

TECH TALK

Spring 2007

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NEWSLETTER SUBMISSIONS

TMGT welcomes submissions from our readers that are applicable in the context of technology management interests and which you believe will be of general interest to other readers.

We want to hear how you used technology to accomplish your business objectives, how you acquire technology, how you manage technology professionals, how you use technology to perform tasks or improve business processes, or how a specific technology implementation advanced your interests.

Please ask for more details or submit your article via e-mail attachments to Terry Suen, tsuen@bcit.ca.

LIFE CYCLE OF A BIOTECH COMPANY

— Opportunities and Pitfalls for Licensing Executives

(Adapted from presentation given to the BC LES group by Dr. Paul Barran, January 2006)

The journey new BC biotechnology companies take from “start up” to “mature” company is characterized by specific and critical changes in management skills, company and product development strategies. How well a biotechnology company is able to garner support and switch gears during the transitions through each stage of development is a good indicator as to the staying power of the company.

The following chart illustrates the key focus points during the life cycle of a typical biotechnology company:

Stage	Age of Company	No. of Staff	1st Product	Pipeline	Financing	Partnering	HR Issues	MGMT Issues
Start-Up	0-3	1-20	Basic research Define biology activity		\$0 - \$15M - “friends & family” - Govt. grants - Angels - Venture Cap “A” round	Validation	CEO CSO (Chief Science Officer) HR Planning	IP protection Business Plan Cash management
Growth	3-7	15-40	Pre-clinical to Phase I	Build franchise 2nd generation leads	\$20M - \$50M - Venture Cap “B” and “C” rounds	In-license Infrastructure GLP/GMP	Chemistry VP Clinical Regulatory	Chemistry Clinical / Regulatory
Adolescent	7+	50+	Phase II to market	Rapid development	\$100M+ - Mezzanine - IPO - Follow-on rounds	Value realization Out-licensing	Marketing Investor Relations Public CFO (CFO with public co. experience)	Investor Relations Marketing
Mature	15+	200+	Marketing	Ongoing	Product Sales	In / Out-licensing	Sales	Pipeline

There are two distinct phases where licensing has a key role to play; Start-Up and Growth. Obviously in the initial Start-Up phase we are mainly

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IS YOUR HDTV INTERACTIVE? PART TWO

BY JIM DUNCAN



As part one of this two-part article was being written, the 2006 World Cup of Football was — for me — the big draw on TV. Well, Italy won the cup and the captain of the French team, Zinedine Zidane, was “red carded” for head butting an Italian player. It seemed the replaying and discussing of the infamous act would never end.

Viewers who subscribed to some enhanced television services were able to post their comments on the event and share them with fellow service subscribers in “real time.” I was not one of those viewers, as I still do not subscribe to any enhanced or “interactive” television service. Therefore, I don’t have all the necessary technology appropriately enabled. Even though I was out shopping around just before Christmas — convinced that I deserved a new HDTV with “all the bells and whistles” — I am still technologically deprived and can’t yet participate in interactive TV as I would like.

Today of course — even without my HDTV — I receive numerous TV channels, some of which offer enhanced or interactive features.

Alternatively, I can use my computer to go view cool vintage music “footage” (CCR, The Allman Brothers, The Eagles) on YouTube and rate them; but, is that really interactive TV? I don’t think so. I want to be able to *really* interact with what I see on the tube ... perhaps actually affect the content of the program. For that, I am going to need some other technology bits that I currently don’t have. These bits are both hardware and software (middleware) and will typically include a HDTV (because I really want one), a set-top box (STB) of some sort (maybe ... maybe not) and the appropriate middleware to keep everything in sync.

The essential technology piece for interactive television is “return” or “back” channel capability. This channel provides the pathway to communicate with the source of the broadcast television programming. This is the piece of technology that I don’t yet have.

The majority of folks in Canada receive their television signals via a cable and, for those who subscribe to the enhanced/interactive services available from their provider, this back channel is integrated into the cable feed ... and typically resides somewhere in the 5 MHz to 42 MHz frequency band range. The set-top box they lease or rent from the provider — which comes bundled with the enhanced service — is typically where the middleware that manages this communication channel resides.

