Chief Technology and Artificial Intelligence Officer

(AI-CTO) Program

Elevate your leadership with the force of AI, technology, and innovation.

UNIVERSITY OF WATERLOO

powered by

upGrad

6-Month Program | 100% Online

Crafted for Technology Leaders by a Global Top 100 University*

*THE World Reputation Rankings 2025

GET READY
TO LEAD AS TOMORROW'S ~~CTO~~ AI-CTO.

Today, boards are no longer looking for leaders who simply "know tech." They're seeking translators, leaders who can turn AI, data, and emerging technologies into business growth and measurable outcomes.

And the forward-looking tech leaders know it.

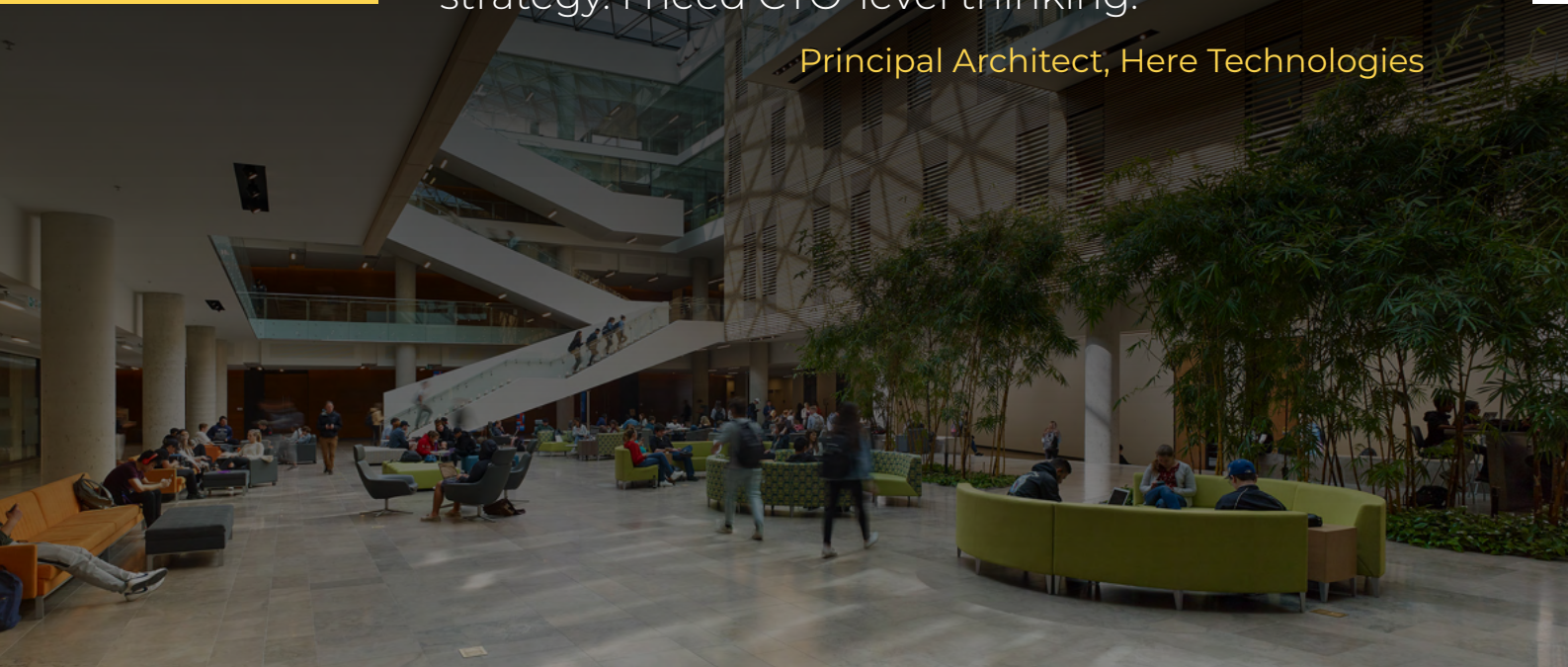I scale platforms globally but lack P&L ownership and product monetization skills.

Principal Director, Accenture

I run $400M transformations but can't frame security as business commitments.

Head of Technology, MUFG

There's a vocabulary gap between delivery and strategy. I need CTO-level thinking.

Principal Architect, Here Technologies

"60% of technology executives struggle to quantify the benefits of individual technology investments and demonstrate cause-and-effect relationships between tech spending and financial growth."

