterprise architecture principles[22] and meet information security standards such as those outlined in UBC Information Systems Policy SC14[23].

- **Risk management/mitigation:** Learner, patient, faculty, and staff personally identifiable information is subject to Provincial[24] and Federal[25] legislation. Research discoveries and insights developed by our Faculty and institution are valued intellectual property while running our research groups commands significant financial investment. To protect our digital assets and financial position as well as our institutional reputation, security, privacy, and data ethics disciplines will be developed and managed within the Faculty. Importantly, these disciplines must be seen as responsibilities for the entire Faculty, not specifically IT. We will develop a cybersecurity plan that outlines roles, accountabilities, and approaches to meeting UBC's standards. Leadership will need to commit to ensuring that the systems used by their units follow UBC security requirements. Finally, regular audits will be required to help identify security enhancement opportunities.

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[21] UBC Capital Projects Policy: https://universitycounsel.ubc.ca/files/2019/08/Capital-Projects-Policy_FM11.pdf
[22] UBC Enterprise Architecture - General Principles. Approved by the Architecture Review Board February 2019.
[23] UBC Information Systems Policy: https://universitycounsel-2015.sites.olt.ubc.ca/files/2019/08/Information-Systems-Policy_SC14.pdf?file=2013/06/policy104.pdf
[24] BC Freedom of Information and Public Privacy Act (FIPPA): https://www.oipc.bc.ca/about/legislation/
[25] Personal Information Protection and Electronic Documents Act (PIPEDA): https://www.priv.gc.ca/en/privacy-topics/privacy-laws-in-canada/the-personal-information-protection-and-electronic-documents-act-pipeda/

Moving from IT to DigITal

Refocusing the Faculty toward delivering optimized services and transformational digital capabilities will entail significant change from our current IT model.

Current IT Model

While the Deputy CIO Medicine has cross-Faculty accountability for IT, IT services and support at the Faculty are largely decentralized. Current IT capabilities are delivered from three areas: UBC IT, MedIT, and IT in Faculty units.

UBC IT

UBC IT is the University's central group that provides IT applications, infrastructure, and support services. Their focus is primarily on 'enterprise' technology and tools that are used University-wide.

Almost all core IT, including infrastructure and end-user support services, for the Dean's Office, education, and administrative units have been transitioned to UBC IT. However a large number of departments continue to support their own infrastructure (e.g., servers, data storage, and end-user support) or utilize local providers. For example, while almost all (>90%) administrative units have signed up for shared end-user support, only 30% of administrators in academic departments and 20% of research labs currently receive some central support.

MEDIT

MedIT is the largest organization within the Faculty (c.65 employees) and primarily provides support for the medical education programs (UGME & PGME) and administrative units. The group is currently aligned along traditional IT functional lines:

- **Infrastructure**: The 'Core Technologies' team was originally responsible for helpdesk, desktop support and maintaining Faculty-specific infrastructure, including networks and servers, for the Dean's Office and Medical Education Program. Most of this functionality has now been transferred to UBC IT, although systems administration capability remains in MedIT. The 'Collaboration' team supports the Faculty's videoconferencing capability enabling the distributed educational model, with renewal of videoconferencing rooms and equipment being completed by staff that have moved to UBC IT.
- **Applications**: The 'Architecture & Applications' group supports a portfolio of applications for the Undergraduate and Post Graduate Medical Education Programs, and well as applications in support of Faculty administration (e.g. MedNet).
- **Educational Technology:** The 'Ed Tech' team currently focuses on video production and educational innovation (augmented/virtual reality, volumetrics, etc.) but also delivers instructional design and educational consultation services.

IT IN FACULTY UNITS

The Faculty units that have not signed up for shared support source their own IT, with the majority using in-house resources. Initial analysis of UniForum results (2019) indicates that a significant number of resources in Faculty units are currently provisioning IT services, amounting to c. 60 FTEs worth of work by over 140 people. These people primarily support research with core services such as end-user support, and server and storage support and maintenance. Clinical faculty are largely supported by health authority services, however there is significant dissatisfaction with the service levels achieved,

and as a result there is a waiting list for Departments to 'onboard' with UBC IT. Moving some of this work to shared support represents a significant opportunity to reduce security risk and to free resources to work on the Faculty's digital capabilities.

