ONLINE MEM Master of Engineering Management

uOttawa

DIGITAL TRANSFORMATION in GOVERNMENT

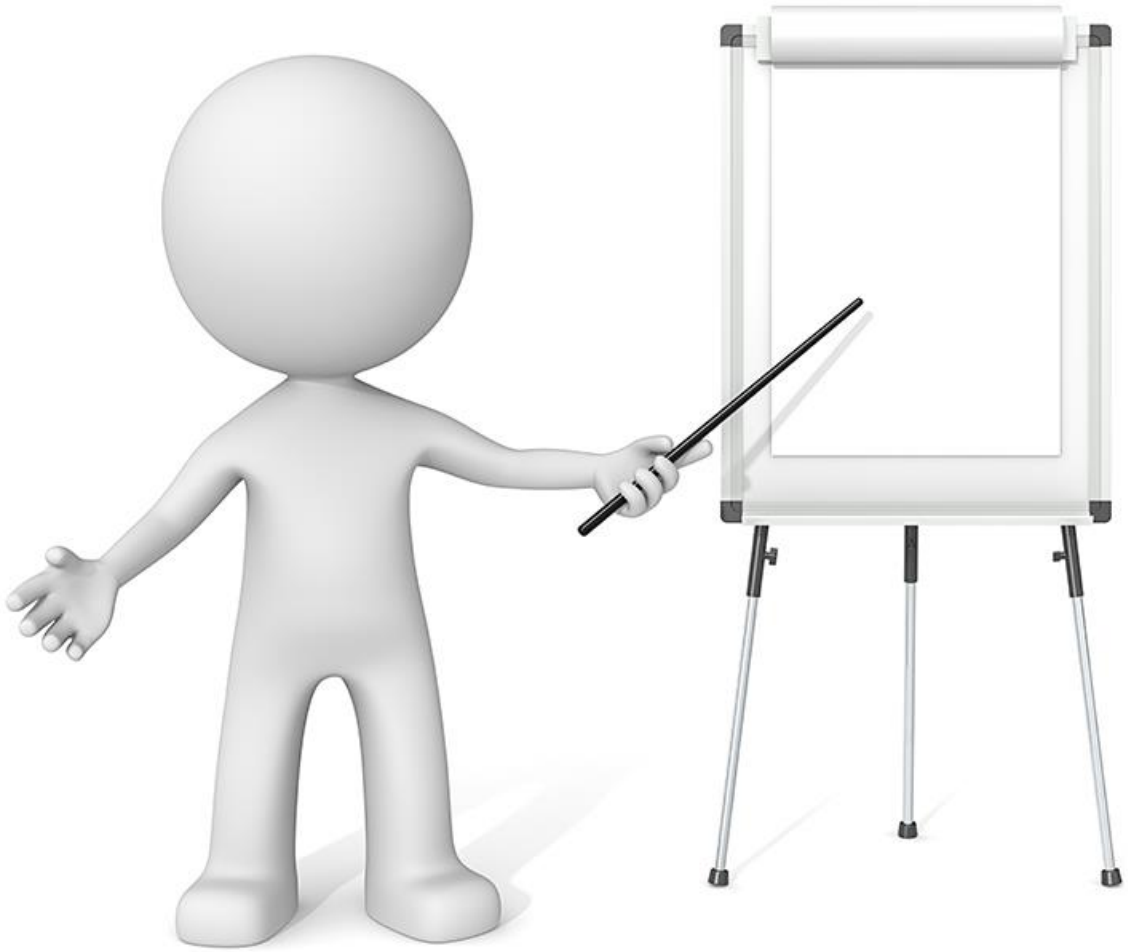
Stream 2

Preparing the Workforce of the Future

June 14, 2022

Introduction

- Profile
- Shaping Forces and uOttawa's Evolution
- Re-Skilling Professionals
- Digital Shift
- Skills in Demand
- MEM
- Way Forward



Profile

https://www.linkedin.com/in/jac-van-beek-fcmc-86a7624/

Executive in Residence
Director, Graduate Programs in Engineering Management
Long Term PT Professor

- Former executive (CEO, VP) – Canada's Research enterprise
- Social entrepreneur, start-up ventures, grocery retail
- Management Consultant (3 multinational consultancies and independent)
- Educator for 27 years – Business and Engineering
- Broad range of complex problems and national policies – emerging technologies, large science, aerospace, construction, information capture/access/processes/data storage/retrieval, certification/international standards
- National institution strategies
- Broad, strategic perspective
- Project/initiative orientation

Impact of the information revolution

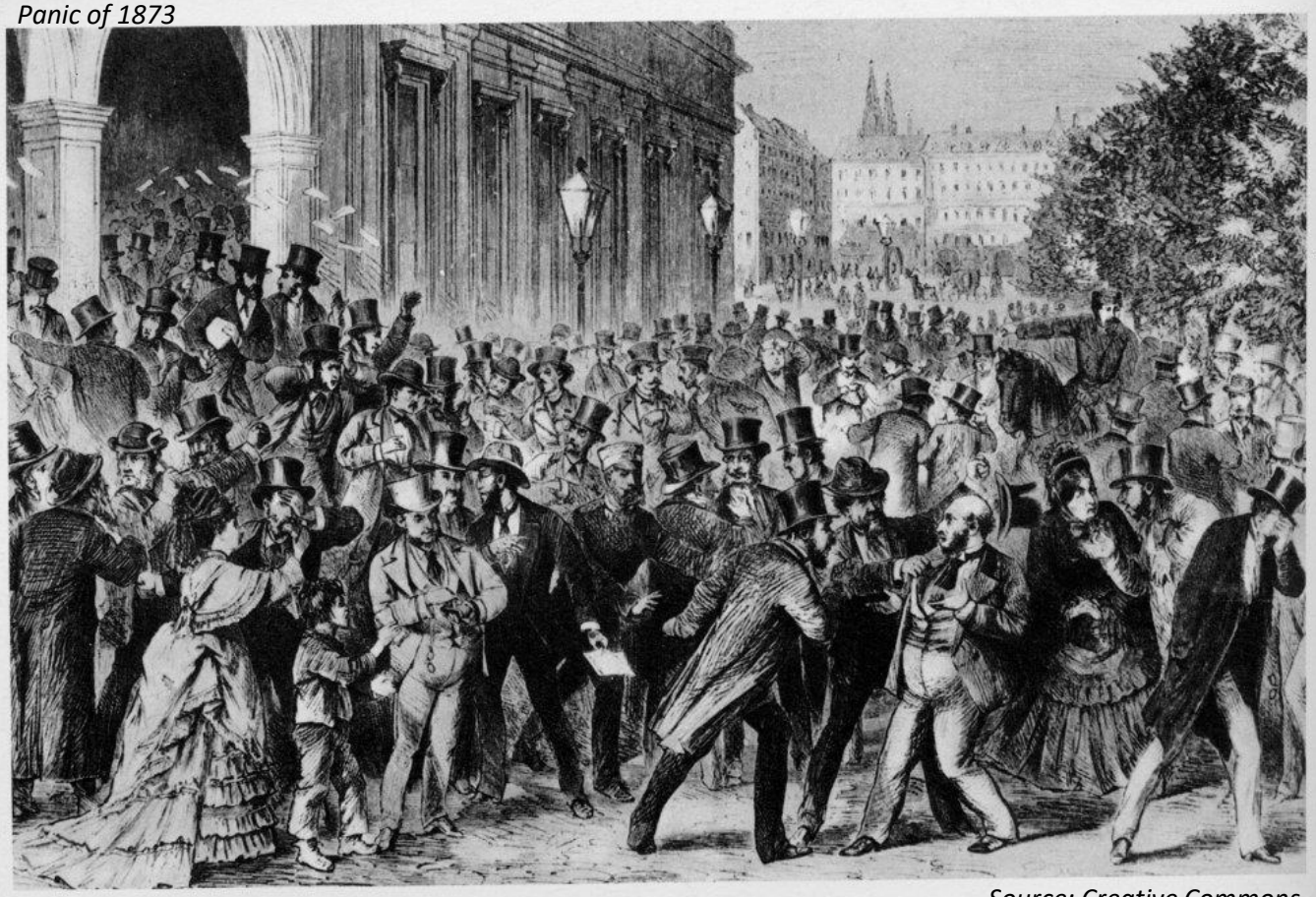
The Long depression of 1873-96

- Started as a banking crisis brought on by insolvent mortgages and complex financial instruments and quickly spread to the real economy, leading to mass unemployment
  - Resulted in consolidation of railroads, steel, petroleum, decline of others
  - Prolonged period of innovation and industrial growth
  - Rise of major factory towns (Chicago, Pittsburgh, Detroit, Buffalo, Cleveland)
  - Death of mill towns (Lawrence, Lowell, Manchester, Springfield)
- Major changes and societal shifts driven by the railroads….and with the growth of the digital platform, here we go again……

"The truly revolutionary impact of the Information Revolution … is being driven by the explosive emergence of the Internet as a major, perhaps eventually, the major worldwide distribution channel for goods, for services, and surprisingly for managerial and professional jobs."

"Beyond the Information Revolution", Peter Drucker, Atlantic Monthly, October 1999