— Deloitte Global Technology Leadership Study

42% of IT organizations identify business acumen as the single biggest skills gap in technology teams — ranking higher than technical expertise.

— Cisco Next-Generation IT Talent Strategies Report

90% of top-performing GCCs established AI-led Centres of Excellence in the last 18 months, making AI central to innovation

— BCG Report on Global Capability Centers

What tech leaders have

- ✓ Deep technical expertise
- ✓ Strong delivery track record
- ✓ Team leadership experience

What more will tech CXOs need

- ✓ P&L / commercial ownership
- ✓ Board-ready communication
- ✓ Tech-to-business translation
- ✓ Portfolio-level judgment
- ✓ End-to-end AI leadership
- ✓ Intrapreneurship and Entrepreneurship

The Four Pillars of the Waterloo AI-CTO Program

At the core of the University of Waterloo AI-CTO curriculum is a framework that merges technology mastery, AI innovation, strategic influence, and enterprise transformation. It equips leaders with a performance toolkit that turns strategy into execution, innovation into ROI, and ideas into enterprise-scale impact.

Core Curriculum

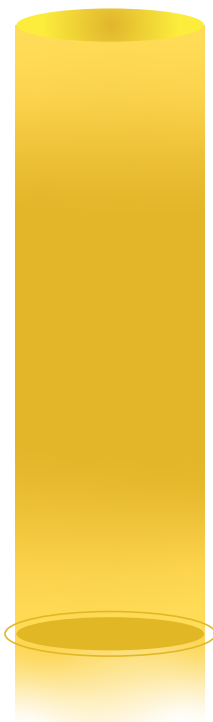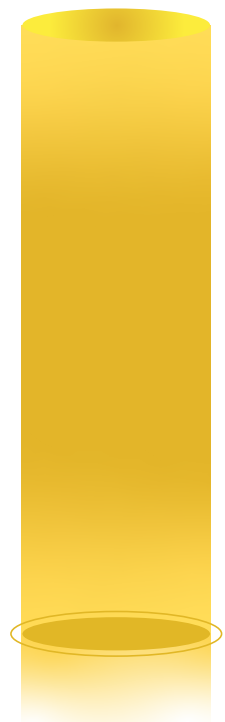| AI Leadership	Technology Leadership	Boardroom Fluency	Build a Venture or Transform an Enterprise
Gain the capability to architect, deploy, and govern AI systems end-to-end. Build the confidence to quantify impact, enforce responsible governance, and align every AI investment with measurable business value.	Develop the frameworks and judgment to turn complex architectures into board-aligned action. Communicate technology in business language, mobilize teams around clear priorities, and deliver high-credibility results	Command executive conversations by framing technology strategy through ROI, governance, and risk. Earn trust as a board-ready leader who can align stakeholders, influence direction, and secure enterprise buy-in.	Apply your leadership toolkit to build a scalable venture or modernize an enterprise. Operate with founder speed and enterprise discipline, shaping investment-grade strategies, ROI-driven roadmaps, and crisis-tested execution plans.

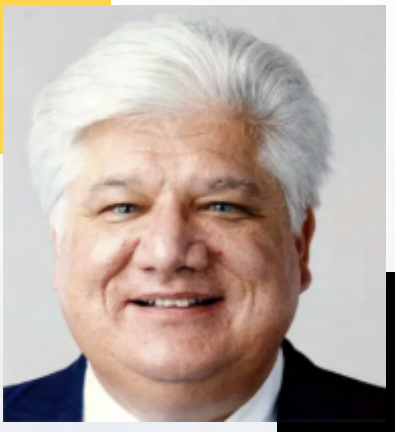## The Global Epicenter of Tech and AI-Driven Leadership

The University of Waterloo stands at the intersection of technology, business, and innovation, making it the world's launchpad for next-generation tech leaders. Ranked among the **Top 150 universities globally (QS 2025),** named **Canada's #1 university for innovation for 29 years (Maclean's),** listed among the **World's 100 most prestigious universities (THE 2025), and the Top 1% worldwide (CWUR 2025),** Waterloo unites its **Faculty of Engineering, School of Computer Science,** and **Conrad School of Entrepreneurship and Business** to shape leaders fluent in both code and commerce.