Moving to DigITal

The existing IT groups in the Faculty must evolve in order to support our digital capabilities. One key change is transitioning to shared services wherever possible, enabling existing staff to focus on differentiated capabilities. The second key change is establishing a truly Faculty-wide group to provide shared digital solutions for health. In this model, UBC IT continues to play a critical role in providing core services. Figure 8 demonstrates this model, which is described further below.
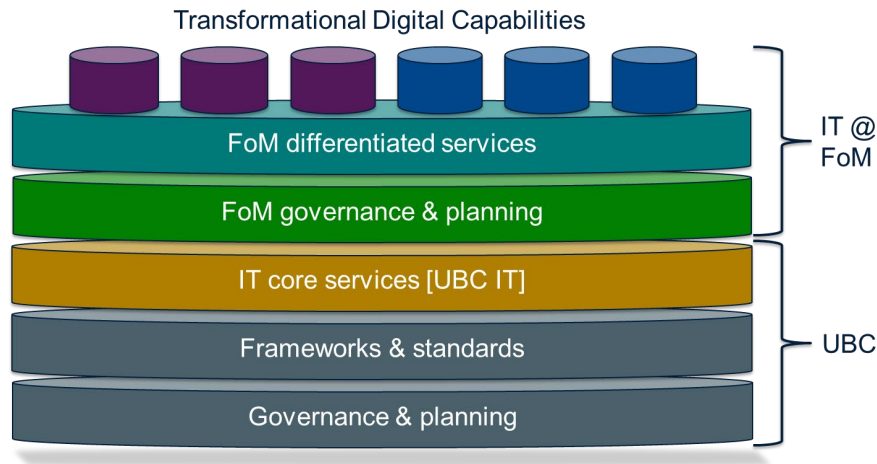

Figure 8: Operational Model to Support Faculty Digital Capabilities

PROMOTE THE USE OF SHARED SERVICES

In this model, shared services are provided by two sources: UBC IT and a new Faculty-wide digital solutions organization. Core services, such as end-user support, storage, networking, and servers, have been migrated from units to UBC IT. Units are able to make use of specialized digital health services shared across the Faculty and delivered by the new digital solutions group. IT staff in units have been redeployed to focus on other activities.

The Faculty benefits from the increased use of shared services in a number of ways. Importantly, shared services strengthen our ability to manage data security risk by ensuring that systems meet security guidelines, are actively monitored for threats, and are updated to address emerging security issues. Shared data platforms and data management standards are foundational for further integration with the health system. IT staff can be refocused toward more strategic objectives such as achieving the Faculty's digital priorities, and more career opportunities for staff improve the UBC's ability to maintain and grow talent in a competitive market. Potential savings in moving to a shared services model are estimated at $1.5M annually, which represents a cost reduction of 33% from providing core services through the Faculty.

Executive support is required for the shift to shared services and to enable the Faculty to see the full benefits and cost savings of this model. Significant financial and organizational analysis will be

undertaken to determine the full impact of transitioning core services out of units before embarking on this realignment across the Faculty.

BUILD A CENTRALIZED DIGITAL SOLUTIONS ORGANIZATION

In the new model, a centralized digital solutions group serving all Departments, Schools, Research Centres and administrative units across the Faculty is focused around three main streams –

- **Education**: including innovation and education delivery.
- **Research**: including computing, data tools, and specialized lab support.
- **Administration**: including collaboration tools, clinical engagement, and differentiated administrative services.