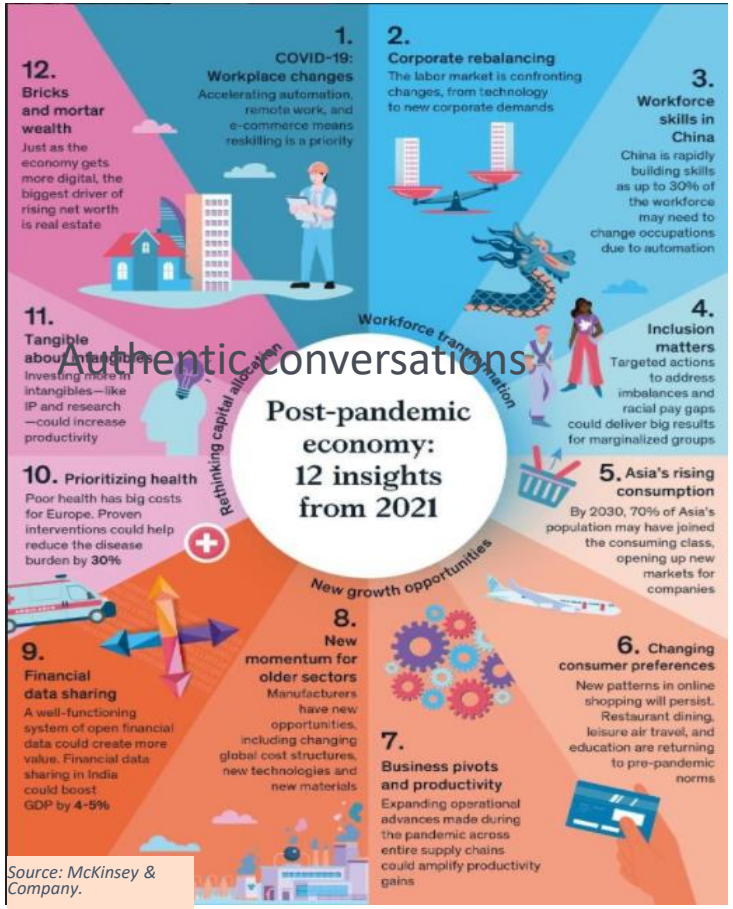
Panic of 1873



Source: Creative Commons

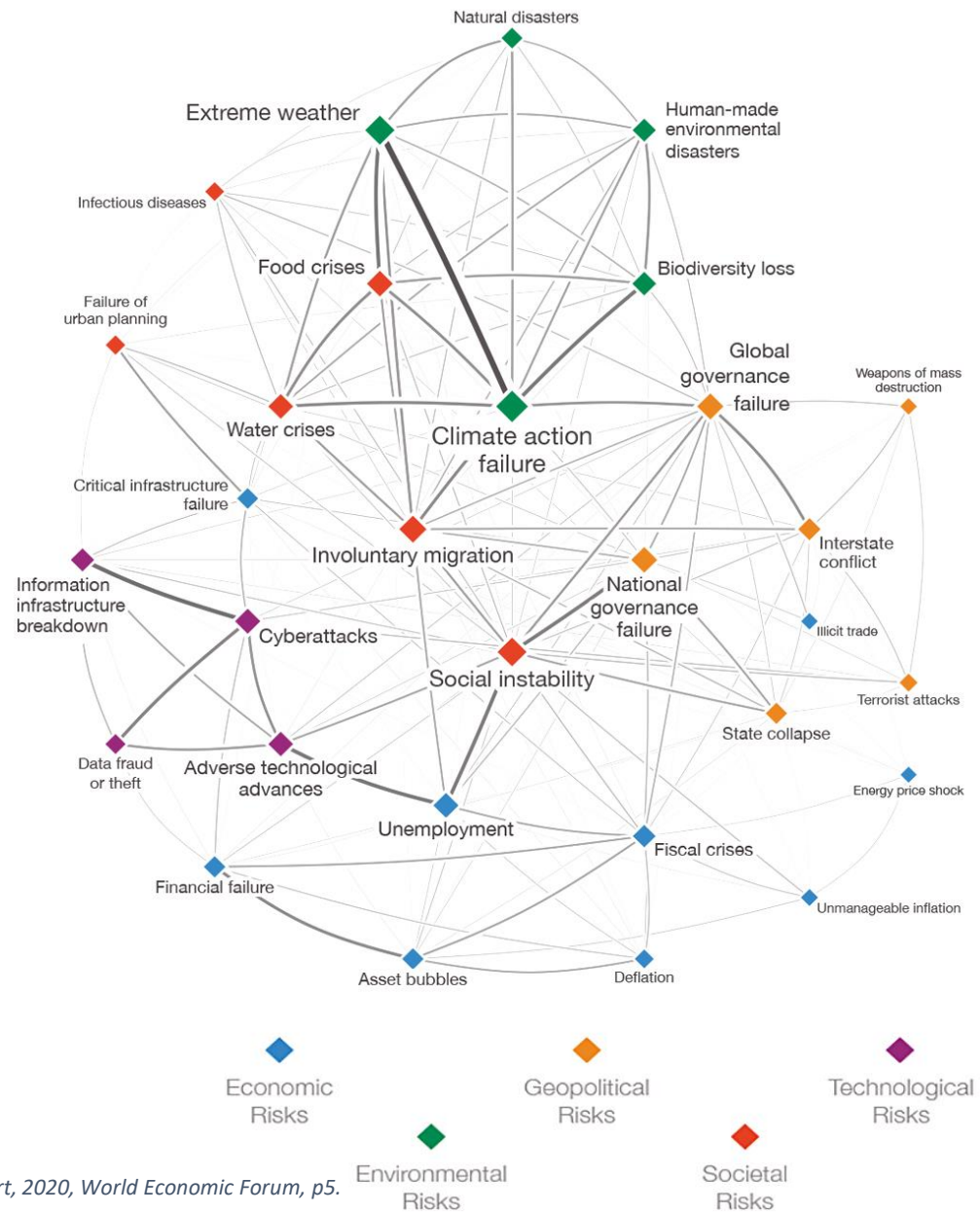
Forces Shaping the Future of Work

- Affordability
- Accessibility
- Inclusion
- Gender equality and safety
- Reconciliation
- National Debt
- Ongoing COVID-19 threat



Authentic conversations

Source: McKinsey & Company.



Source: The Global Risk Report, 2020, World Economic Forum, p5.

University Response – Evolving Role

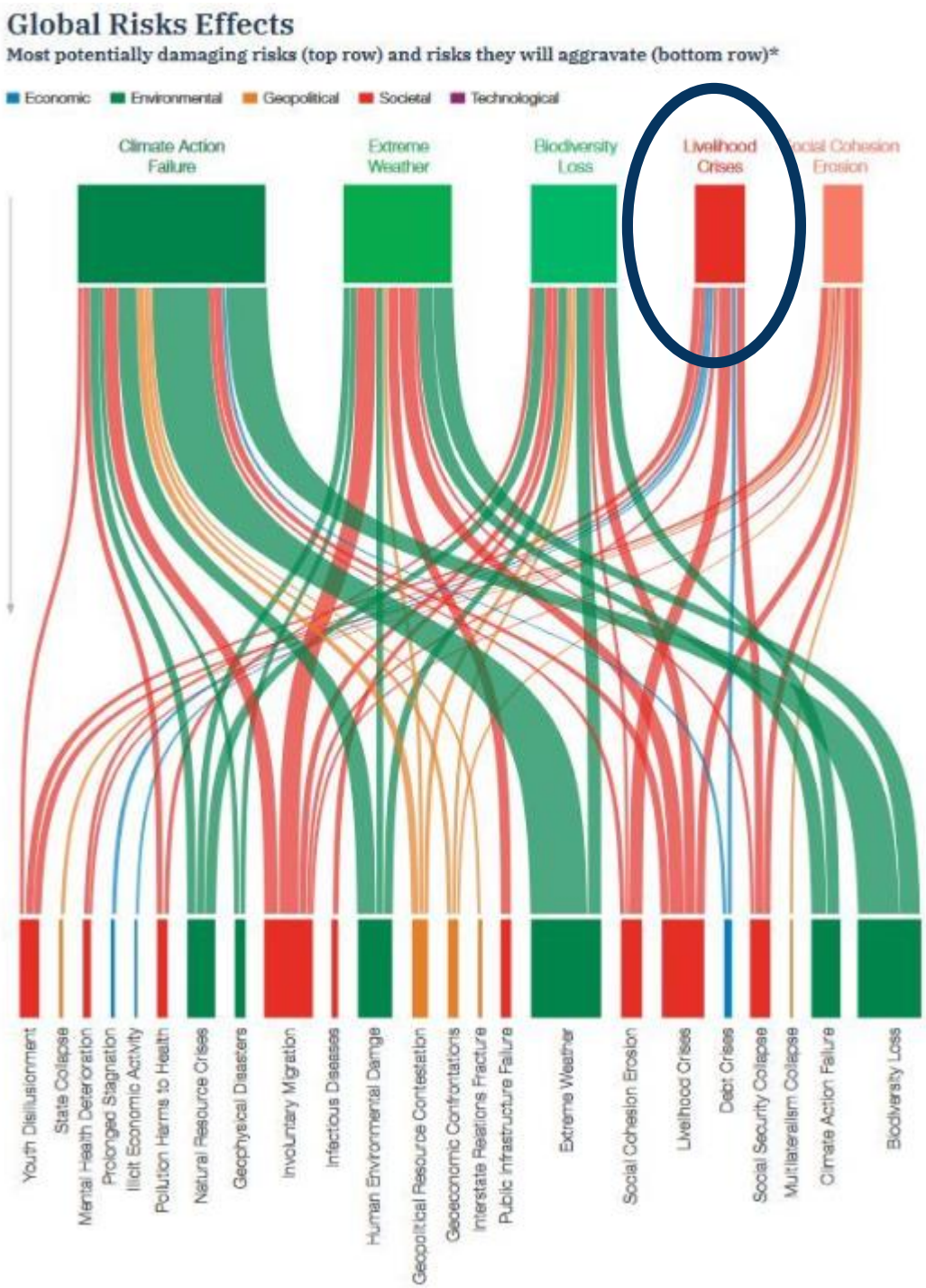
- **Renaissance to WWII**
  - Ivory Tower – Theoretical Research
  - Finishing School for the Elite
- **WWII – 2000**
  - **All of the above plus …**
    - Government-funded research
    - Public Education
- **Since 2000**
  - **All of the above plus**
    - Industry-funded research & Internships
    - International Education
    - Innovation Hubs and Start-up Incubators
- **COVID Disruption**
    - Flexibly located, tailored learning environments
    - Internationally branded talent development
    - Global Strategy matched to local resources (government – industry – university partnerships)
    - Community and society

- Traditionally an integral part of the country's innovation system (and IP protected)….now seen increasingly as a vehicle for community and international advancement and connection.
- Changed role and digital capability is driving force for evolution:
  - Immersive learning experiences will no longer be a perk, but a necessity
  - Blending traditional and non-traditional teaching methods will become the norm
  - Moving between borders and gaining an international outlook
  - Student-focused learning will be essential

Concern for Livelihood

Livelihood Crises aggravates other damaging risks:

- **Youth Disillusionment**
- **Mental Health Deterioration**
- **Pollution Harms to Health**
- **Involuntary Migration**
- **Social Cohesion Erosion**
- **Debt Crises**
- **Social Security Collapse**



Source: The Global Risk Report, 2020, World Economic Forum

Realizing the Possibilities: First Steps – Preparing New Graduates

uOttawa Engineering Graduate Programs 2000-2020

- **2010 –** 750 Students (mostly Canadian, 700 Thesis, 50 Professional Program)
- **2018 –** 1500 Students (mostly international, 750 Thesis, 750 Professional Program)
- **Chemical Engineering**
- **Civil Engineering**
  - Sustainable and Resilient Infrastructure *New since 2020
  - Environmental Engineering *New since 2000
- **Computer Science**
- Applied Artificial Intelligence *New since 2018
- Bioinformatics *New since 2000
- **Electrical and Computer Engineering**
  - Applied Artificial Intelligence *New since 2020
- **Mechanical Engineering**
  - Biomedical Engineering *New since 2000
  - Advanced Materials and Manufacturing *New since 2000
  - Engineering Management *New since 2000
- **Digital Transformation and Innovation *New since 2020**
  - Systems Sciences *New since 2000
  - Applied Data Science *New since 2020
  - User Experience Design *New since 2020

Realizing the Possibilities: Bolder Steps for New Graduates

uOttawa Engineering Graduate Programs 2021-2022

Regular Enrollment of 1500 students plus … via strategic partnerships and signed agreements

- ~150 Egyptian Students – Digital Egypt Builders Initiative
- ~150 Working Canadians – Master of Engineering Management (online)
- ~150 Students in Faculty of Engineering "upskilling" certificate programs in partnership with Professional Development Institute and Industrial partners
- ~200 Students in Faculty of Engineering acquiring technical management skills

Planning microprograms and industry partnered training and internationally partnered training in the following areas:

- Enterprise Architecture
- Cybersecurity
- Interdisciplinary AI
- Cloud Computing
- Robotics & IOT
- Sales Engineer
- Data Analytics
- Product Development
- User Experience Design

How Are We Preparing Professional for their Changing Careers

- **CloudCampus** - in partnership with FX Innovation, uOttawa Faculty of Engineering and Professional Development Institute have partnered with the Kanata-based Center for Next Generation Networks to market and deliver the cloud system specialist certificate to working professionals as well as integrate it into a uOttawa graduate course.
- **Cybersecurity -** Fortinet, a multi-billion / year revenue security company with a world-wide presence, has made its training materials freely available to grow the talent pool of Cybersecurity professionals around the world but is partnering with universities to incorporate it into undergraduate and graduate programs tied with internship and onboarding opportunities at Fortinet.
- **Enterprise Architecture** - Faculty of Engineering and Professional Development Institute have partnered to create a microprogram and professional certification in Enterprise Architecture
- **Digital Egypt Builders Initiative** – uOttawa Master of Engineering in Electrical and Computer Engineering delivering a unique initiative launched by the Egyptian Ministry of Communications and Information Technology (MCIT) to empower Egyptian graduates to become leaders at the global level and be capable of implementing Egypt digital vision.

