

Richard Boudreault

CEO, TAI inc.

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Summary

Richard is a successful serial entrepreneur/intrapreneur and innovative C-level general, technology management and commercialization executive with professional board director/chairman governance experience and a 30 year track record of achievements in leadership roles.

A problem solver, he has held CEO, CTO, CRO (turnaround mandates), and top corporate finance positions with large and small entrepreneurial organisations, in both private and public sectors. Richard's notable experience in Advanced Materials, Natural Resources/Metallurgy, Clean Tech, Medical Devices, Energy and Aerospace sectors, has included the authorship of 13 awarded patents and 65 pending. He was involved with 6 private and 4 public successful ventures as a principal player as well as three national-level centers of excellence.

On top of proven multidisciplinary expertise in finance, corporate governance, and technology and business development, Richard is a dynamic, passionate, resilient, multilingual and multicultural, result-oriented manager.

- Proven ability to deliver innovative and commercially successful products in record time as well as in attracting financing.
- Sought out for business acumen, strategic decisional skills and for structuring highly profitable business ventures, in particular technological-based ventures.
- Strong coaching-based leadership style with ability to learn quickly and communicate effectively.

He was active on 26 boards of directors, including public, private and para-governmental/crown corporation boards, and currently sits on 3 BoDs. The average tenure growth rate of portfolio while sitting is 49.7% CAGR, 55% reached liquidity events.

Richard has lived, studied and worked in the US, Japan, and France and has taught at universities around the globe: The University of Sherbrooke, University of Ottawa, Royal Military College, Michigan Tech, Cornell University, U. Louis-Pasteur, MIT, York University and ISU have all welcomed Richard as a lecturer.

Experience

CEO at TAI inc.

February 2014 - Present (4 months)

Business, entrepreneurship and innovation consultant. Technology-Market-Financing coupling services including venture and IP valuation. With a special interest in natural resources, clean tech, power grids and energy issues. Presently under contract with Orbite Aluminae.

R&D advisory committee, BoD member (1999-2004) at INO

1999 - Present (15 years)

INO is a 200 specialists strong technological design and development firm for optics' and photonics' solutions for SMEs and large corporations. It is Canada's foremost national center of excellence in photonics, home to the largest concentration of skill in the field and serves clients of all sizes from all parts of Canada and around the world. INO offers a complete range of integrated services in the fields of optics/photonics to clients of all descriptions in every field of industrial activity. It also possesses a variety of technologies and innovative processes based on a strong IP portfolio. INO has successfully spun-off 29 firms and tech transferred commercial license to 54 corporations. It has a portfolio of 183 patents. www.ino.ca/en

President, CEO and director at Orbite Aluminae Inc.

August 2005 - February 2014 (8 years 7 months)

Conceived, developed and patented an innovative metallurgical/chemical process enabling the clean production of alumina from various aluminous ores, the transformation of industrial and mining wastes (Red Mud, Fly Ash...) into a series of metallurgical (Al, Fe, Si, Ti, ...) and rare metals products including rare earths (REE) and rare metals (Ga, Sc, ...). Raised over \$140M of financing from institutional and government sources and directed a knowledge-based publically traded start-up to reach a peak valuation of \$1/2B and, that generated 11 patents as well as more than 65 pending. Resulting in roughly 760% market share gain over tenure, representing a CAGR of roughly 30% per annum. Developed relationship agreements and partnerships with aluminium producers such as RUSAL (smelter-grade alumina), a complete off-take contract with Glencore (smelter grade alumina), as well as with the environmental services world leader Veolia (for sustainable treatment of Red Muds). Led the development of a Pilot facility and of a circa \$100M High Purity Alumina production commercial facility expected to enter service by the end of 2014. On-boarded an highly effective quality team. Developed a thorough understanding of the aluminium industry economics.

www.orbitealuminae.com . http://fr.wikipedia.org/wiki/Orbite_Aluminae.

http://en.wikipedia.org/wiki/Red_mud

BOD Member at AECL

January 2007 - April 2013 (6 years 4 months)