With the **largest engineering faculty in Canada** and $79 million in annual research funding, Waterloo's ecosystem bridges deep technical mastery with real-world application. Its **co-operative education model, the world's largest,** links 8,000 industry partners across 70 countries, giving learners exposure to Fortune 500 boardrooms and frontier startups alike.

Waterloo's **Velocity** incubator has launched **1,000+ ventures** that have raised **$14B USD,** ranking **#18 globally for startup founders (PitchBook 2025).** In computing, Waterloo is **Top 33 in Computer Science (QS 2025),** ahead of Caltech, Georgia Tech, UC San Diego, and UIUC, and hosts Canada's #1 Computer Science program (Maclean's 2024).

For ambitious professionals seeking to lead at the intersection of technology, AI, and business strategy, Waterloo is where ideas scale, ventures grow, and executives are built.
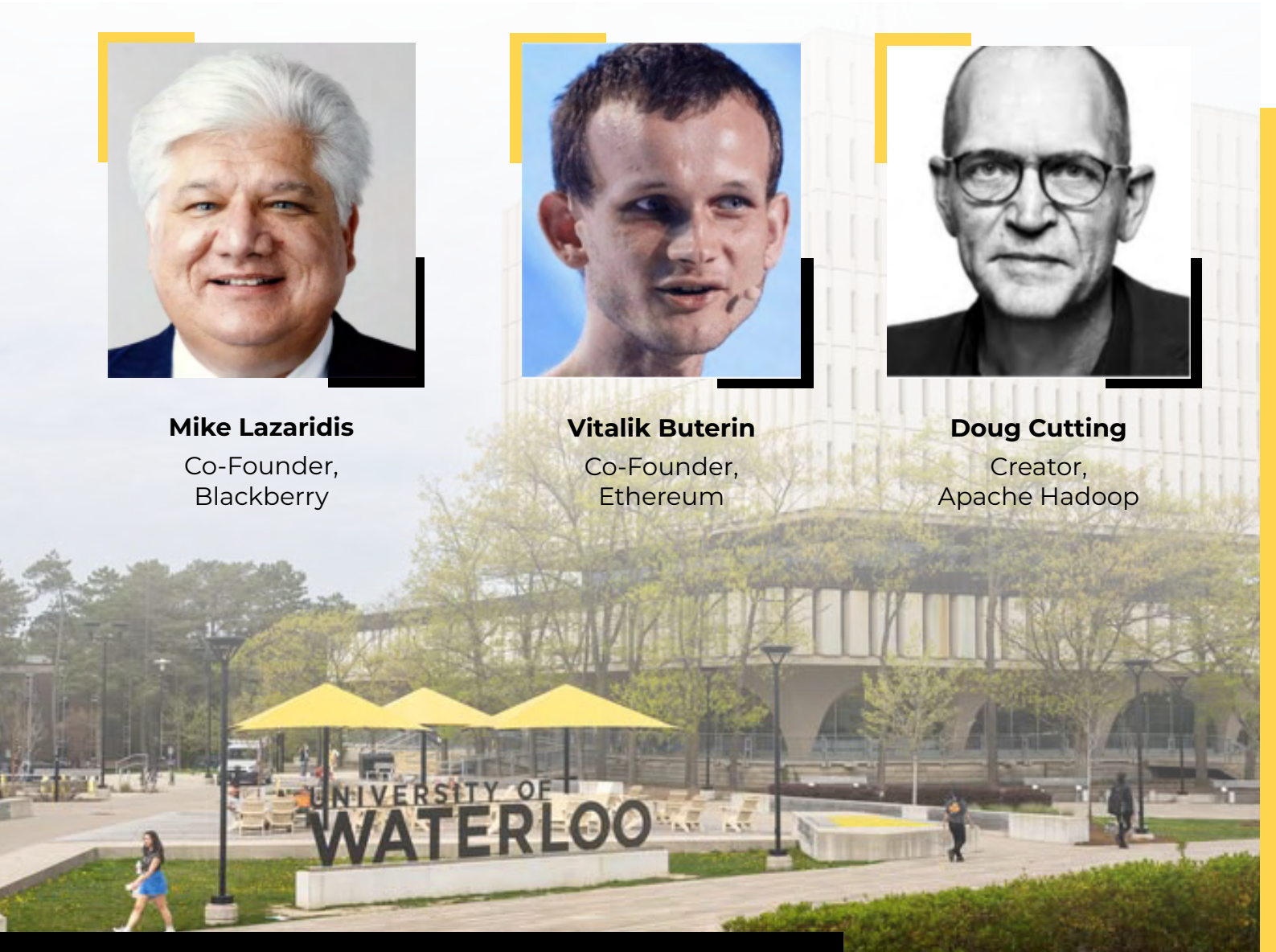
Notable Alumni