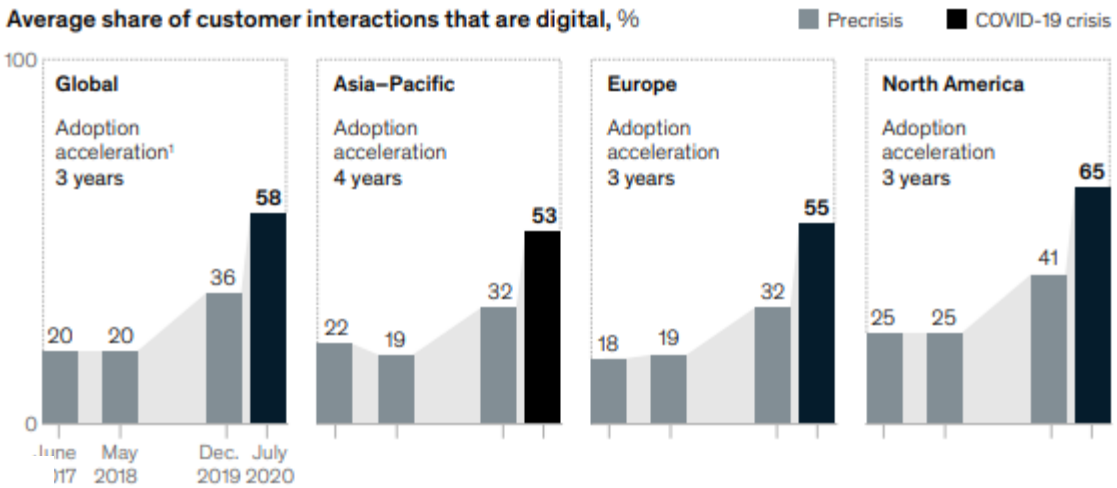
Microprograms

- **Professional Program and Undergraduate Students want careers in addition to a general education**
- **Employers are looking for specialized skills, not just general degrees**
  - Digital technology is evolving ever more rapidly, and business practices are being transformed by it
  - STEM skills in particular are in short supply and are increasingly needed across industries
- **Employers want to upskill or "right" skill existing employees … less disruptive and more cost effective than constant employee turnover (there is a lack of available talent to hire anyway…)**
- **Coursera, Udemy, Youtube, Vendor-specific options are not sufficient. The university adds value.**
  - Many big vendors (Google, etc.) are approaching universities to include their courses in our curriculum because universities provide:
    - Experienced instructors who can mentor and guide students through the materials and provide insight in how to apply
    - Rich learning environments, projects, teams so that students gain experience with practice
    - Internship and coop opportunities
    - A theoretical foundation that lasts beyond a specific tool training (students will learn new tools on their own as they appear on the market
    - A serious evaluation that determines just how well the material has been mastered
    - A respected arms-length partner that ensures the quality of the certificate / degree can be trusted

Digital Shift

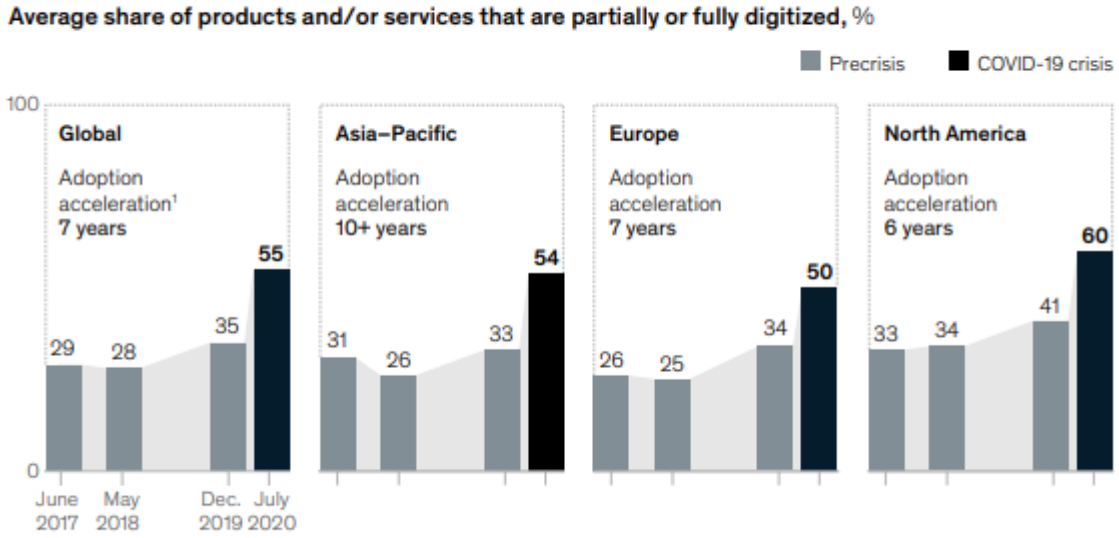
- As many of you have experienced, there has been a digital shift in our work
- This shift cuts across all sectors – private, government, NFP

The COVID-19 crisis has accelerated the digitization of customer interactions by several years.



ahead of the average rate of adoption from 2017 to 2019.

Across business areas, the largest leap in digitization is the share of offerings that are digital in nature.

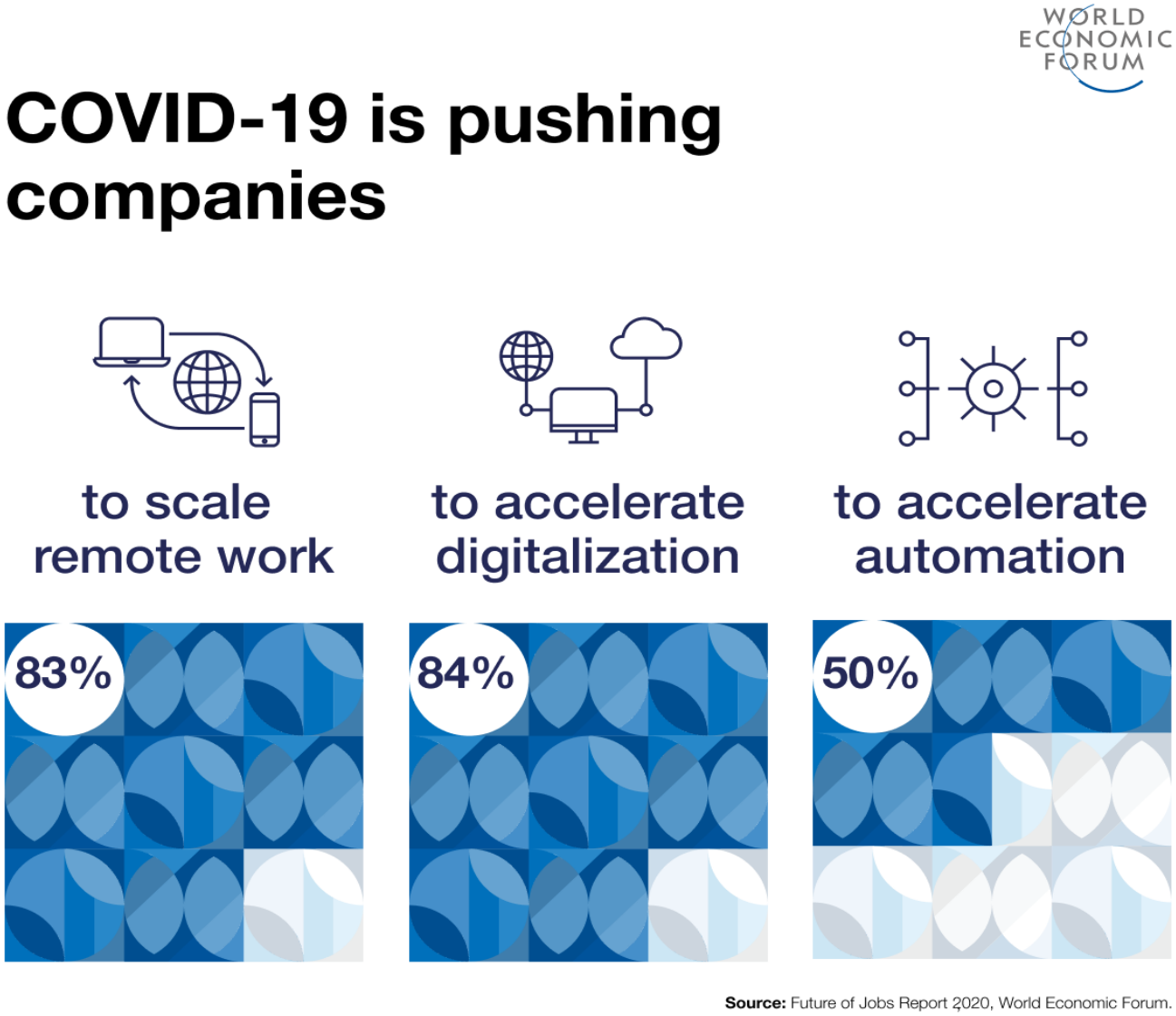


¹Years ahead of the average rate of adoption from 2017 to 2019.

Source: McKinsey

Job Shift

- The nature of jobs are changing rapidly
- Digitization is the common thread
- Workers will need to have a greater literacy in digital technologies and an aptitude for using it to solve a range of organizational and community problems



Source: World Economic Forum

We Shifted Much Faster than Expected

- Organizations that have weathered the shock of shutdown have worked to a predictable formula:
  - Sell out or cut businesses programs, initiatives
  - **Save the core at the expense of the periphery**
  - Any stable source of good profits/surpluses – any advantage – attracts overhead, clutter and cross-subsidies in the best of times – this must be cut.
  - **(Pressure to) cut expenses and find new efficiencies**
  - Concentrate on and strengthen advantage
  - Buy the assets of distressed organizations at bargain-basement prices
  - Renegotiate terms with suppliers
  - Buyers want better terms – may settle for rapid, reliable payments
  - **Focus on employees and communities *(you will be repaid in time)***
- This formula moved organizations rapidly to survival practices

Executives say their companies responded to a range of COVID-19-related changes much more quickly than they thought possible before the crisis.