Atomic Energy of Canada Limited, a crown-corporation, is Canada's premier nuclear science and technology organization. For over 60 years, AECL has been a world leader in developing peaceful and innovative applications from nuclear technology through its expertise in physics, metallurgy, chemistry, biology and engineering. It developed the CANDU heavywater reactor, the sole nuclear energy technology capable of burning naturally occurring uranium (and Thorium) without reverting to enrichment and without producing climate changing CO₂. 22 reactors were built in Canada providing some 15% of the country's power requirement at a 5-8 cents per kW/hr cost. there are CANDU-type units operating in India, Pakistan, Argentina, South Korea, Romania and China. The technology can burn the cheaper and more prevalent element Thorium. While in tenure, the BoD successfully divested the CANDU business unit to

SNC-Lavallin and supervised the repair the Chalk River medical isotope reactor, developed the EC6 reactor concept and set AECL with a new structure as a GOCO. Served also on the audit and technology committees. www.aecl.ca and en.wikipedia.org/wiki/CANDU_reactor.

BOD director and Head of Audit Committee at Mechtronix Systems Inc.

2000 - 2012 (12 years)

Mechtronix is a private world leader in flight simulation; offering a complete range of products from 2D training tools and FTDs to Full Flight Simulators (FFS) Level D, have extensive experience in the flight simulation business and a well implemented worldwide support network. During tenure, the firm went from a start-up providing training tool to the second largest full-flight simulator firm in the single aisle aircraft category (B737, A320 families) generating circa 10x in shareholder value growth over tenure. It was recently sold to the Textron conglomerate (TruSimulation). <http://www.mechtronix.com/home/>

Governance Experience at Board of Directors

1993 - 2011 (18 years)

2013-now Canadian Rare Earth Network (Not for profit industrial network)
2005-2014 Orbite Aluminae (Alumina & Cleantech mining process, Rare Earths and Metals)TSX
2008-2013 Atomic Energy of Canada Ltd (Nuclear energy and technology) Crown Corporation
2007-2009 Broadsign (Chairman, Digital signage software) Private
2006-2011 JAG Mines (Natural Gas exploration) TSX-V
2005-now ITSMAX (Intelligent highway technology for public transport) Private
2004-2010 Raymor (Carbon nanowires, plasma surfacing) Public became Private
2001-2013 Mechtronix (Flight simulators) Private and M&A to Textron
2002-2004 Institut National d'Optique (Photonics, R&D and tech transfer) Parapublic
1999-2003 Autovu (Autonomous optical reading of license plates) Private & M&A
1999-2002 Codagen (Autonomous software writing software) Private
1999-2002 Nikron (Nanotechnologies, Metallic resurfacing) Private
1995-2002 Poetic Tech (Ergonomic and Memory farms cooling technology) Private
1999-2002 Smartsight (IP surveillance camera technologies) sold to Verint
1998-2001 ExtensoTech (Tourism guide technology) Private
1997-2001 SMT Hydrasil (Nanotechnologies and surfacing) Private
1997-2001 PyroGenesis (Nanotechnologies, Cleantech) Private became public TSX-V
1996-2001 Tetra Tech (Fleet managing technology) Private
1998-2000 AT2/Biogentis (Surgical glue and instruments) Private
1999-now Géomax (Geomatics) Private
1996-1998 ART Advanced Research Technologies(Biophotonics and aero technologies) TSX
1992-1998 Visuaide (Technology for the visually challenged) Private became Humaware
1994-1996 Aéroports of Montreal (Management of the Montreal and Mirabel Airports)Parapublic
1993-1996 CLD de la Montérégie (Regional Development Agency) Parapublic
1993-1996 Centre de Technologies Aérospatiales (Aerospace technology center) Parapublic

CEO at Technologies Aérospatiales Inc

February 1991 - February 2010 (19 years 1 month)

Aerospace, Energy and Management consulting. Performed contracts for ESA in automation and robotics, optics, microgravity and international Technology Transfer mechanisms; CNES and France's DGA on remote sensing technology; CSA on moon and mars exploration missions; Technology transfer; NASA committees and workshops on asteroidal earth impact and avoidance; Microgravity Processing and In-Situ Resource Utilisation (ISRU); and process development for lunar ilmenite; at Royal Military College developed space specialty program involving the novel milspace operations curricula.