Additionally, the group provides strategic oversight capabilities that are critical for ensuring ongoing alignment with the Faculty, enabling the digital solutions group and Faculty to work in partnership. Strategic oversight capabilities include management of business and partner relationships, security and data privacy, work intake and prioritization, and governance. The digital solutions group reports to the Deputy CIO Medicine, and will be created by refocusing the Faculty's IT service-focused organization, MedIT, toward meeting our digital needs.
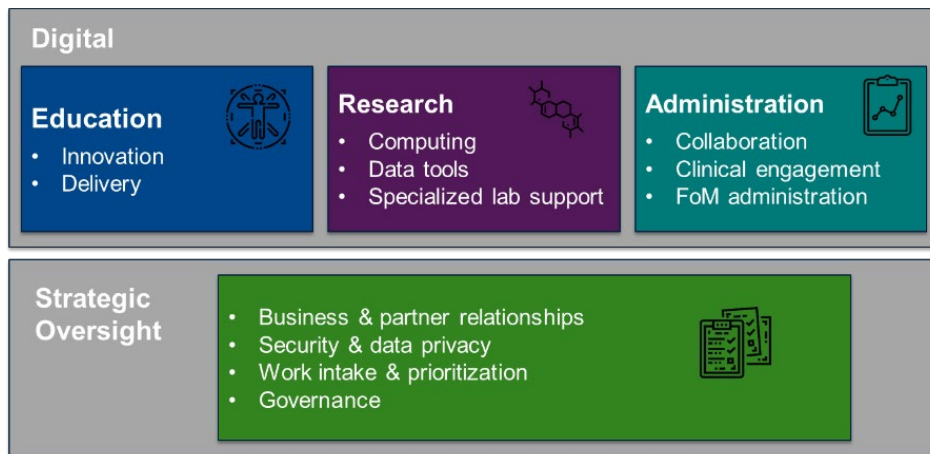

Figure 9: Capabilities of Centralized Digital Solutions Group

A key to enabling this centralized group will be a critical examination of funding. Currently a significant amount of MedIT's funding is restricted to activities that support education. Revision of the funding models will need to be closely analyzed to enable the central digital solutions group to provide Faculty-wide solutions. Operating cost efficiencies can be achieved by rationalizing the MedIT and administrative applications portfolio, and by continuing to optimize core IT services through the use of Institutional resources.

Initial Actions: IT Operational Plan for 2020/21

The COVID-19 pandemic has accelerated the implementation of the digital vision, substantially progressing some components in a matter weeks instead of years. The IT operational plan for fiscal year 2020/21 will see the continuation of activities in response to the pandemic, including the move of educational programs to online delivery, development of data sciences capabilities, and rollout of new collaboration tools. Other activities to support the digital vision will continue or commence, such as the formalization of general research computing services and the rationalization of learning and administrative tools. Figure 10 provides a timeline of key digital initiatives for the 2020/21 fiscal year.
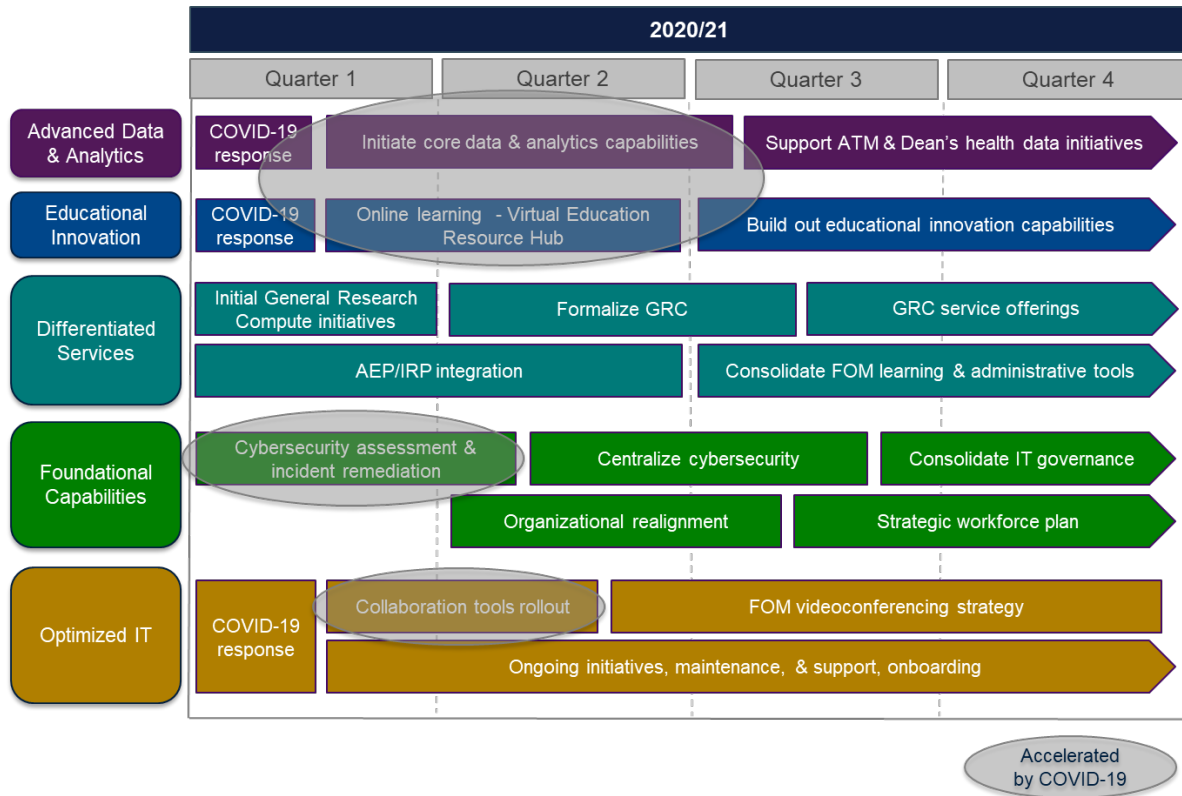