Time required to respond to or implement changes,[1] expected vs actual, number of days

Organizational changes | Industry-wide changes

	Expected	Actual	Acceleration factor, multiple
Increase in remote working and/or collaboration	454	10.5	43
Increasing customer demand for online purchasing/services	585	21.9	27
Increasing use of advanced technologies in operations	672	26.5	25
Increasing use of advanced technologies in business decision making	635	25.4	25
Changing customer needs/expectations[2]	511	21.3	24
Increasing migration of assets to the cloud	547	23.2	24
Changing ownership of last-mile delivery	573	24.4	23
Increase in nearshoring and/or insourcing practices	547	26.6	21
Increased spending on data security	449	23.6	19
Build redundancies into supply chain	537	29.6	18

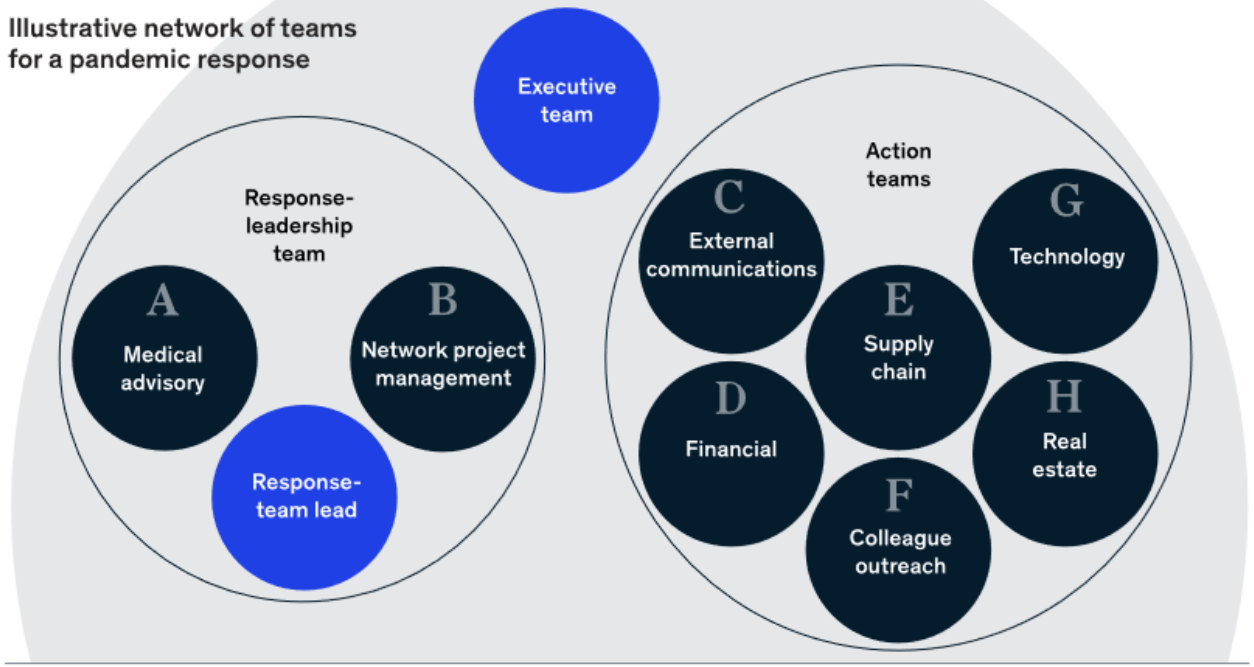
[1]Respondents who answered "entry of new competitors in company's market/value chain" or "exit of major competitors from company's market/value chain" are not shown; compared with the other 10 changes, respondents are much more likely to say their companies have not been able to respond.
[2]For instance, increased focus on health/hygiene.

Source: McKinsey

We Shifted Much Faster than Expected

- Decision making is centralized to control communications, manage expenditures and assure consistency:
  - Rely on teams
  - Look at all aspects of the organization to reduce waste, re-think possibilities
- Routines are under intense scrutiny and subject to change
- Build up cash reserves
- Digital tools are a major driver of change
- Many have learned to work effectively remotely

During a crisis, a network of teams carries out responses outside of normal operations, as well as adjustments to routine business activities.



A Medical advisory
- Overall guidelines and policies
- Guides for frontline managers

B Network project management
- Scenarios
- "Issue map"
- Operational cadence

C External communications
- Regulatory alignment (eg, dispensations)
- 3rd-party communications (eg, to partners)

D Financial
- Financial stress testing

E Supply chain
- Disruption and restart support (eg, loans)
- Exposure across tiers
- Inventory management

F Colleague outreach
- Communication across employee channels
- 2-way feedback (eg, ombudsperson, survey, email, call)

G Technology
- Work-from-home execution and infrastructure
- Support for special employee segments (eg, those who cannot work from home)

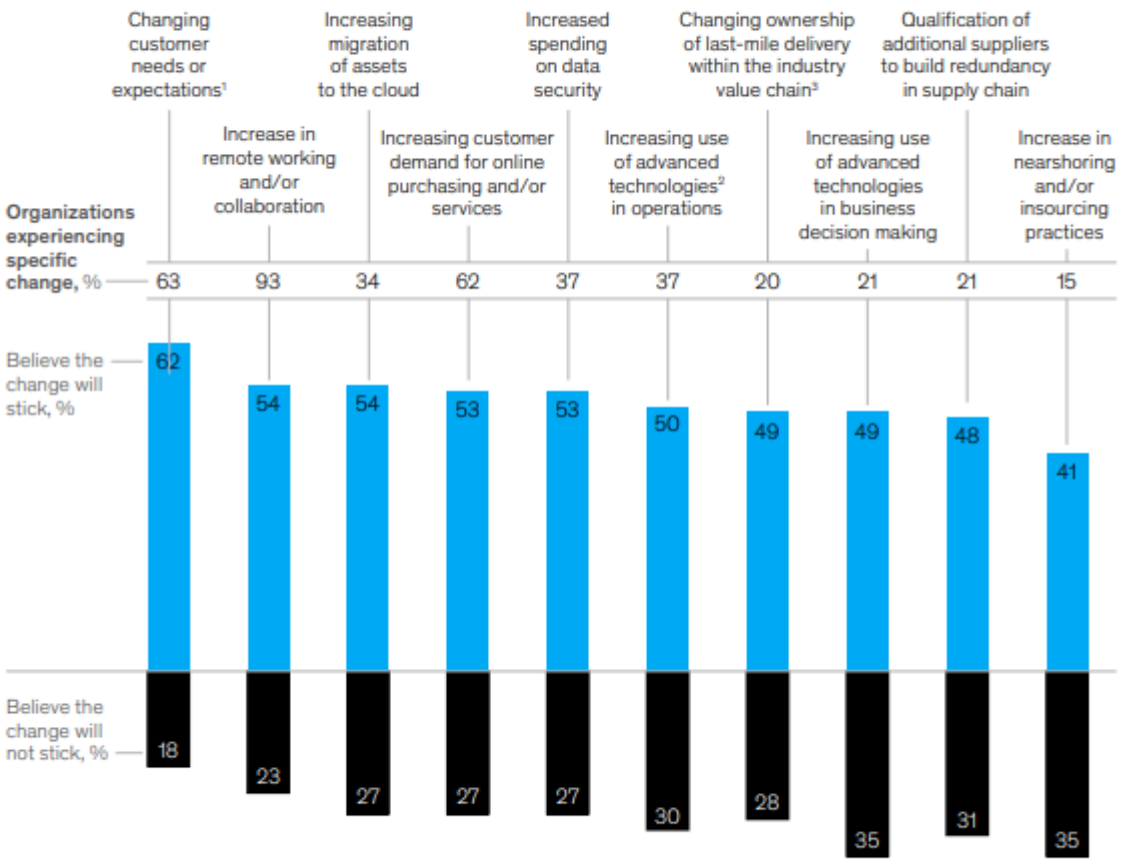
H Real estate
- Building management
- Factory management

Source: McKinsey

This Shift is a Break from the Past

- A strong impetus to move away from expensive and time-consuming methods (often the legacy of unconnected, time dependent strategies and improvements) to digital was forced upon us by circumstance on a wide scale
- Expect digital platform to stick
  - Preferred by customers, clients, end users
  - Based on several years of experimentation by a generation of early adopters
  - Disparate organizational processes can easily connect to expand service and fulfillment capabilities and add functionality
  - Data rich to enhance responsiveness, improve targeting of special interests
  - Widely accessible

The largest shifts during the crisis are also among the most likely to stick through the recovery.



Note: Respondents who answered "don't know," "not applicable," or "some of the change will stick" are not shown.
[1]For instance, increased hygiene awareness.
[2]For instance, automation, artificial intelligence, and advanced analytics.
[3]Ie, a different final point of contact with end users.

