

University Technologies International Inc.

Annual Review

Fiscal Year 2001-2002

“Everything that
can be invented
has been invented.”

— Charles H. Duell
Commissioner, U.S. Office of Patents, 1899



University Technologies International Inc.

“Excellence in creating business opportunities from scientific innovation”™

“Inventions reached their
limit long ago, and I see
no hope for further
development.”

– Julius Frontinus, 1st century A.D.

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University Technologies International Inc.

“Excellence in creating business opportunities from scientific innovation.”™

UTI Inc. is a private, for-profit technology commercialization company wholly owned by the University of Calgary. UTI offers the entire spectrum of technology commercialization services including technology assessment, intellectual property protection and management, market assessment and evaluation, license negotiation and management, and company creation and development.

The company serves a wide variety of research-based clients in post-secondary institutions, government research laboratories, industrial research and development installations and in private facilities. Its customer base includes corporations, startup companies, research and development facilities and other research institutions.

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“I think there’s a world
market for about five
computers.”

— Thomas J. Watson, Chairman of the Board, IBM, 1943

Letter from the President & CEO

“Everything that can be invented has been invented.”

- Charles H. Duell, Commissioner, U.S. Office of Patents, 1899.

While we now view Mr. Duell’s pronouncement and the other quotes in this Annual Review with considerable amusement, there is a lesson those of us in the high technology sector have been re-learning in the past few years: the future is a very uncertain place and even those who are in positions of knowledge occasionally misinterpret the images in their crystal balls.



Oleh Hnatiuk
President & CEO

It’s no secret that the economy in general and the high technology sector specifically have just been through some rough times. The dot-com bubble burst on the stock market, followed by the horrific September 11 attacks and their repercussions, dealt a one-two punch that staggered the economy around the world, an impact strongly felt throughout our technology commercialization industry

While not immune from the forces acting on the world economy, UTI is able to report that we had a strong business year in Fiscal 2001-2002. For example, we looked at a **record number of technology disclosures from the University of Calgary - 62**. A formal disclosure starts the process where UTI assesses the technology’s commercial potential, arranges for intellectual property protection, assesses the existing and potential market and then, if there are green lights all along the route, commercializes the technology

through licensing to an existing company or creating a company around it.

In FY 2002, UTI instituted a more-rigorous technology assessment process with an aim to more-quickly identify inventions where UTI can add the most value in the commercialization process. The result of that change is that the disclosures which pass through it have a better chance of being successful in the market place. The visible result from the change is that the total number of disclosures from non-University of Calgary inventors was reduced considerably. In the previous fiscal year, UTI looked at 79 disclosures from non-UofC inventors. In Fiscal 2002, we looked at 23; but feel the disclosures that made it through the screening are more targeted to UTI’s commercialization strengths. This also allowed UTI staff to focus their attention on the inventions where UTI could be most effective in adding value in the commercialization chain.

As proof, UTI negotiated **33 licensing agreements** in FY 2002, up from 29 in the previous year. Those, and active licenses from previous years, generated approximately \$2.5 million in revenue. While less than the record performances of the previous two years, the revenue total is significant in that it was primarily generated from licensing activity. Capital gains from the sale of equity in UTI’s portfolio companies contributed significantly less to UTI’s overall financial performance than in the previous two years.

UTI balances its business operations between licensing existing technology to existing

Letter from the President & CEO (continued)

companies and new company creation and development. UTI helped to launch **five start-up companies** in Fiscal 2002, the largest number of companies that UTI has helped to create in one year. This shows that UTI's company creation abilities, an area on which we have been concentrating in the past few years, is coming into its own. Secondly, it demonstrates that innovators with technologies that possess the specific criteria to become companies are seeking out UTI's expertise.

As part of UTI's ongoing commitment to support research on the University of Calgary campus, **three researcher fellowships totalling \$45,000** were awarded in Fiscal 2002. These fellowships, given annually to post-graduate and post-doctoral researchers on campus, were made possible through the legacy of the significant financial donation UTI made to the University in Fiscal 2000.