Figure 10: Initial Actions for Building the Faculty's Digital Capabilities - IT Operational Plan for 2020/21

Conclusion

Developing the Faculty's digital capabilities is imperative to 'transforming health for everyone' and to enabling us to be 'extraordinary together.' As a critical intersect of health scholarship in the province, we are uniquely positioned to take a lead role in facilitating world class-research and education, driven by data and enabled by digital technology. To do so, we must act now to build our digital capabilities and skillsets.

Capabilities in advanced data & analytics, education innovation, differentiated services, and optimized IT will provide a new digital foundation for the Faculty that will increase our ability to collaborate and innovate. Supported by a new IT model focused on shared services and Faculty-wide digital solutions, our educators, researchers, and learners will have new resources available to them for their health transformation journeys.

Transforming health is a cyclical process: discoveries in research will lead to new ways of training health professionals and new approaches providing care; new models of education will advance health and inspire new researchers. Developing the digital foundation needed by the Faculty today will set the stage for future discovery and further transformation.

Appendix A: Consultation Themes

The following table outlines themes from consultation sessions held at the beginning of the digital visioning process.

Theme	Description
Collaboration & integration	Participants envisioned an integrated organization that works collaboratively internally and with partners to enable team research and development, shared problem solving, and ultimately, seamless health care.
Data: access & usability	The ability to access data and make it meaningful are huge opportunities for the Faculty. Current challenges include data silos which are created by inconsistent standards, and policies meant to protect privacy. We also need expertise within the Faculty to help us make use of data (such as data visualization and analytics experts).
Technology in care & team-based learning	There was a desire to increase the training provided to health care providers at all stages of their career on how to use technology and data in their practices. Examples included training on virtual care, heath informatics, and clinical data management. Participants also envisioned team-based training that would be delivered across the province in a way that made it more accessible for learners in smaller communities.
Technology & support for research	Participants expressed the need to increase the support available to researchers. Researchers are often left navigating complex processes and organizational systems which takes their time and focus away from their work. Examples include difficulties in setting up labs and problems accessing resources across university and health authority environments.
Recruitment & retention	The recruitment and retention of learners, scientists, educators, and staff was a key theme across the different pillars. There was concern that UBC could either fail to attract or could lose learners, scientists, educators, and staff due to the challenges of operating in such a complex environment.
Shared goals & governance	Shared goals and appropriate governance are seen as critical to enabling the Faculty's partnerships with our academic and health care partners. Governance included defining clear roles and responsibilities which will help build trust.

Theme	Description
Innovation & emerging technologies	Groups identified the need to support creativity and risk-taking to enable innovation and allow the Faculty to leverage emerging technologies. Specifically mentioned was encouraging "good disruption" and developing new ways of teaching and operating.
Managing risk	Increased access to data is desired, but this also brings increased risks of improper management and data breaches. There is a desire to put in place resources to ensure we are appropriately managing data and privacy.
Simplification: standardization & streamlining	People want to be able to complete their jobs with ease. This means having technology and processes that support what they want to do, without having to develop workarounds. Increased standardization and streamlining of processes and systems across the Faculty and the University is also desired. Standardization does not mean centralization, and needs to be done collaboratively with regional programs.