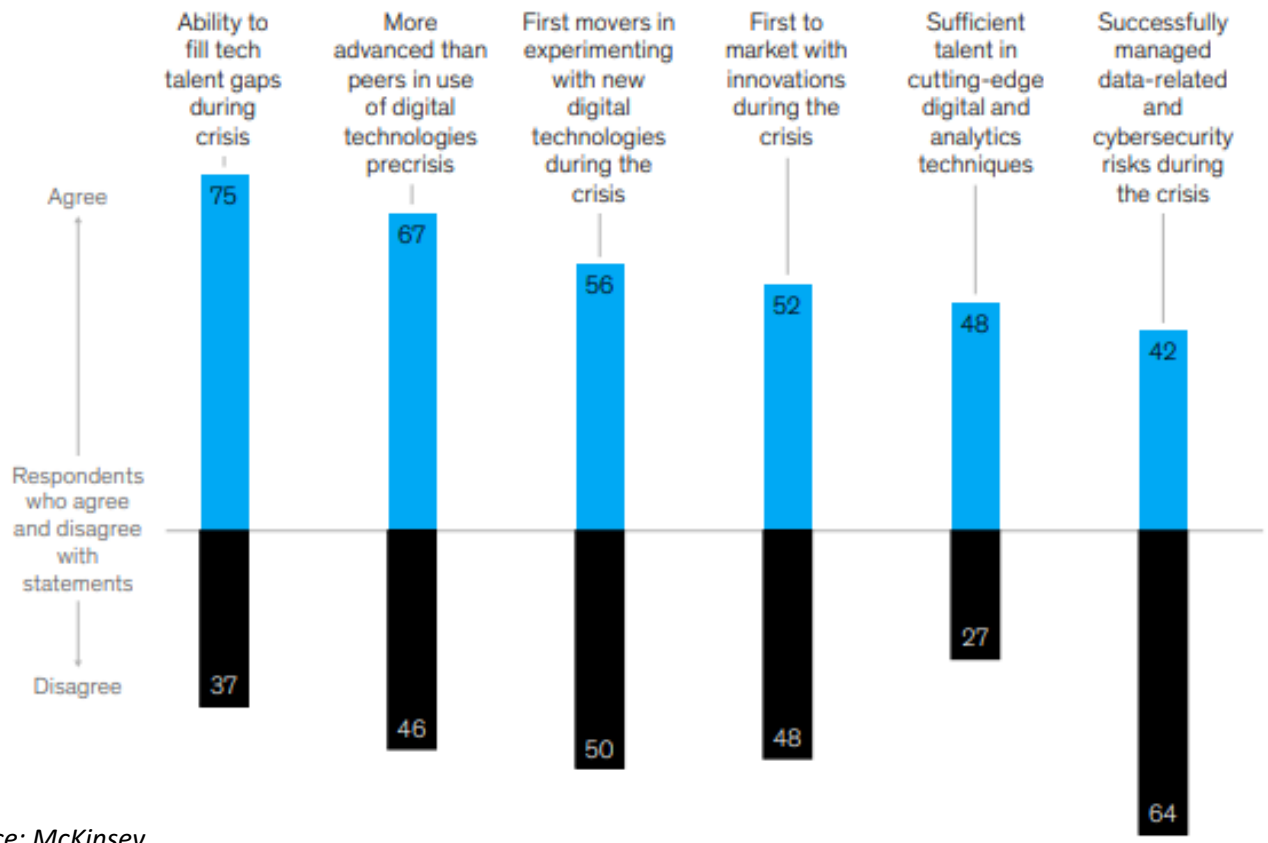
Source: McKinsey

Technology Savvy is the Difference

- First mover advantage for early adopters
- Having technology know-how in digital technologies is in demand – those who lead have it and those that need to catch up want it
- Re-skilling is an important source of talent
  - Anticipate that 50% of the workforce will need reskilling by 2025 *(World Economic Forum, Future of Jobs Report 2020)*
  - 2 of 3 employers expect a return on reskilling investments within a year *(World Economic Forum, Future of Jobs Report 2020)*

During the crisis, the most successful organizations report a range of technology-related capabilities that others lack.

Differences between organizations that implemented COVID-19 responses very effectively and all others, % points

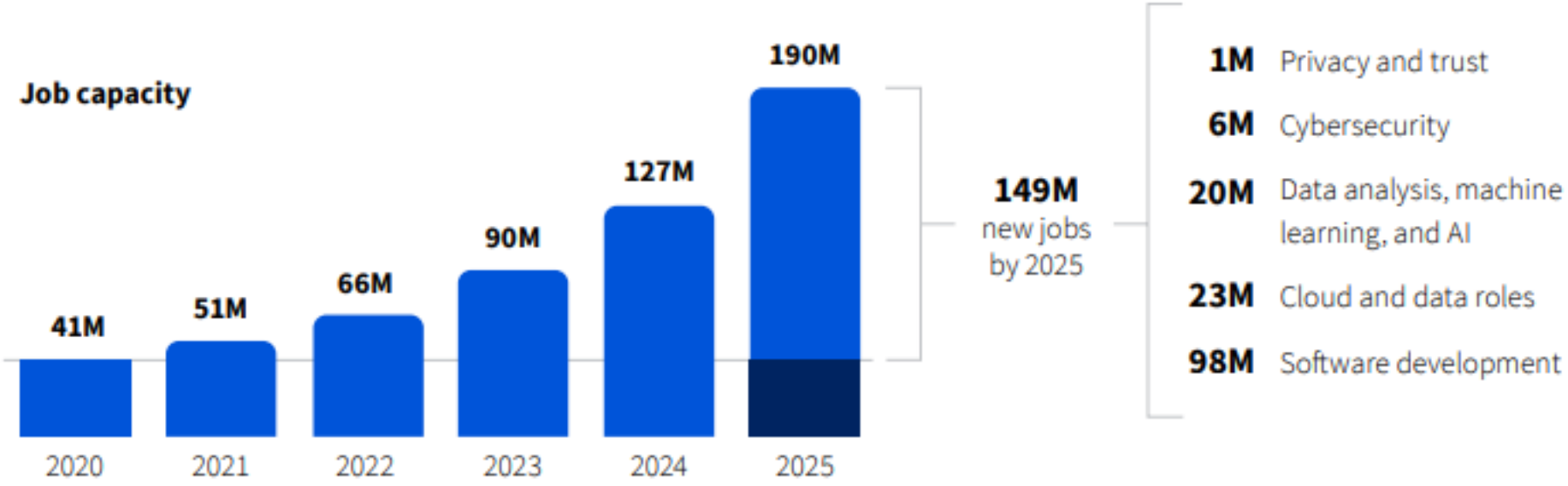


Source: McKinsey

Digital Job Growth is Projected to Accelerate

The future of work looks to be digital - accelerated by the pandemic

Digital job growth from 2020 to 2025 (US job growth)



Data Source: Microsoft Data Science utilizing LinkedIn data. Methodology and assumptions can be found in the white paper "Methodology: Digitization Capacity of the World Economy."

Source: Coursera Industry Skills Report, 2021

Top Skills Sought

Digital transformation is being fueled by these skills

Top 10 trending skills by domain

Business	Technology	Data Science
Data Analysis Software	Theoretical Computer Science	Python Programming
Microsoft Excel	Programming Principles	Probability and Statistics
Budget Management	C++	Econometrics
Behavioral Economics	C Programming	Machine Learning
Business Process Management	JavaScript	Data Management
Digital Marketing	Data Structures	Machine Learning Algorithms
Project Management	Web Development	Applied Machine Learning
Marketing	Design and Product	Probability Distribution
Business Design	Graphic Design	SQL
Data Analysis	Mathematics	Deep Learning

Source: Coursera Industry Skills Report, 2021

Knowing the Technologies is Not Enough

- Leadership and management is needed to make the change happen
- Must be based on a firm understanding of the technologies, their potential, how they integrate and transform
- Must be accompanied by some tough business decision making
  - Use the technological capabilities to maintain the course of the past or strike forward to the unknown - blue ocean strategic direction, alignment of investments and resource allocation
- This is made possible by a talent pool that blends business and engineering skills and know-how

Source: Future of Jobs Report 2020, World Economic Forum

There will be many traditional job casualties

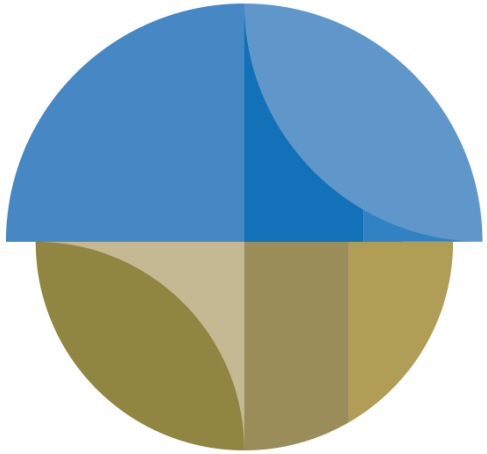
- First mover advantage for early adopters
- Having technology know-how in digital technologies is in demand – those who lead have it and those that need to catch up want it
  - Digital and analytics
  - Data related and cybersecurity
  - AI, IoT
  - Supply chain, process automation
  - Social media

WORLD ECONOMIC FORUM

Job landscape

By 2025, new jobs will emerge and others will be displaced by a shift in the division of labour between humans and machines, affecting:

97 million



85 million

Growing job demand:

1. Data Analysts and Scientists
2. AI and Machine Learning Specialists
3. Big Data Specialists
4. Digital Marketing and Strategy Specialists
5. Process Automation Specialists
6. Business Development Professionals
7. Digital Transformation Specialists
8. Information Security Analysts
9. Software and Applications Developers
10. Internet of Things Specialists

Decreasing job demand:

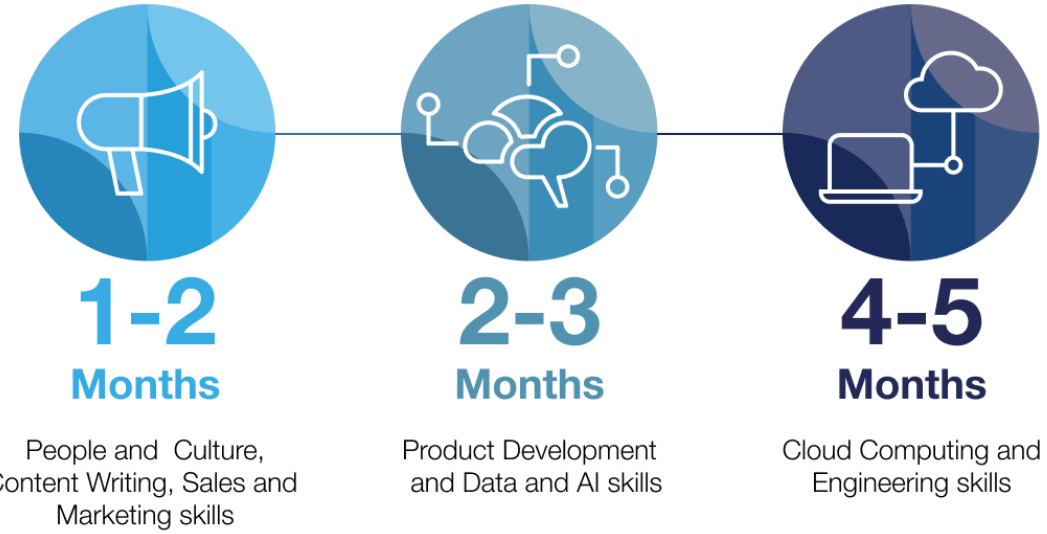
1. Data Entry Clerks
2. Administrative and Executive Secretaries
3. Accounting, Bookkeeping and Payroll Clerks
4. Accountants and Auditors
5. Assembly and Factory Workers
6. Business Services and Administration Managers
7. Client Information and Customer Service Workers
8. General and Operations Managers
9. Mechanics and Machinery Repairers
10. Material-Recording and Stock-Keeping Clerks

Source: Future of Jobs Report 2020, World Economic Forum

Online course/training is a preferred mode of instruction

- Difficulty in filling jobs is compelling firms to supplement new hires with upskilling existing employees and online training is the preferred option *(see Coursera Industry Skills Report, 2021, p 5).*
- Advantages of online:
  - Retention is a cost effective option
  - Traditional mid-career education (requires on site presence) also competes with family time and now geography
  - Short and immediate micro courses focused on specific needs
  - No interruption in productive work
  - Can be woven into family duties

Time needed to start building new skills online in jobs of tomorrow



Source: Coursera data produced for the Future of Jobs Report, World Economic Forum
Presents the days of learning needed for the average worker to gain the level of mastery through Coursera learning.