UTI's Board of Directors experienced a number of changes during the year. Four long-time Board members - **Richard Elenko, Chuck Shultz, Wieland Wettstein** and former Chair **Brian Felesky** - retired from the board in November. It is impossible to overstate the contribution that each of these four has made to UTI in their tenure on the Board of Directors. UTI is grateful for their valuable effort and insight given on a volunteer basis. We offer our sincere thanks to them. UTI congratulates Board Chair **Dr. William Cochrane** who was recognized at the 2001 Alberta Science and Technology Awards for his outstanding contribution to the growth and development of those sectors in the province, a most deserved honour.

UTI is very fortunate in the calibre and quality of the people who came forward to fill the four vacant seats on its Board. Banker **Linda Hohol**, financier **Chris Robb**, former federal cabinet minister and business woman **Bobbie Sparrow** and entrepreneur **Brad Zumwalt** bring with them a variety of expertise and experience in important areas. With the addition of their wisdom and guidance coupled to the remarkable group of researchers and inventors we work with, UTI has every reason to be optimistic about our future and the future of the technology commercialization industry in Alberta and beyond.

UTI would be remiss if we did not recognize the contribution of a number of federal and provincial agencies who have supported UTI's efforts in developing the technology commercialization industry. These include the **Alberta Science and Research Authority, Alberta Innovation and Science, Western Economic Diversification, Alberta Heritage Foundation for Medical Research** and the **Intellectual Property Management Program of the Natural Sciences and Engineering Research Council (NSERC)**, the **Canadian Institutes of Health Research (CIHR)** and the **Social Sciences and Humanities Research Council (SSHRC.)**

Given the less-than-perceptive pronouncements of Mr. Duell and others quoted in this Annual Review, what is UTI's position on the future of technology? We tend to agree with computer researcher Dr. Alan Kay who said, "**The best way to predict the future is to invent it.**"



Oleh S. Hnatiuk
President & CEO

Fiscal Year Statistical Summary

Fiscal Year 2001-2002 Statistical Summary

Disclosures

- University of Calgary	62
- Non-University of Calgary	23
- Total	85
- Previous High Total (2000-2001)	135
- Historic Total (1989-2002)	916

Deals

- Deals (Licenses, Options and PDAs ¹)	33
- Historic Total (1989-2001)	398
- Active Licenses (Generating Revenue ²)	130 (68)
- Gross Revenue and Gains ³	\$2,492,146

Company Development⁴

- Companies Created	5
With UofC technology	4
With non-UofC technology	1
- Companies Developed or Assisted 1989-2002	35
With UofC technology	23
With non-UofC technology	12

Intellectual Property Protection⁵

- New Patent Applications Filed	9
- Total Patent Applications Filed	112
- Total Patents Issued	36
U.S. Issued	15
International Issued	21

¹Product Development Agreements - research contracts connected to licensing agreements.

²Revenue received in this fiscal year.

³Gross Revenue and Gains - gross licensing revenue, product development agreements, consulting and contract revenues, miscellaneous revenues and net gains from sale of equity interests.

⁴Companies which UTI and/or UTI technologies have played a significant role in developing.

⁵Because of delays in processing and notification, these numbers are tallied on the day UTI is notified.

Technology Licensing Overview

The most common and expeditious route for technology commercialization is licensing. Once intellectual property protection is in place for a new technology and the potential market for the product or products that can be produced from that technology is evaluated, licensing is often chosen as the most efficient and effective commercialization path. Licensing is a matchmaking process, locating the most appropriate licensing partner, one which will maximize the value and impact of the technology.

The search may be narrow such as the case of certain biomedical or pharmaceutical discoveries which are of interest to a small number of companies with the capability of exploiting them; or wide, as is the case with Global Positioning System software which is of interest to a large number of companies for a variety of applications.

Licenses may be exclusive (one licensee) or nonexclusive (multiple licensees.) The type of licence greatly depends on the technology. Some technologies have the most impact with exclusive licenses; while others – GPS software being a prime example – are most effectively distributed through non-exclusive licences. Revenue may be in the form of an upfront payment, ongoing royalties or milestone payments based on time or usage.