In the management sector consulted on the M&A of large European and American aeronautics and aerospace conglomerate. In the energy sector; worked on Space Power Generation (SPS) and Space Relay Transmission of power (SPR) clean technologies, Lagrange Point Solar Flares detection and warning technology for Hydro-Québec and Hydro-Ontario; but also with power grids and oil and gas prospection.

In the advanced materials sector was involved advising 5N+ and Canadian Electronic Powder (CEPC). Client list included large Japanese and European firms such as IHI, Nippon Steel, Matra-Marconi and Société européenne de propulsion (SEP), and Canadian DMR. Worked as Advisor to the Québec's Ministry of Industry on aerospace and robotics affairs.

Developed strategic and business plans for the CSA, DMR, ATS Aerospace, Lockheed, Lockheed-Martin, Matra, Instrumar, and provincial governments. Served as expert on technology transfers and intellectual properties for the European and Canadian Space Agencies.

In his career, he has participated directly as a principal to more than 13 space missions/satellites and a few aircraft programs.

CTO and VP Strategy at ART aerospace

November 2000 - April 2004 (3 years 6 months)

Public firm using a proprietary infrared optical technology to create and market biomedical and pre-clinical pharmaceutical bio-optical imaging devices. The firm at the onset was a start-up, then graduated to be traded on TSX stock exchange and had a market cap of approximately \$100M at the end of tenure. Hired to effect a technology turnaround the firm and divest a business unit.

Established the corporate strategy, R&D, engineering and business development functions. Conceived and developed new product in Optical Molecular Imaging in 14 months (3 patents). This product accounted for all of the firm's revenue. Negotiated commercial licensing deal with GE Medical for two products. Raised two rounds of more than 17MUSD in financing.

Divested the ISIS division at 5x sales to Photon Dynamics (based in California). Pivotal in firm's IPO (24M\$ in strategic and institutional investors, \$35M in TSX IPO and prepared for a NASDAQ listing) increasing market capitalization from \$20M to \$200M in 36 months.

Optix small-animal imager has become a technology quality standard in the market picking up more than 10-15% market share with more than 50 units fielded. Developed inverse-solution image reconstruction technique. Research dealt also with the mechanics and biophysics of cancerous cells.

CEO, CRO at PyroGenesis Canada

2003 - 2004 (1 year)

A firm dedicated to the application of thermal plasma technology for aerospace depositions and the oil and natural resources industries to solve important environmental/energy problems and produce nanomaterial such as Bucky balls and carbon nanofibers and nanowires. Involved also in Clean technology to treat municipal and ship wastes using high temperature plasmas, sold systems to US Navy and Caribbean Cruises. The firm is now a TSX-V publically traded firm. www.pyrogenesis.com

Venture Advisor, SOFINOV at Caisse de dépôt et placement du Québec

February 1995 - November 2000 (5 years 10 months)

INSTITUTIONAL FINANCE

Executive level Venture Advisor for Caisse de dépôt et placement du Québec's (CDP – \$132B in assets) primarily for Sofinov (\$1B in assets) and in support to Capital Communications (\$2B in assets). Responsible for managing venture capital equity investment in high technology industrial companies, specifically materials, aerospace, cleantech and energy ventures including fuel cells.

Developed and managed more than 22 international investment projects commitments worth in excess of \$110M, with an orientation towards new economy. Generated more than 200 investment leads. Enabled CDP's investment in an aerospace-oriented US Venture Capital (USVC) fund (Spacevest) for \$40M. Served on seven Boards of Directors for CDP. Developed a tech valuation model for CDP venture funds.

<http://www.lacaisse.com/en>

Chairman, resources and manufacturing department at International Space University

1988 - 1997 (9 years)

The ISU is an international non-governmental organisation providing a post-graduate education on space issues. Every summer, the selective program attracts 130 young space professionals from 30 countries.

Member - Board of Governors

Member - Board of the Canadian Foundation for ISU

Faculty member, robotics, microgravity processing and space resources

Founder and CEO at Centre technologique en aérospatiale - CTA

1993 - 1996 (3 years)

Established a federally-provincially financed research center of excellence in aerospace with aim of transferring aerospace and materials technologies to SMEs. Projects in light aircraft design, aerospace metallic and composite structures, flight and aircraft maintenance simulators were carried out. A successful start-up incubator was established. Located near the Canadian Space Agency (CSA) and École Nationale d'Aéronautique on the St-Hubert airport near Montreal.