A Digital Transformation is Where We Seem to be Going

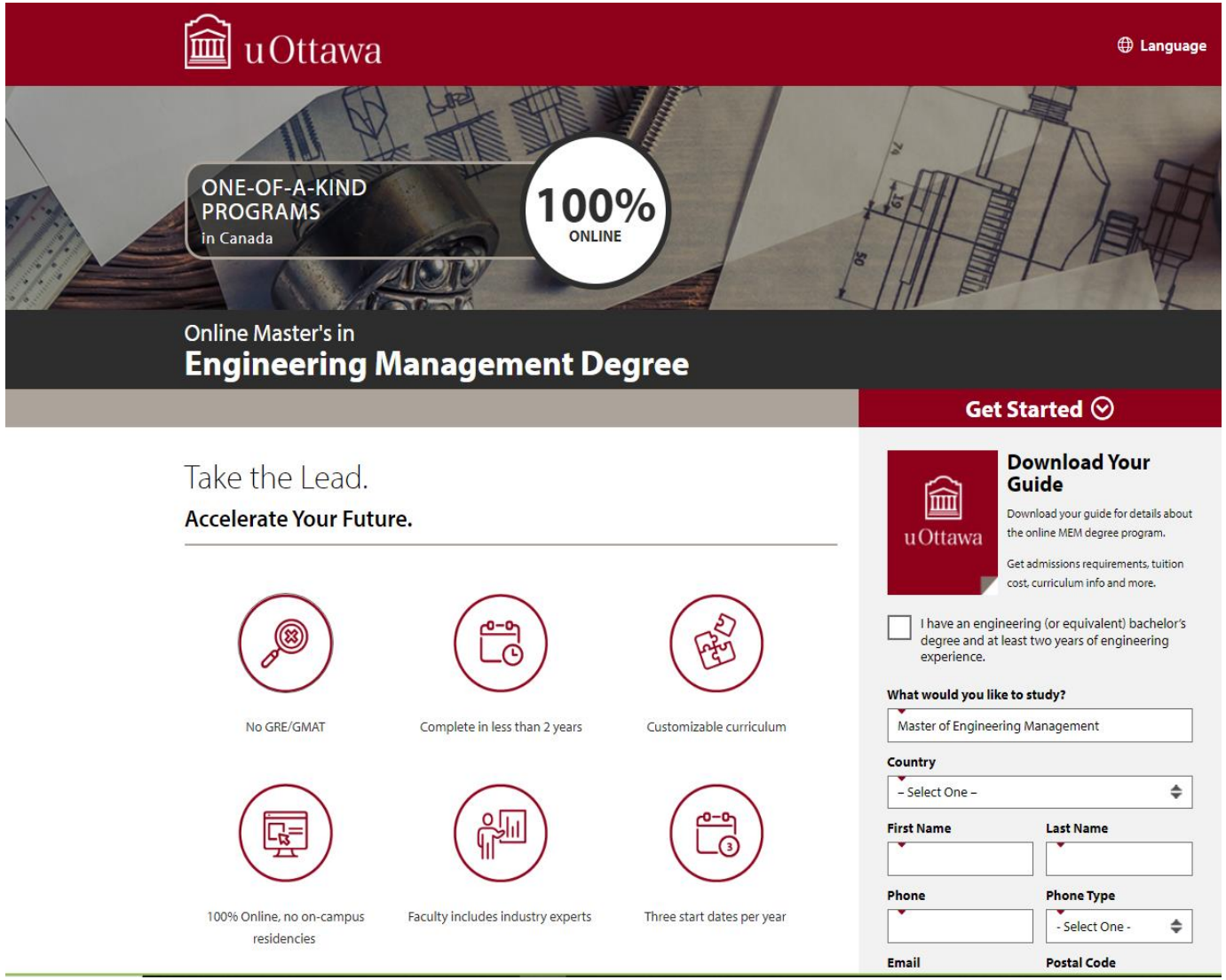
- **Not a policy but rather an inevitability – growing demand, increasing capacity and then an accelerant**
- **How to proceed?**

- *Rapid migration to a virtual course format (one weekend)*
- *Expansion of existing platforms (Brightspace, Zoom, Teams etc)*
- *Training/self help*
- *Inaugural standards – use of email, Zoom/MS Teams/Adobe Connect*
- *Experimentation – integrating existing functionality into course delivery*
- *Pilot was available to experiment with course delivery*

Source: Coursera

Partnership – Online Masters of Engineering Management

- **Launched a program last year that fits today's needs**
- **Keypath specializes in partnering with universities (worldwide) to deliver online programs**
  - Their analytics told them that working Canadians were searching for a program they could complete online … and that uOttawa already offered such a program on campus that was arguably the best in Canada.
  - They convinced us to offer the Master of Engineering Management (online)
  - Fine-tuning, refresh/maintain, new offerings
  - Have emulated initial offering by launching Online Telfer Executive Master of Health Administration



Partnership – Online Masters of Engineering Management

- **Student reactions –**
  - Exceeded expectations by over 300%
  - Student body located across the country
  - Broad range of engineering disciplines
  - 17% female (13% is the industry average)
  - Supports lifelong learning, meets flexibility needs
- Three intakes a year (160 students)
- 4 Mandatory/6 electives
- 10 courses/5 terms
- Maximum 2 courses per term

Specialized Modules

There are four concentrations available within the MEM degree program: Advanced Project Management, Data Analytics, Operations Management, and Product Innovation Management. You can opt for two out of four concentrations, or none at all, depending on your specific objectives.

Advanced Project Management

Learn the essential aspects of technology project management, study the complexities of project information management, and understand the factors that can put projects at risk and how to manage these challenges.

Data Analytics

Develop your skills in applying descriptive and predictive analytics models, explore business intelligence and performance management approaches, and learn fundamentals of big data as well as big database management (NoSQL).

Operations Management

Learn about Lean Six Sigma Green Belt tools and techniques, build well-rounded knowledge in the field of operations, and explore supply chain management to analyze and strategize.

Product Innovation Management

Examine factors that enhance individual and group creativity within organizations, develop and implement trial plans for design simulations, experiments and prototyping, and learn best practices in product development and management within engineering.

Online Learning

“ Typical planning, preparation, and development time for a fully online university course is six to nine months before the course is delivered. Faculty are usually more comfortable teaching online by the second or third iteration of their online courses.”

Remote Learning

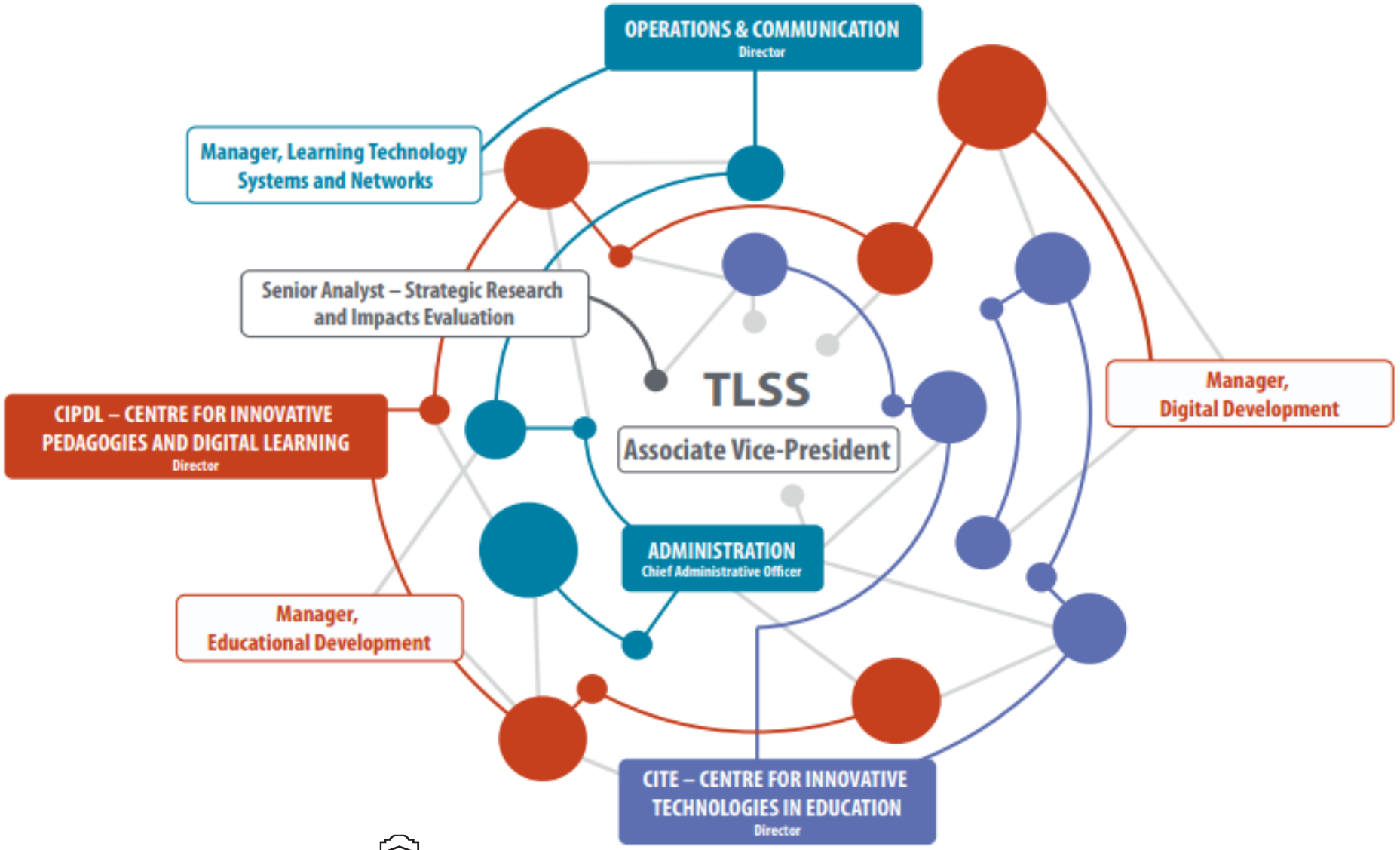
“In contrast to experiences that are planned from the beginning and designed to be online, emergency remote teaching (ERT) is a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances.”…

“The primary objective in these circumstances is not to re-create a robust educational ecosystem but rather to provide temporary access to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency or crisis. ”

Hodges, C., Moore, S., Lockee, B., Trust, T., and Bond, A,. **(Mar 27, 2020) .The Difference Between Emergency Remote Teaching and Online Learning,** Educause Review. Available https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning?fbclid=IwAR3TEbjw3Y31SBaZoNabi3vr4WoUVUqF3_LR9cAuY8EoUEh2nD_APFXaiOw