For those who get their televi-

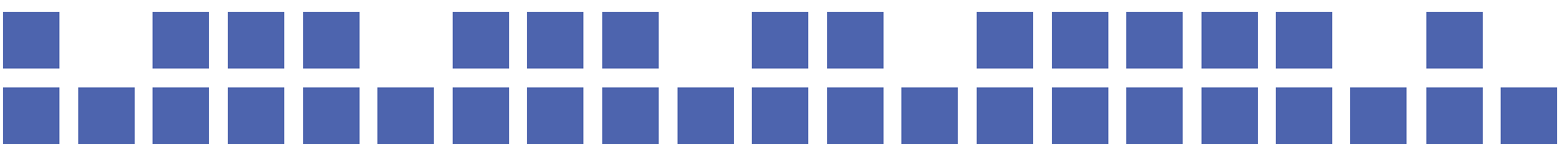
sion signals from a satellite ... or otherwise “grab it out of the air” ... the back channel is likely to be via phone, or text messaging or accessing a website from their computer.

As the majority of television viewers in Canada use cable, in the balance of this article I will focus on the interactive technology as currently developed for and deployed by cable providers.

In the first installment of this article, I referred to “standards to the rescue” and described how Sun’s Java TV set of APIs is becoming a de facto standard for the delivery of interactive television. Well, continuing with the standardization theme, there is a non-profit consortium of cable operators — Cable Television Laboratories, Inc. (CableLabs®) — that is a research and development centre for the cable industry in the U.S. and Canada. Member companies include most, if not all, of the “major” players in the Canadian Cable Television industry. One of the initiatives undertaken by this group is called OpenCable™ and is focused on providing a set of specifications for both hardware and software components that will assist in the delivery of interactive television over cable.

On the software side is the Open Cable Applications Platform (OCAP) specification for the middleware layer intended to enable the design of interactive services and applications that will run over virtually any cable TV system in North

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ARE YOU READY TO GRADUATE?

So, you have finished all the required courses and completed your graduation project — the years of hard work and late nights are but a memory — your well-earned degree is at hand. Or is it?

You have earned your degree — yes, but you still need to formally request your degree credential to be awarded to you. It is not automatic. This may sound vaguely familiar to you — especially those who remember reading about this in your original program plan letter. It is in the fine print.

“So what do I need to do?” You need to do the following:

1. Complete an Application for BCIT Credential (Version Feb 2007)
2. Forward completed request to BCIT’s Advanced Placement and Degree Program office at fax number 604.431.8422.

And that’s it! You may choose to be united with your degree at one of two BCIT Convocation ceremonies (February or June), if not, your degree will be delivered to you via Canada Post.

Note: Application for BCIT Credential (BTECH) is currently not available online, please contact BCIT’s Advanced Placement and Degree Program office to have an electronic copy emailed to you or hardcopy mailed to you. Processing time is 4 – 6 weeks from the point your application is received by SIES, so plan your convocation date carefully!

TO ALL TECHNOLOGY MANAGEMENT STUDENTS, CLASSROOM AND DISTANCE/CORRESPONDENCE EDUCATION | BY JIM HENDRY

I’d like to remind all that TMGT has hundreds, if not thousands, of assignments, proposals, plans and graduation project reports flowing in from hundreds of students in the course of a year. Thus it is in your interest to ensure accuracy and completeness in terms of identifying yourself with important data items on the cover page of every submission to TMGT. For guidance on this please see section 2.0 and Appendix 11.1 of the Student Guide (it is posted at www.tmgt.bcit.ca). It is headed “Assignments Protocol Sample” but is applicable to anything you submit.

Until we edit and reissue the Student Guide, would you please also include your land-line and cell numbers immediately below your e-mail address on every submission cover page.

In a few isolated cases there may be a submission protocol embedded in the course materials but we are eliminating those when they are identified — the Student Guide Appendix 11.1 protocol takes precedence.

We also recommend strongly that you in fact read the Student Guide in its entirety as we begin a new TMGT calendar year — it will be helpful to you (and us) in many ways. Thank you, and have a successful 2007 year.

SPRING 2007 COURSE LINE-UP

TMGT courses offered for classroom delivery this term in BBY:

- TMGT 7101
- TMGT 7102
- TMGT 7103
- TMGT 7122
- TMGT 7134
- TMGT 7142
- TMGT 7144
- TMGT 7152
- TMGT 8103

TMGT courses offered for classroom delivery this term in OK:

- TMGT 7143

For information contact, Laurie McGee, laurie_mcgee@bcit.ca, or 604.432.8459.