Mike Lazaridis
Co-Founder,
Blackberry

Vitalik Buterin
Co-Founder,
Ethereum

Doug Cutting
Creator,
Apache Hadoop

Program at a Glance

Duration

25 weeks
(Six months)

Commitment

Four-Six
hours per week

Format

100% Live Online
(Synchronous with Group
Engagements)

Target Learners

Tech leaders with
10+ years of Experience.
who lead large, multi-domain
teams and own architecture, data,
AI, or security.

Innovation and
Industry Network

Gain access to Velocity,
Canada's largest university
startup incubator.

Led by Faculty and
Tech Leaders

University faculty and senior tech
leaders deliver research-driven,
industry-tested learning you can
apply immediately.

Program Curriculum

Strategic Leadership and Business Fluency (Weeks 1-3)

Clarify the modern CTO mandate across startup, scale-up, and enterprise contexts. Learn to communicate technology decisions in business terms, align engineering outcomes with revenue and ROI, and build an executive-ready 90-day plan for your organization.

▶ **Key Topics**
- The Modern CTO Role and Archetypes
- Business–Technology Alignment and ROI Modelling
- Building Teams, Culture, and Psychological Safety

▶ **Key Deliverable**
- **Executive Onboarding Package (90-Day CTO Plan)**—A board-ready 90-day plan including a stakeholder map, first-quarter priorities, and strategic bets. Strategic Priorities Dossier—Top five initiatives with financial impact, risks, and board-ready language.

Modern Technology and AI Leadership (Weeks 4-12)

Master the technologies that define the modern CTO's toolkit. Learn to design scalable cloud architectures, deploy AI/ML systems with governance and MLOps, optimize cloud costs using FinOps, and make build-versus-buy decisions that balance innovation with business value.

▶ **Key Topics**
- Architecture and Platform Engineering (microservices, DevSecOps, CI/CD, zero-trust security)
- Data, AI and Emerging Tech (GenAI, MLOps, Responsible AI)
- Scaling Operations (SRE metrics, FinOps, vendor management, global architecture)

▶ **Key Deliverables**
- **AI Investment Dossier**—Business case, ROI/TCO model, and governance framework.
- **Scaling Blueprint (SRE + FinOps)**—Reliability charter, cost dashboard, and global expansion plan.
- **Architecture Decision Record + Platform Blueprint**—Target architecture, security, and compliance framework.

Boardroom Influence and Transformation (Weeks 13-18)

Strengthen your ability to lead at the highest levels. Learn to communicate complex technology strategy in board language, drive enterprise-wide transformation programs, and design governance models that balance innovation, regulation, and ethical AI practice.

▶ **Key Topics**
- Board Dynamics and Executive Communication
- Transformation and Change Leadership
- Ethical AI and Governance

▶ **Key Deliverables**
- **Board Presentation Deck**—A board-ready presentation with strategy, budget, and risk summary.
- **Transformation Playbook**—Governance, metrics, and change-management framework for sustained impact.

Electives—Choose Your Path (Weeks 19-25)

Apply your leadership blueprint in one of two advanced contexts—launching and scaling a new venture or driving enterprise-wide innovation and transformation. Each path culminates in high-stakes War Games where learners present under real-world pressure and board scrutiny.

▶ **Track A: Entrepreneurship—Building and Scaling Ventures.**

Key Topics
- Venture discovery, validation, and growth strategy.
- Fund-raising, investor targeting, and exit planning.
- Capstone War Games: VC pitch, valuation defense, and multi-crisis simulation.