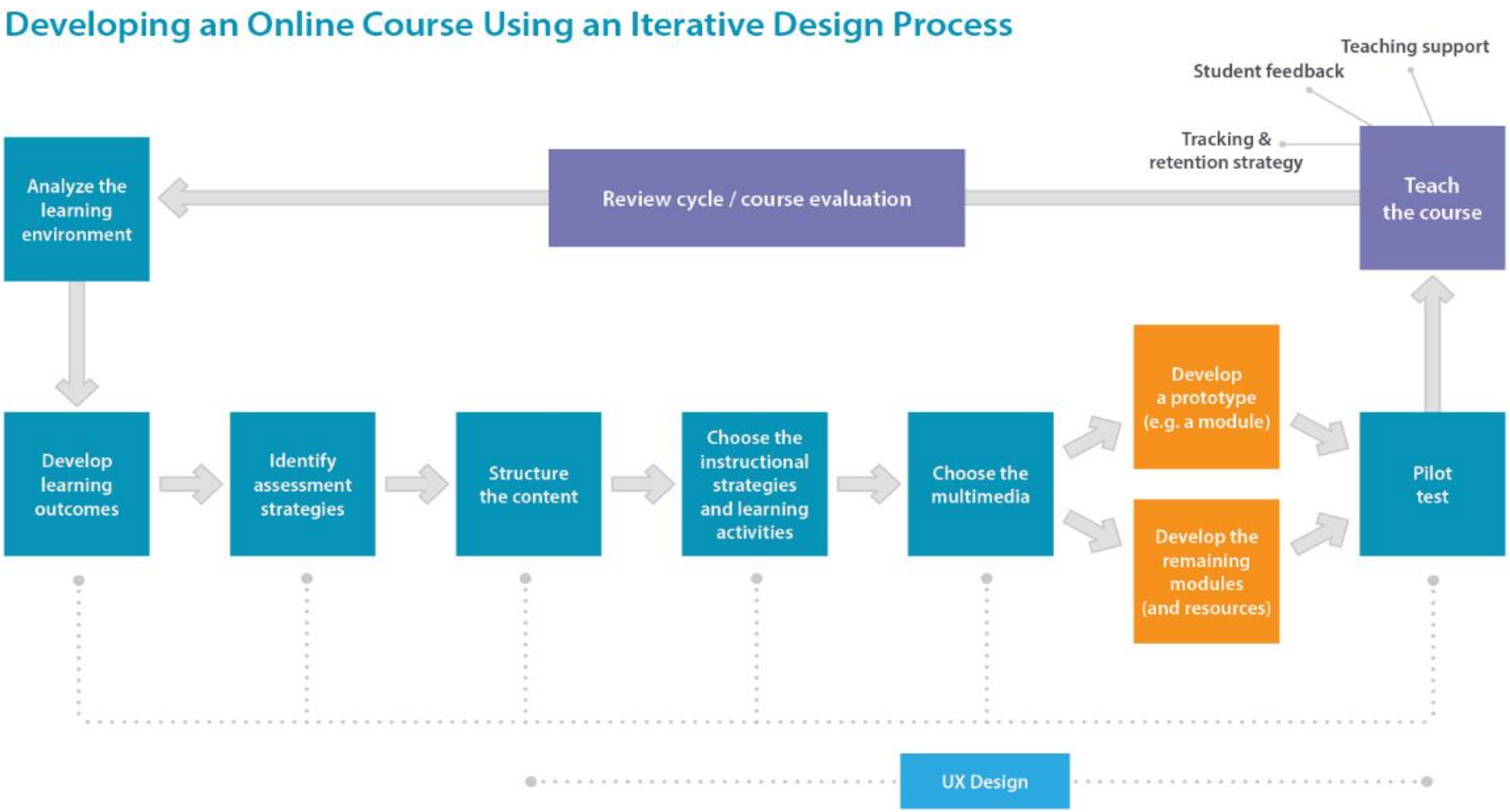
Transforming Course Delivery– Online Masters of Engineering Management

The uOttawa Teaching and Learning Support Service (TLSS) supports faculties in the development of online programmes



Online Masters of Engineering Management – Our On-Line Development Laboratory

The course development timelines may range from 26-weeks, to 8-12 months depending on course readiness and the availability of the Course author.

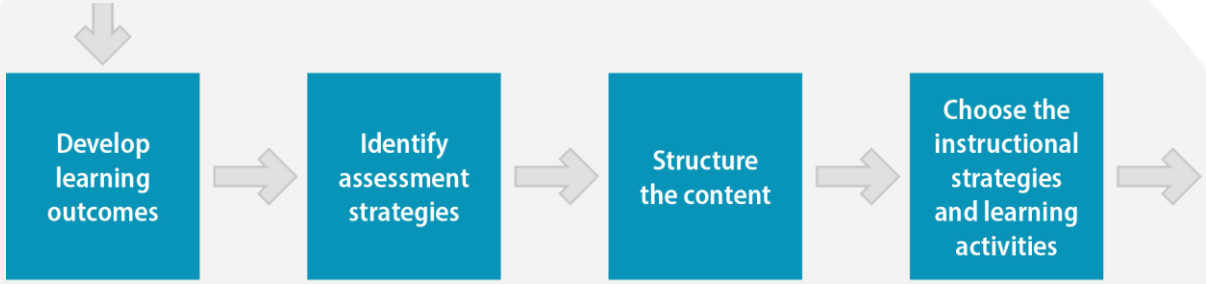


Online Masters of Engineering Management – Initiation of Course Development Project

- Director arranges program-level learning outcomes, creates a course carrousel, recruit professors to develop and teach
- Professors must sign course development & IP, Copyright contracts and review 'workload' estimates:
  - The effort required by the SME to prepare and deliver Course Material for the Course varies according to several factors including the availability of pre-existing course materials, the SME's level of experience developing online courses, and the SME's level of familiarity with technology enabled teaching. The SME acknowledges that the typical workload required by a subject matter expert to prepare and deliver all course materials for an online course (not including teaching the course) is approximately equivalent to the workload associated with teaching one to two courses, i.e., 117-234 hours.
- A technical Development Team is assembled for each course
- An **Info session** with Professors and TLSS team to review course plan
- Professor then signs Course Development contract – Project officially starts

Online Masters of Engineering Management – Design Features

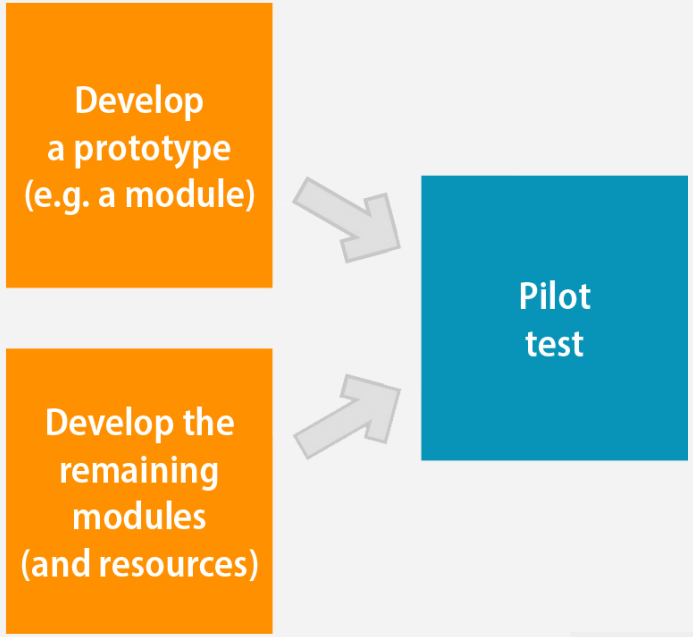
- **Multiple considerations**
- **Program**: Program outcomes are mapped to courses
- **Course:** Define learning outcomes that are aligned with assessment strategies, learning activities
- **Module / Week:** Define learning outcomes that are aligned with formative & summative assessment, practice / learning activities
- **Interaction**: Student – Prof/Student – Student/ Student – Content
- **Output**: Outline of new online course



Online Masters of Engineering Management – Prototyping

Extensive **multi-tasking** in the Development phase

- Continue developing storyboards
- Review multimedia, content pages in Brightspace
- Interactive content, activities, images, examples …



Online Masters of Engineering Management – Evaluation

- **KeyPath** support (student and Director) -
  - Recruitment/workload
  - Communications
  - Surveys
- **TLSS** support (faculty and Director) –
  - Feedback from faculty about course delivery
  - Update per term
  - Annual maintenance and refresh of courses

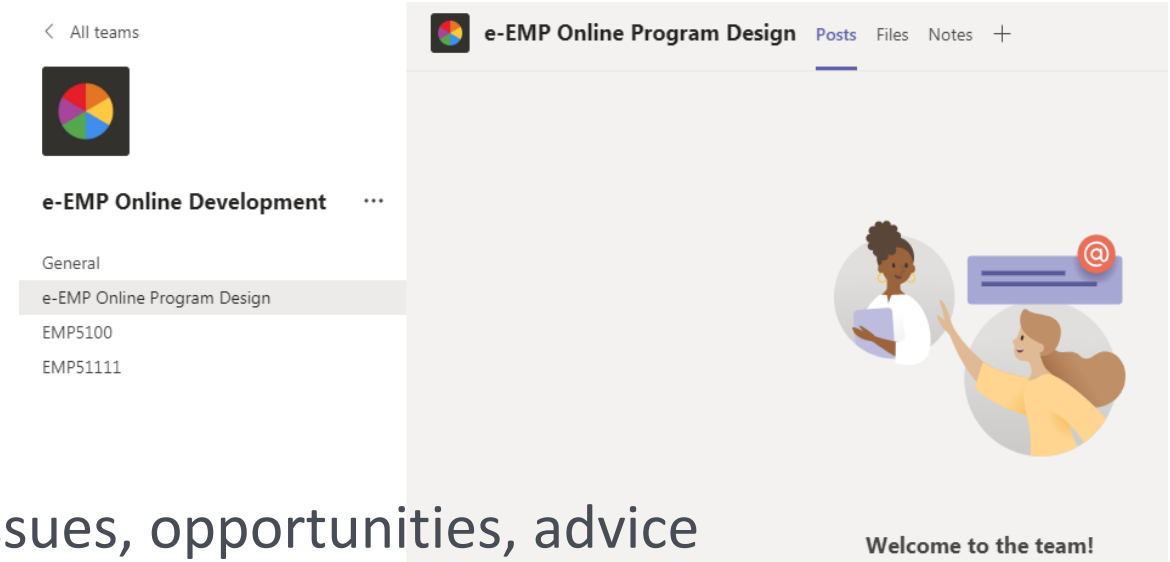
Online Masters of Engineering Management – Deliverables

- Detailed course syllabus
- Measurable Learning Outcomes
- Alignment document
- Assessment strategies
- Description and instructions for student assignments
- Grading – evaluation rubrics
- Storyboards for each module / week
- Content material for web pages
- Content for interactive activities & feedback
- Course-specific ideas to achieve **Quality Matters** standards

Online Masters of Engineering Management – Working Remotely

Online collaboration platforms:

- MS Teams
- Brightspace



Learner support:

- KeyPath on-going support – issues, opportunities, advice
- More direct connection with professors – email, Teams chat, file transfers, Zoom sessions

Online Masters of Engineering Management – Experiential Learning Tools

- **Immersive experience - Fligby simulation**
  - Boardroom level leadership simulation
  - MBTI, Enneagram assessments
- **Asynchronous learning - Harvard Business School**
  - Cases and readings
- **Practical applications - IBM Platform (Tableau)**
  - Big data analytics
- **Analogies, alternative perspectives - Guest speakers from industry, news organizations**
  - Fewer barriers to their involvement
- **Authentic conversations**
  - Learners are recruited for their experience (mid-career)

Virtual Course Secret Ingredients

- **The quality of our international students and international agreements**
  - is directly related to …. the international academic reputation of the university … largely based on our **research quality**

- **Online students can test learnings in situ**
  - Virtual sessions are highly interactive and designed for **engagement**

- **Courseware is organized and designed to deliver stated learning objectives tailored to learner needs**