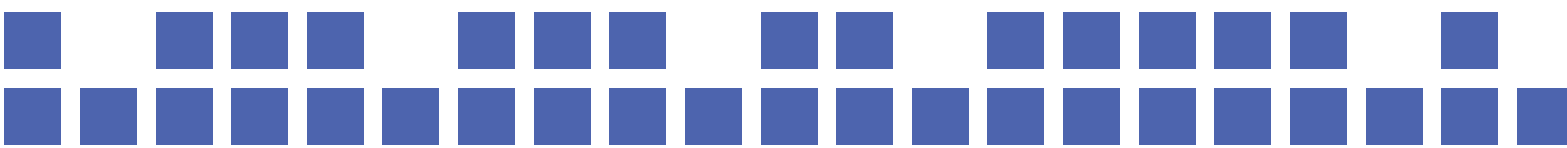


REALITY CHECK

Your concerns and issues are important to us.

In future, we will be publishing comments, suggestions or Q&A in this new section of our newsletter to share with you and to get feedback on matters that are of concern to you.

In your submission try to address a topic, concern or issue that will be of interest to, or shared by, others enrolled in the program. Please forward your item to us at tsuen@bcit.ca.



Life Cycle of a Biotech Company *Continued from page 1*

interested in transferring intellectual property (IP) rights directly to the newly formed company. At the Growth and Adolescent stages, biotechnology companies need to consider in and out licensing to maintain momentum. In-licensing is utilized to acquire new technology, compounds or targets. In-licensing strategy may be used to found the company, to develop the product pipeline or grow the company knowledge base with complementary or competitive technologies.

Another approach, out-licensing, may be used to generate cash to fund company development and this may be effectively achieved via exclusive or territorial licenses with other companies or by seeking out co-development deals or manufacturing and marketing deals with other companies. As a biotechnology company gets closer to actual commercialization, manufacturing becomes a huge problem requiring many qualified people and equipment to ramp up from lab production to full scale production for market. At this stage the company requires access to cash and resources which it does not have on its own, hence the importance of developing good partnerships via in or out licensing to survive this stage.

The Licensing Executive Society (LES) can be a great support resource in this respect.

LES

The LES membership includes a wide range of professionals, including business executives, lawyers, licensing consultants, engineers, academicians, scientists and government officials. Licensing Executives Society (U.S.A. and Canada), Inc. is a member society of the Licensing Executives Society International, Inc. (LESI), with a worldwide membership of over 12,000 members in 30 national societies, representing over 80 countries.

For more information please visit www.usa-canada.les.org

APPEARING NEXT ...

Over the remainder of the year TMGT staff members will be participating in various industry conferences and activities to promote the program, network and connect with industry members. The following lists a handful of events which TMGT has lined up for the year:

- APEGBC Annual General Meeting
- ASTTBC Annual General Meeting
- IT4BC
- Massive Technology Show
- BCNet 7th Annual Conference
- ISMOT.

If you are also attending these events, drop by the BCIT-TMGT booth as we would love to hear how you're doing and what is happening in your industry sector.



TMGT department staff can be contacted should you require assistance or would like to provide feedback. Please contact any of us at the following:

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 604.451.6886

Michele Minichiello

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 604.432.8277 or
 toll free at 1.866.768.7070

PROFILES



Donna Foster Instructor

Donna has worked at BCIT since 1980, primarily in the Physics Department. She has been an instructor, program head, acting associate dean and acting dean at BCIT. She is currently the program head for the Technology Entry program.

Donna has a BSc in Physics and Math, a professional teaching certificate, a MEd in higher education, and a Certificate in Professional Accounting. She brings extensive experience to the teaching of accounting, with an analytical, problem solving perspective and a passion for numbers.

When Donna is not teaching or tutoring physics, accounting or economics, she indulges her creative nature by working on her many elaborate wall hangings, quilting and craft projects.