▶ **Track B: Intrapreneurship—Enterprise Innovation and Transformation.**
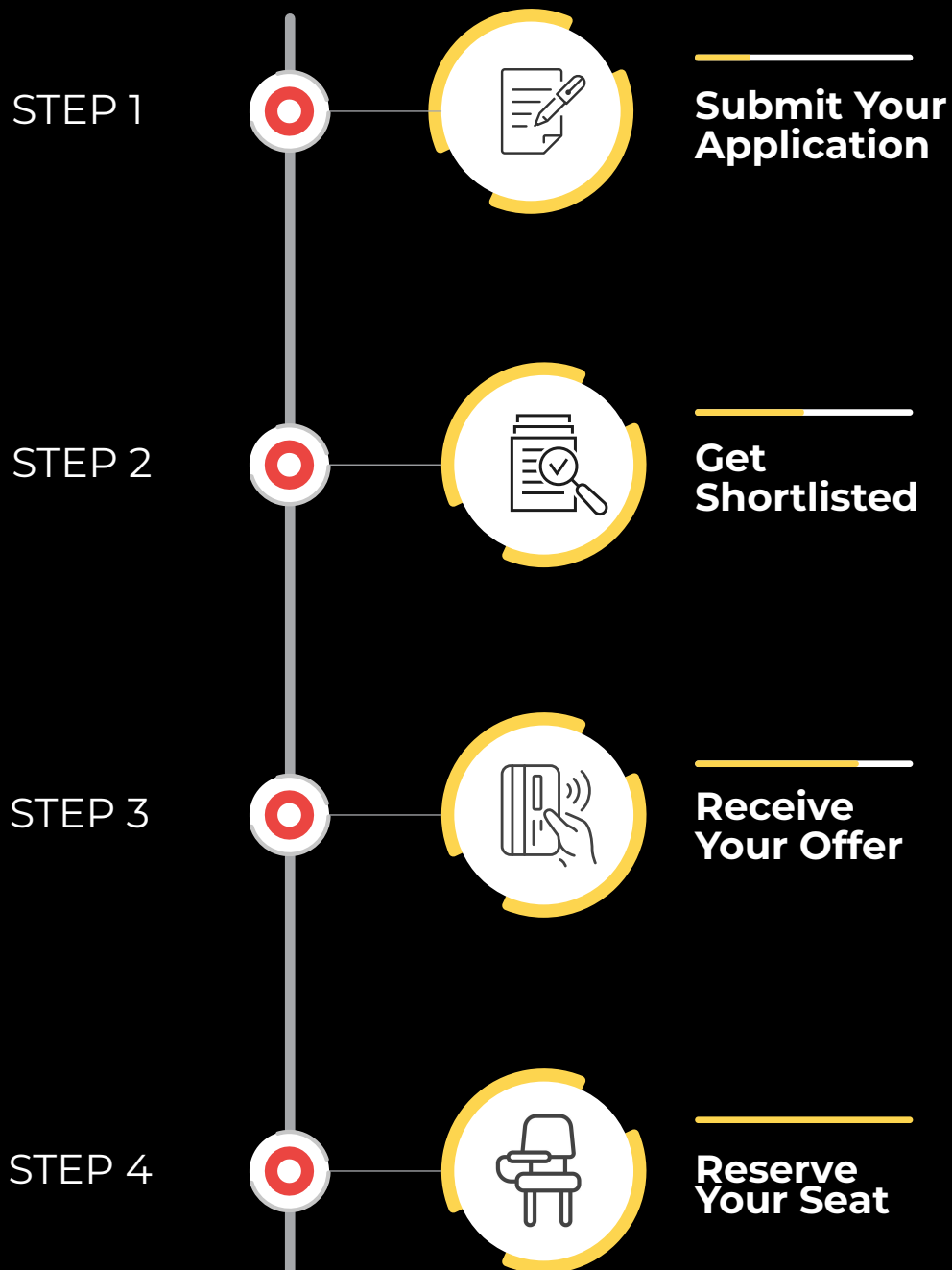
Key Topics
- Leading enterprise-scale transformation and ROI tracking.
- Platform modernization and change leadership with governance balance.
- Capstone War Games: Board-level transformation pitch, regulatory or M&A shock response.

▶ **Key Deliverables**
- **Startup Playbook**—An investor-ready package with pitch deck, growth model, and exit options.
- **Enterprise Transformation Blueprint**—A three-year roadmap with governance model, ROI framework, and transformation plan.

Engage with Waterloo's Velocity ecosystem for mentoring, incubation touchpoints, and enterprise innovation pilots to take projects beyond the classroom.

Begin Your Journey
In 4 Easy Steps

STEP 1

Submit Your Application

STEP 2

Get Shortlisted

STEP 3

Receive Your Offer

STEP 4

Reserve Your Seat

Eligibility Criteria

· Minimum of 8 years of industry experience

For further details, **contact**

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