Fiscal Year 2001-2002 saw UTI sign **33** such agreements; **30 involving University of Calgary technology** (16 from the **Faculty of Engineering**, 7 from the **Faculty of Medicine**, 3 from **Science**, 2 from **Humanities**, one from the and one which involved licensing technology from both Engineering and Science.) **Three** agreements were made for technology from **non-UofC researchers/inventors**. Because some deals may include more than one technology, the 33 agreements involved 39 separate technologies.

UTI ended the fiscal year with **130 active licenses**, an increase of 19 over the previous fiscal year. **Sixty-eight licences generated revenue** in FY 2002.

“Louis Pasteur’s theory of germs is ridiculous fiction.”

– Pierre Pachet, Professor of Physiology at Toulouse, 1872

Technology Licensing Highlights

Fiscal Year 2002 was one of the strongest licensing years in UTI's history. Global Positioning System software continued to make up a significant portion of UTI's licensing deals, understandable considering the strength of the University of Calgary geomatics researchers and their constant efforts to advance, upgrade and improve their software products. Many of these products are now being advanced into second and third generation. Licensing deals done in Fiscal 2002 involved FLYKIN™, C3NAV™, C3NAVG2, MULTINAV™ and HEADRT+™ GPS software developed by the **Department of Geomatics Engineering** at the UofC **Faculty of Engineering**. Developers included **Dr. Elizabeth Cannon** and **Dr. Gérard Lachapelle** who is also head of the department. KINGSPAD™ GPS software and other related inertial measurement software programs of **Dr. K. P. Schwarz** and **Dr. Nasar El-Sheimy** were licensed in separate agreements in FY 2002.

In light of the events of September 11, 2001, the number of inquiries with military or security connections increased. The year's licensees included geomatics research institutions, aerospace agencies, and private aerial survey, engineering, electronics and communications companies. These customers are world wide.

Highlights from the **Faculty of Medicine** included a licence with **Transgenomic Inc.** of Omaha, Nebraska, for Q-Linker technology developed by **Dr. Richard Pon** and **Dr. Shuyuan Yu** of the UofC's **Department of Biochemistry & Molecular Biology Core DNA Services**. The technology allows quick cleavage and support recycling in nucleic acid synthesizing. UTI also completed two product development agreements involving sleep apnea relief and treatment technology developed by **Dr. John Remmers** of the **Faculty of Medicine**. The agreements were with **Respironics Inc.** of Pittsburgh, Pennsylvania.

The UofC's **Faculty of Science** had a strong showing in licensing in FY 2002. The biofilm removal technology of **Dr. William Costerton** was involved in three licensing agreements. Three photocatalyst technologies developed by **Dr. Cooper Langford** and one from **Dr. Alex Starosud** were licensed by a startup company.

A CD-ROM and book-based course called Interactive Japanese, developed by **Dr. X Jie Yang**, **Fumiko Summerell** and **Yoko Riley** of the **Faculty of Humanities** at the UofC, was involved in two licensing deals, both for distribution of the education package.

A software program to generate, distribute and track legal forms, developed by the UofC's **Learning Commons**, was licensed to an Alberta police service for use producing warrants and other legally-required forms. As well, UTI signed three license agreements for technology brought to it by non-UofC researchers/inventors including the novel phase-change shipping material invented by **Ted Malach** of **Intermed Engineering**, Calgary. The agreement was signed with **Saf-T-Pak Inc.**, an international company based in Edmonton, specializing in transportation of infectious diagnostic materials and other perishable medical items.

Company Creation Overview

In recent years, University Technologies International Inc. has placed considerable emphasis on company creation and development activities. Any new research discovery disclosed to UTI is assessed for its potential as the basis of a new company or a substantial development or addition to an existing one.

There are strong reasons for this emphasis. UTI is encountering more and more technology which fits the rigorous qualifications to be considered for company creation. Most important of these is that the technology must be a platform of technologies or processes carrying unique, valuable products into a significant market.

Identifying new technology with company potential is only part of the process in moving technology to a company creation/development situation. The researcher/inventor is an important part of the equation as well. She or he must commit to being a part of, and involved in, the commercialization process.