Responsible for implementation and management of Centre de technologies aérospatiales (CTA) a para-governmental R&D centre of excellence.

- Centre with one of highest levels of self-financing in the province and country.
- CTA was self-financed in initial year with low initial capitalisation.
- Five year business plan accomplished in less than three years.
- Built-up client loyalty and satisfaction to high levels with a high contractual repeat rate (>3.3).
- Developed and established a successful technological enterprise incubator, with two (2) firms receiving VC funding

Director, Aerospace Systems at Oerlikon Systems

August 1989 - 1992 (3 years)

An international high-technology company specialised in the development and integration of air defence systems based in Switzerland. Responsible for the development of a diversification unit involved in space technology at Oerlikon Aerospace. Awarded contracts from the Canadian Space Agency on dextrous robotic devices (DEXTER or SPDM) and other on the exploration of a Canadian contribution to a future international Moon-Mars mission. Sat on external NASA committees for the in-situ uses of local resources (ISRU) and processing ores on the Moon, asteroids or Mars to produce oxygen, fuel and water.

Sr. Staff Scientist at Canadian Astronautics Limited

1984 - 1989 (5 years)

A start-up in space engineering, worked on 8 different satellites and space station programs ranging from Radarsat, to military telecom and remote-sensing platforms to a variety of scientific payloads and satellites. Grew to 200 persons before being sold to EMS technologies.

Developed software to position distressed individuals/pilots using Doppler shift of emergency beacon on the radio emission on the Cospar-Sarsat satellites. Worked on energy storage devices such as H2 batteries.

Established new ventures for CAL in space technology and space utilisation (microgravity) growing to finally 25% of the revenues of the firm. Was leader in developing microgravity material processing float-zone furnace technologies for high-purity germanium, gallium-arsenide (III-V) semiconductors. Developed on protein crystallisation, encapsulation of Beta-cells (diabetes) and electrophoresis separation of long chain pharmaceuticals in low-gravity. Trained on NASA's KC-135 parabolic flight aircraft simulating low-gravity. Developed Moon-Mars mission scenarios for the interdepartmental committee on space (prior to CSA's emergence).

Provided design for equipment mounting and operational aircrafts and helicopters involving obtaining the required Transport Canada authorisations.

Professor of aerospace and mechanical engineering at Université de Sherbrooke

1982 - 1984 (2 years)

Professor of aeronautics and mechanical. Developed an undergraduate specialty program within the

Mechanical engineering department in partnership with Pratt&Whitney Canada and Bombardier Aerospace. A first in Québec, the project also included an international faculty exchange program with Ecole Polytechnique in Paris, ENSICA and Sup'Aéro in Toulouse. Developed a complete aircraft design curricula involving DeHaviland Aircraft (now Bombardier). Produced refereed research and publications in fluid dynamics including the aerodynamics of Darrieus type windmills (Hydro-Québec), racing sailboats (North Sails), racing cars and transonic (Bombardier). Acted as an aeronautics expert for the media and the courts.

Defence Scientist at Canadian Forces

1981 - 1982 (1 year)

Computation Fluid Dynamics (CFD), Internal Aerodynamics and Ballistics, Simulation of missiles in warfare scenarios.

Aerospace Simulation Engineer at CAE

1979 - 1980 (1 year)

World leading manufacturer of flight and marine systems simulators. Involved in modelling engines and aerodynamics for military and commercial aircraft simulators. Coding in machine language and Fortran. Simulation of space robotics systems. Left to attend graduate school at Cornell University.

Research and teaching assistant - Physics at University of Waterloo

June 1978 - August 1978 (3 months)

Under a National Grant from NSERC.

Optical and Astronomy Research Associate at Université de Montréal

May 1977 - August 1977 (4 months)

Design, planning and performing optical engineering acceptance tests on 1.6 m. Ritchey-Chretien telescope planned for Mt-Megantic. Optical modelling. Astronomical instruments design and testing.

Honors and Awards

Medal of Queen Elizabeth II's diamond jubilee

Her Majesty The Queen in Right of Canada

May 2013

For distinguished services to Canada.