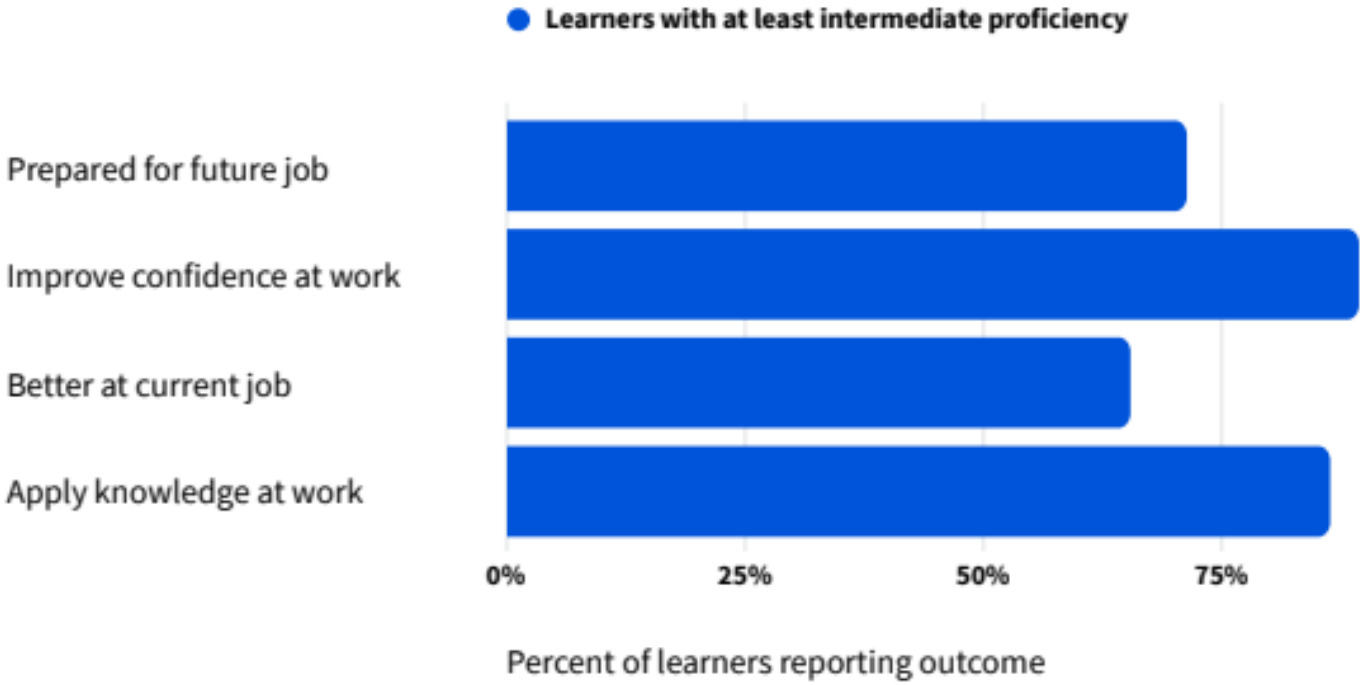
- **The quantity of our domestic students and our research**
  - is directly related to … the national reputation of the faculty … largely based on our **industrial collaborations**

- **The opportunities for our students**
  - is directly related to … the reputation of our programs … largely based on the marketing of our programs to **employers** … especially by social media and **alumni** … especially with employers who know of our **industrial collaborations**.

Demand Driver: Learning investments contribute to a positive work environment

- The share of enrollments in personal development courses has risen dramatically – 3.1% to 5.5% between 2019 and 2020
- Improves economic mobility and growth for employees, an effective engagement and retention strategy/performance strategy for managers and a growth and cost savings strategy for organizations

Learners with at least intermediate proficiency had better job outcomes

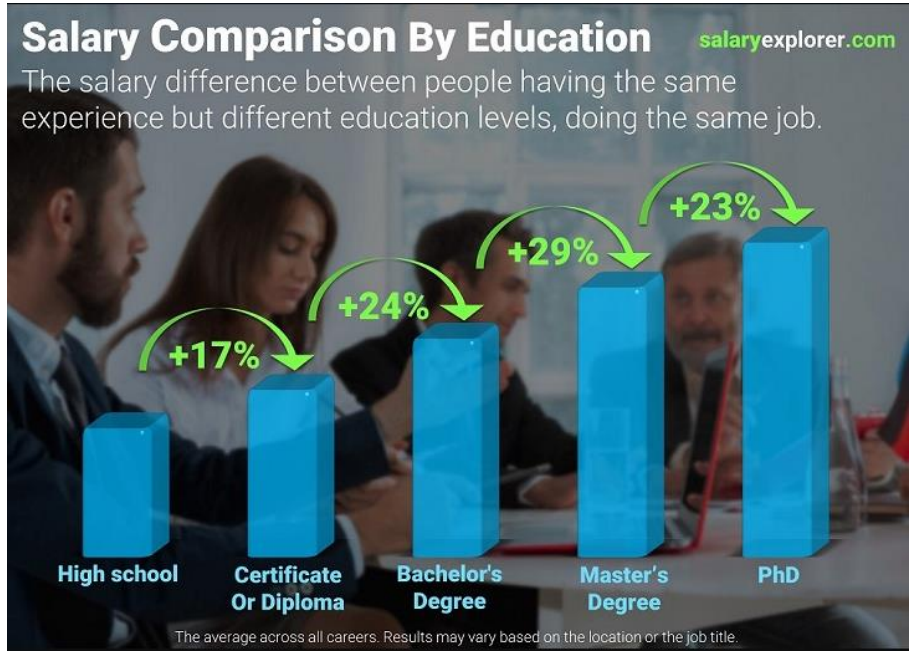


Source: Coursera Industry Skills Report, 2021

Demand Driver: Engineering Experience and Level of Education Matter

- Average yearly salary for engineers is $101,000 CAD (highly variable – ranges from $32,000 to $213,000)
- Upskilling and offering an online Masters degree presents another incentive to employees as work experience and level of education matter in the workforce

http://www.salaryexplorer.com/images/salary-by-experience.jpg



http://www.salaryexplorer.com/images/salary-comparison-by-education.jpg

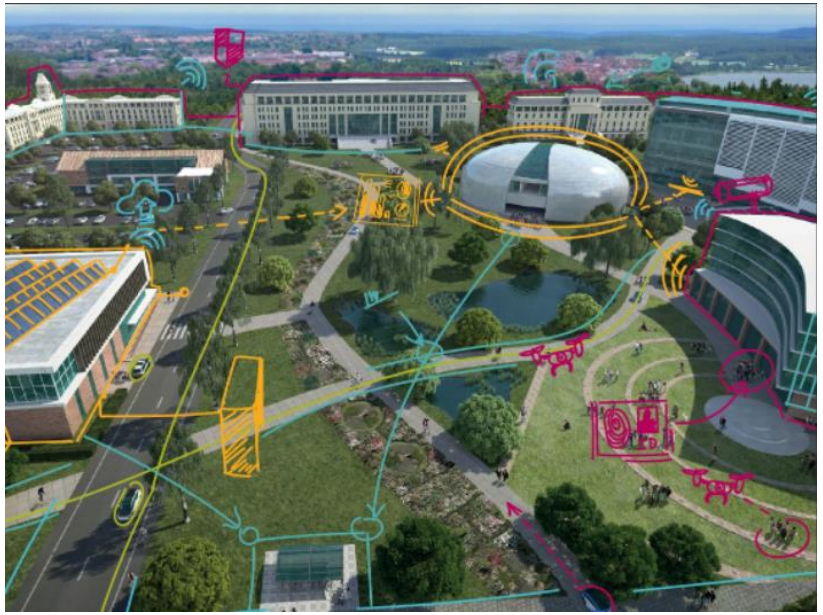
The Way Forward – School of Engineering Design and Teaching Innovation

- **Three roles:**
  - Center for Entrepreneurship and Engineering Design
  - Innovative approaches to teaching and life-long learning (high school to retirement and beyond)
  - Curriculum design with an emphasis on experiential learning, industry and community collaboration, volunteer culture, sustainability and EDI (Equity, Diversity, Inclusion)
- **Interfaculty Graduate Programs and Research (including engineering education)**
  - PhD in Digital Transformation and Innovation (Faculty of Arts, Engineering, Management)
  - Engineering Management, Systems Science
- **Professional Development and Design Courses**

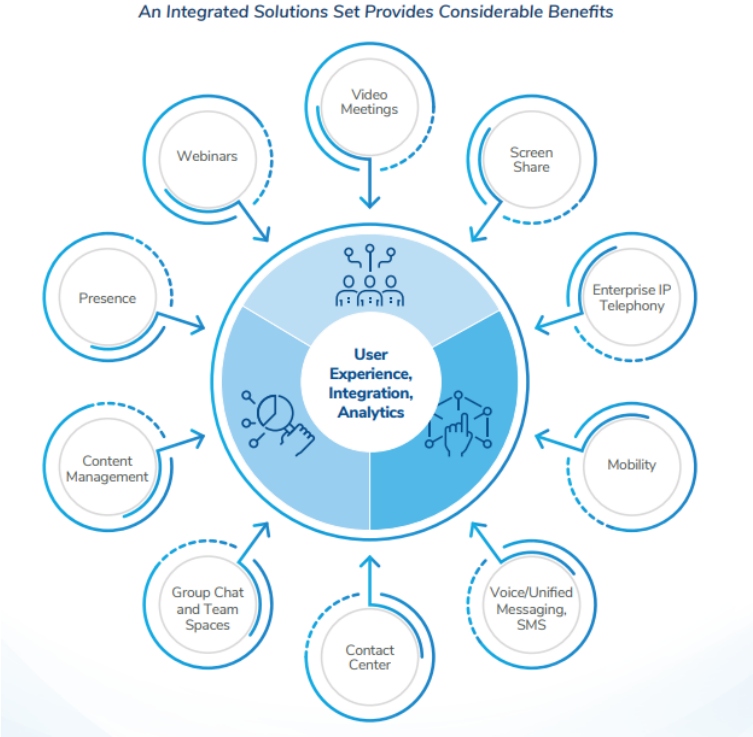
GNG 1103 Engineering Design
GNG 2101 Introduction to Product Development
GNG 4120 Technology entrepreneurship
GNG 5100 Introduction to Engineering Management
GNG 5122 Operational Excellence and Lean Six Sigma
GNG 5123 Enterprise Architecture
GNG 5124 Internet Technologies & Mobile Commerce
GNG 5125 Data Science Applications
GNG 5130 Business Communication and Influence
GNG 5131 Sales and Influence for Engineers
GNG 5140 Engineering Design
GNG 5141 Creativity and Innovation
GNG 5902 Industry Internship Project

Digital Dreams Abound

- The changing role of universities in Canada is being shaped by the scale and complexity of the issues of the day, public policy, funding criteria and public expectations
- Prospective digital platform visions are contributing to shaping the possibilities



Source: https://new.siemens.com/us/en/products/buildingtechnologies/markets/education/higher-education/campus-of-the-future.html



Source: "Unlock the Full Potential of Your Digital Future", Frost and Sullivan White Paper,