There is considerable demand in the market place for new or existing technology to assist or augment a company or line of business. Often UTI will take equity in these startup or augmented companies which it holds on behalf of its shareholder, the University of Calgary.

UTI maintains equity in 11 companies including **Cell-Loc Inc.**, **Oncolytics Biotech Inc.**, and **Wi-LAN Inc.** which are publicly traded. Managing that equity and helping to build companies is an important part of UTI's business activities. The current economic climate adds to the challenge of these activities.

Spotlight on SemBioSys Genetics Inc.

SemBioSys Genetics Inc., which UTI co-founded, hit several major milestones in FY 2002 including the granting of **United States Patent 6,146,645** broadly covering the use of its plant oilbody technology. Early in the year, **Steven Antonellis** of Massachusetts joined SemBioSys to head its new **Personal Care Division**. The **Dermasphere™** Ingredient System is being offered to personal care and topical pharmaceutical companies for product formulation.

SemBioSys received a \$5.5 million repayable investment from **Technology Partnerships Canada** in November 2001 to develop its technology platform. In December 2001, the company moved to a new 25,000 square foot, state-of-the-art laboratory and pilot plant in northeast Calgary. The new manufacturing and research facility consolidated all company employees and facilities in one location with room for expansion. In February 2002, **AVAC Ltd.** invested \$2.4 million in SemBioSys to produce monoclonal antibodies, pharmaceutical proteins for the treatment of a wide array of diseases including arthritis, many types of cancer, cardiovascular disease and psoriasis. Also in February, **Jeff Craig**, former president of Goodwin Biotechnology, Inc. and vice president of business development at Monsanto's Integrated Protein Technologies, joined SemBioSys as vice president of business development.

Company Creation Highlights

In Fiscal Year 2002, UTI had one of its busiest company creation years with five companies started, four from University of Calgary technology.

AB Biopharma Inc. was formed with University of Calgary researchers **Dr. André Buret, Dr. Grant Gall, Dr. James Hardin and Dr. Merle Olson** primarily to develop and commercialize their proprietary epidermal growth factor technology for human therapeutic uses. Veterinary uses had previously been licensed to **Janssen Animal Health** of Belgium.

ACT Pharma Inc. was started with UofC researchers **Dr. Tom Back and Dr. Floyd Snyder** to develop and market their nucleoside technologies for anti-infective and anti-neoplastic uses.

UTI assisted in the significant development of **Quorex Pharmaceuticals Inc.** through an agreement in which **Dr. Michael Surette's** autoinducer technology involved in cell-to-cell communication was bundled with technology from **Princeton University**. The company hopes to produce anti-infective drugs that disable disease-causing mechanisms in pathogenic bacteria.

Perm Environmental was started by licensing in a number of photocatalytic technologies developed at the UofC.

On Stream Technologies Inc. was formed around the continuous de-coking technology developed by **Orlande Sivacoe** of DDT Inc. in Lacombe, Alberta.

A number of existing companies built around University of Calgary technology in UTI's portfolio achieved significant corporate milestones during Fiscal 2001-2002. UTI continues to play an important role in many of these companies, including **SemBioSys Genetics Inc.** Its milestones, including the opening of its new pilot plant facility, are outlined on Page 6.

In March 2002, **Oncolytics Biotech Inc.** won a U.S. patent for its cancer therapy treatment. The patent, entitled *Reovirus for the Treatment of Neoplasia*, covers the use of human, mammalian, and bird reoviruses as a treatment for some forms of neoplasms, or cancers. Oncolytics, a UTI startup, is developing the human reovirus into a potential cancer therapeutic called Reolysin.



During the open house at **SemBioSys' new pilot plant facility**, **Dr. Maurice Moloney**, centre, scientific founder and chief scientific officer of **SemBioSys**, demonstrates how oil seeds implanted with commercially-valuable proteins are sprouted in the laboratory.

Other Highlights of the Year

One of the winners of the 2001-2002 **UTI Fellowships** for UofC postgraduate and postdoctoral researchers pointed out that there was a distinctly 'international' flavour in the University Technologies International Inc. fellowships this year. The winners were originally from Germany, Korea and Brazil.