Fellow CAE

Canadian Academy of Engineers

June 2011

For distinction in the art and science of engineering. CAE is the Canadian national academy for engineers.

The Aluminium Rising Star 2013

Corporate award by Metal Bulletin

September 2013

For developing a new clean tech process to produce green alumina and for remediating the usual associated Red Mud ponds generated by the alumina industry using the Bayer process.

Fellow WASS

World Academy of Arts and Sciences

2006

WAAS was founded as an Academy by Albert Einstein. It has links to the Club of Rome.

Finalist

First National Canadian Astronauts Selection

1983

Best faculty (two years running)

International Space University

1989

Summer Graduate Program in Space Science, Technology and Art.

Fellow IAA

International Astronautics Academy

July 1993

Fellow CASI

Canadian Aeronautics and Space Intitute

November 1997

Best Published Paper Award

CAL

October 1987

Associate Fellow AIAA

American Institute of Aeronautics and Astronautics

September 1991

Sr. Member IEEE

Institute of Electrical and Electronis Engineers

January 2005

Art & Sciences Faculty Medal

Faculté Arts et Sciences, U. de Montreal

1996

Member

Sigma Xi Science Honour Society

2006

For distinction in Science and Engineering.

PerformAS Award

Corporate award by Quebec's Ministry of Economy

March 2012

Award to the Chemistry Corporation of the year offered by the Québec Gouvernement.

Awards for New Technology (regional & national)

Corporate award by the Canadian & Manufacturers & Exporters & National Research Council of Canada

2012

Quebec and Canadian winner of best new technology by industry and Canadian Gouvernement

Alpha Prize

Corporate award by St-Laurent's Chamber of Commerce

2011

For innovation.

Innovation & Creativity Award

Corporate award by the Quebec's Ministry of Economic Development and Innovation with the upper gaspesia chamber of commerce

Education

Université de Sherbrooke

MBA, Technology management and finance, 1995 - 1998

Grade: Top of graduating class

Activities and Societies: Participated to the International MBA Competition, Organized by the Molson School of Business of Concordia U., lead a Semi-Finalist Team representing the university.

McGill University

Ph.D. (incomplete), Mechatronics, Robotics, and Automation Engineering, 1995 - 1997

Cornell University

Professional M. Eng., M&AE, 1980 - 1981

Grade: Top decile

Activities and Societies: Sigma Xi honour society member. Teaching assistant at Sibley's School of Mechanical and Aerospace Engineering.

Université de Montréal

B. Sc (Honours), Physics, 1976 - 1979

Grade: top tier

Activities and Societies: Elected president of the class.

Concordia University

Short Course, Conceptual and advanced design of Aircraft

Ecole de Technologie Supérieure (ETS)

Operational Research Short Courses

Harvard Business School

Leading Product Innovation short course

Hautes Études Commerciales (HEC)

Short Courses

Kansas State University

Short Course, Aircraft reliability

McGill University

Short Course, High Tech Marketing

Palisade

Short Course, Risk management

Patents

Processes for extracting aluminium from aluminous ores

United States Patent 7,837,961 Issued December 13, 2011

Inventors: Richard Boudreault, et al.

Also delivered in Australia, Canada, China, Russia and pending in Hong Kong, Europe, India and Japan

Simultaneous multiwavelength TPSF-based optical imaging

United States Patent US2,003,085,338 Issued May 16, 2006

Inventors: Richard Boudreault, et al.

also WO03008945, JP2004536304, EP1409995, CN1543568 and more.

Multiwavelength imaging of highly turbid media

United States Patent US20,050,509,869 Issued August 25, 2005

Inventors: Richard Boudreault, et al.

also WO03007808, JP2004534607, EP1411824, CN1543325 and more.

Certifications

Advanced Open Water Diver

PADI 1986

Pilot

Transport Canada 1976

Red Belt

Tae Kwon Do 1984

Sailing Vessel

1994

Volunteer Experience

Fundraising assistance at Espace pour la vie

2010 - Present (4 years)

Helped raise financing and participation to events. Espace pour la vie supports science education through a planetarium, insectarium and an extensive botanical garden located in Montreal.