This year's Fellowship winner in **Engineering** was **Rainer Herzinger** who works under the supervision of **Dr. Mamdouh M. El-Badry** in the Faculty's **Department of Civil Engineering, Structural Engineering Group**. Rainer is researching improvements in the methods of detailing the end zones of reinforced concrete members such as those used in bridges and parking structures. Rainer is looking at using various special types of reinforcement developed at the University.

In **Medicine**, this year's recipient is a researcher from the Faculty's **Cancer Biology Research Group**. **Kyu-Sil Choi** has been working for the past five years under the supervision of **Dr. David M. Waisman**. Kyu-Sil's research focuses on the molecular mechanisms of tumor metastasis. In particular, Kyu-Sil has discovered that a protein found on the cell surface has important implications in regulating the ability of a tumor cell to metastasize throughout the body.

The **Science** Fellowship was awarded to a post-doctoral researcher in the **Department of Biological Sciences** in the Faculty of Science. **Dr. Lyriam Marques** works under the supervision of **Dr. Merle Olson** in the **Division of Cellular, Molecular & Microbial Biology**. Lyriam's research is looking into biofilms as a possibly-significant factor in plant disease which could lead to the controlling both bacterial and fungal plant diseases, saving hundreds of millions of dollars in crop loss annually, particularly in the potato, coffee, citrus and grape industries.

Each year the **Association of University Technology Managers (AUTM)** publishes statistics on the performance of technology commercialization organizations in North America. Despite the inherent delay in compiling statistics on the nearly 200 agencies, the Fiscal 2000 report, released in March 2002, is a valuable benchmark for organizations like UTI to compare performance with others and to track the economic impact of the technology commercialization industry.

The report shows UTI in top spot in Western Canada in technology commercialization revenue from company creation and technology licensing. Across the whole country, only two Eastern universities were ahead of UTI in revenue. That ranking placed UTI in the top 40 technology commercialization organizations in North America. UTI's revenue of \$US 3.15 million for FY 2000 was a 68 per cent increase over the previous year and represented one-eighth of the national total.

UTI continued to play a leading role in interagency cooperation in the technology commercialization industry in Alberta, participating actively in the **Alberta Technology Commercialization Network (ATCN)** and **WestLink Innovation Network Ltd.**

Staff, Board of Directors & Advisory Council

Fiscal Year 2001-2002 saw only one personnel change at UTI. In March, Joann Priestley completed her technology commercialization internship with UTI and moved into intellectual property management. Joann excelled in learning the technology commercialization profession in her Alberta Heritage Foundation for Medical Research-sponsored position at UTI, and took an industry position with SemBioSys Genetics Inc., a UTI startup which is now a significant enterprise in Alberta's biotechnology industry.

UTI Staff

Oleh Hnatiuk, President & CEO
Hugh Jones, Vice President
Geoff Moon, Manager, Technology Commercialization,
Engineering & Physical Sciences
Ron Matheson, Manager, Technology Commercialization,
Medical & Life Sciences
Wendy Porter, Financial Administrator
Don Morberg, Communications Manager
Helen Shannon, Marketing Analyst
Arlene Parsons, Information Associate
Christopher Chow, Technology Commercialization Associate
Ian Bell, Business Development Associate
Melanie Newbery, Administrative Assistant
& Corporate Secretary
Iona Fuhrer, Financial Assistant
Sandy De Vos, Administrative Assistant

Board of Directors

Fiscal Year 2001-2002, saw major changes in UTI's **Board of Directors** and its **Advisory Council**. The Board changed significantly with the retirement of four directors including Brian Felesky, a founding director of UTI. The retiring directors were:

Chuck Shultz – joined June 1998, served as a member of the Executive Committee and then became Vice Chair in 1999. He will continue to serve the University of Calgary as Vice-Chair of the Board of Governors.

Wieland Wettstein – joined June 1993, contributed extensively to developing UTI's management infrastructure, served on the board's Audit Committee and chaired the Compensation Committee. His financial expertise was invaluable to UTI as the company grew during his term on the board.