Fundraising committee member at Faculty of Arts & Sciences, University of Montreal

2006 - Present (8 years)

Fund Raising

Board of Editor at Space Policy Journal

1989 - Present (25 years)

Editorial Board member

Judge and advisor at XPRIZE

2003 - Present (11 years)

Advisor on the Ansari competition for \$10M for the first world wide competition to place humans in sub-orbital flight. The prize was won on October 4, 2004, the 47th anniversary of the Sputnik 1 launch, by the Tier One project designed by Burt Rutan and financed by Microsoft co-founder Paul Allen, using the experimental spaceplane SpaceShipOne. The Rutan design is the basis for Virgin Galactic new business.

Guest editor at Acta Astronautica

1987 - Present (27 years)

Guest Editor

Editorial Board at Space Power Journal

Board member and selection committee at Canadian foundation for ISU

1990 - 1997 (7 years)

Raise financing and select canadian candidates (graduate students) to attend the ISU summer program. Organized the Toronto (York University) summer session.

Coach at Conrad Foundation

The Conrad Foundation is a non-profit organization built upon astronaut Charles "Pete" Conrad's history of innovation and entrepreneurship. Coaching students entering into a competition re: space projects

Organizing Committee 42nd IAC, (October 5–11, 1991) Montreal, Canada. at International Astronautics Federation Congress

October 1991 - Present (22 years 8 months)

http://en.wikipedia.org/wiki/International_Astronautical_Congress

Chairman at Space Power Satellite Congress Energy and Space for Humanity

August 1997 - Present (16 years 10 months)

SPS '97 Energy and Space for Humanity was organised by the Canadian Aeronautics and Space Institute in Montreal, Canada. With the support of Hydro-Québec, Canadian Space Agency and the American Institute of Aeronautics and Aerospace. http://en.wikipedia.org/wiki/Space-based_solar_power

Organising committee, Finance Chair at 37th COSPAR Scientific Assembly in Montreal, Canada,
July 2008 - Present (5 years 11 months)

see <http://www.cospar-assembly.org>.

BoD member at Canadian Rare Earth Network (CREEN)

October 2013 - Present (8 months)

Network of Rare Earth Producers and Users aimed at developing technological, ecological and operational best practices for the production of this critical material for Canada and North America.

Organizations

Licensing Executive Society

member

1991 to Present

Learned society for Intellectual Property professionals

American Chemical Society

member

2003 to 2013

Ordre des administrateurs agréés

Adm.A.

1995 to Present

American Association for the Advancement of Science

member

2002 to Present

Canadian Association of Physicists

member

1982 to Present

Industrial, material, biological and energy physics

Publications

Published more than 50 learned and refereed articles, including 2 book contributions and 16 official reports.

Authors: Richard Boudreault

Languages

English	(Native or bilingual proficiency)
French	(Native or bilingual proficiency)
Japanese	(Elementary proficiency)
German	(Elementary proficiency)

Skills & Expertise

Venture Capital
Business Strategy
Strategy
Mining
Mergers & Acquisitions
Start-ups
Risk Management
Due Diligence
Mineral Exploration
International Business
Corporate Development
Corporate Finance
IPO
Executive Management
Entrepreneurship
Private Placements
M&A experience
Joint Ventures
Board of Directors
Mergers
Private Equity
Business Valuation
Finance
R&D
Investor Relations
Restructuring
Valuation
Investment Banking
Aluminum
Financial Modeling
Acquisition Integration
Project Finance
Divestitures
Commodity
Product Development
Business Development
Aerospace engineering
Space Science

Space Systems
Space robotics
Nuclear Engineering
Innovation Management
Optics
nanotechnology
Materials Science
Green Technology
Astrobiology
biooptics
Program Management
Management Consulting

Interests

Scuba Diving, Astronomy, Martial arts, Flying, Sailing.

Media experience:

Commentator for Marc Garneau's space shuttle flight for Radio-Canada. Regular of radio show "Aujourd'hui la science". Interviewed on "The Journal" and "Le Point" on CBC. Numerous interviews for publications such as Space Business News, Space News and Aviation Week and Space Technology.

Richard Boudreault

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[Contact Richard on LinkedIn](#)