Staff, Board of Directors & Advisory Council (continued)

Richard Elenko – joined February 1991, in addition to his volunteer board duties, Richard became immersed in the creation of the UTI startup company SemBioSys Genetics Inc. He worked with UTI in all aspects of the company from business plan to pilot plant, even chairing SemBioSys' Board of Directors. In doing so, he created an industry model for university startups.

Brian Felesky was a founding director of UTI in 1989 and became Chair of the Board in 1991, a position he held for eight years, each one a business milestone in UTI's history and development. Under his chairmanship, UTI moved from struggling startup to a leadership role in the technology commercialization industry.

Four new directors bring a variety of interests and abilities to the Board: Former CIBC Executive Vice President **Linda Hohol** has extensive financial, management and administration experience and wide-ranging post secondary, business and community involvement. **Christopher Robb**, financial and business advisor, is Managing Director of Traction Capital Ltd., a merchant bank involved in energy infrastructure and finance. He is formerly President and CEO of CanStates Energy. Former Member of Parliament and Minister of Natural Resources, **Bobbie Sparrow** is President of Sparrow Holdings, a member of the University of Calgary Board of Governors and has extensive community and business involvement. **Brad Zumwalt** is President of Zinc Ventures and Social Venture Partners Calgary, a unique non-profit funding partnership combining a capital venture approach with local philanthropy. He is an e-business pioneer founding Image Club Graphics and EyeWire.com, and is director of several technology companies.

Board of Directors (as of March 31, 2002)

Dr. William Cochrane
Chairman of the Board

Dr. Keith Archer
Dr. Grant Gall
Dr. Hamid Habibi
Oleh S. Hnatiuk
Linda Hohol
William Kaufmann
Leigh Pullen
Christopher Robb
Bobbie Sparrow
Peter Tertzakian
Dr. Keith Winter
Dr. Chan Wirasinghe
Brad Zumwalt

“Stocks have
reached what
looks like a
permanently
high plateau.”

– Irving Fisher, Professor of Economics,
Yale University, 1929.

Staff, Board of Directors & Advisory Council (continued)

William Cochrane honoured.

Dr. William Cochrane, Chairman of the Board of Directors of UTI Inc., was honoured October 19, 2001, at the **Alberta Science and Technology (ASTech) Awards** for his contribution to the development of those disciplines in Alberta.

Dr. Cochrane received the **Outstanding Contribution to Alberta Science and Technology Community Award**. This is ASTech's version of a lifetime achievement award. Among his many achievements, Dr. Cochrane was the founding Dean of the Faculty of Medicine at the UofC, was President of the University and served as Deputy Minister of Health for the Province of Alberta.

He has received honorary degrees (LL.D.) from the University of Calgary and Dalhousie University in Halifax and a Doctorate of Science (D.Sc.) from Acadia University.

In 1977 he received the Queen's Jubilee Medal and in December 1989 he was made an Officer of the Order of Canada. In 1992, he received the 125th Commemorative Medal from the Government of Canada.

The UTI **Advisory Council** also had significant changes in FY 2002 as the Council's focus and membership was re-aligned to strengthen support for UTI's business aims and goals.



Advisory Council (as of March 31, 2002)

Mike Beamish

Bob Brawn

Dr. Robert Church

William Croft

Jack Davis

Richard Elenko

Brian Felesky

Larry Fichtner

Robert Gibson

Richard Haskayne

Bruce Healy

Brian Hunt

Dr. Tom Keenan

John Lau

Alvin Libin

Joe Lukacs

Archie Mackinnon

Mike Maher

Jack Manns

John Masters

Ken McCready

Robert Mills

Maury Parsons

John Ramsay QC

Doug Reid

Dr. Alf Sailer

Dr. Hans van de Sande

Dr. Robert Schulz

Richard Shannon

Dr. Eldon Smith

Hugh Stanfield

William Stemp

Don Thurston

“This ‘telephone’ has too many shortcomings to be seriously considered as a means of communication.”

– Western Union, internal memo, 1876

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**“I can see the time when
every city will have one.”**

— An American mayor's reaction to the news
of the invention of the telephone

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