Gordon Rein Chair, PAC

Gordon Rein, Chair of Program Advisory Committee for Technology Management BTech (TMGT), is a Senior Consultant with Executive Education at UBC's Sauder School of Business where he manages Business and Program Development for Public programs. Prior to this Gordon was the Executive Director of the Management of Technology MBA program at SFU's Segal Graduate School of Business. He is also an alumnus of and past instructor at BCIT and also has many years experience as a product manager in the High Tech industry. Gordon brings his unique combination of expertise to Adult Education and Marketing to our Program Advisory Committee.

FULL TIME DEGREE?

TMGT department has been asked to consider taking the Technology Management degree to a full time mode of delivery while also maintaining the current part time model.



We wanted to put the question out there to you, our customers, as to whether you feel there is indeed value to having your TMGT Btech degree go to a full time, day school model.

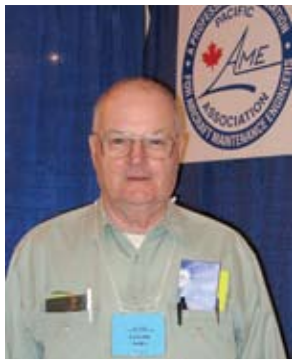
The program aim, since inception, is to provide technologists and others with the knowledge, skills and attitudes for their roles as supervisors and managers in technical organizations. The objective has been to provide individuals with opportunity to acquire the skills and knowledge base while maintaining employment in their chosen technical field and put their skills to use in real time.

We would like your feedback on this notion of a full time study option. Please send your comments to Terry Suen at tsuen@bcit.ca.

PACIFIC AIRCRAFT MAINTENANCE ENGINEERS ASSOCIATION (PAMEA 2007) CONFERENCE

February 2007, TMGT once again joined forces with the Aerospace program and participated at the annual Pacific Aircraft Maintenance Engineers Association (PAMEA) conference.

The annual conference is well attended by local, regional and national suppliers to the BC aircraft maintenance industry. Quality Assurance, Safety Management Systems, and other technical subjects were the focus of several workshops throughout the 2-day conference.



Volunteer Lou Grahn, PAMEA at the PAMEA display

The Aircraft Maintenance Engineer (AME) technology discipline is one that is recognized in the TMGT degree program and the combined training has led to career success for graduates with this specific background.



Jack Baryluk and Morey Altman at the ATC and TMGT display booth



"I cleave the heavens, and soar to the infinite.

What others see from afar, I leave far behind me."

~ Giordano Bruno

"There might be new technology, but technological progress itself was nothing new — and over the years it had not destroyed jobs, but created them."

~ Margaret Thatcher

"Computers are magnificent tools for the realization of our dreams, but no machine can replace the human spark of spirit, compassion, love, and understanding."

~ Louis Gerstner, CEO, IBM

"Teachers open doors; you enter alone."

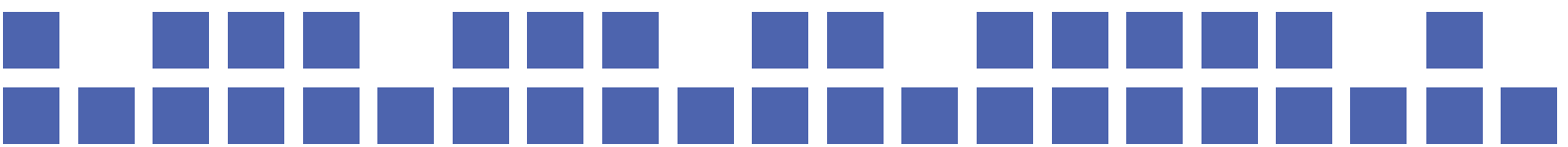
~ Chinese proverb

"Where is all the knowledge we lost with information."

~ T.S. Elliot

"Computers make it easier to do a lot of things, but most of the things they make easier to do don't need to be done."

~ Andy Rooney



Interactive TV *Continued from page 2*

America. Two of the biggest players in the U.S. — Time Warner and Comcast — have both signed licensing agreements and are implementing this specification in their systems. The big plus for viewers/subscribers is that this specification allows for the reception of interactive television *independent of set-top box or television receiver*. Basically this means no more mandatory leasing of set-top boxes and ensures portability of service for users among providers/cable operators.

The technology that will ultimately drive this independence/portability (within the OCAP spec) is something called Downloadable Conditional Access System (DCAS). This middleware will reside inside any receiving device that is OCAP-approved and provide the security and access to other provider supplied applications such as video on demand and interactive features previously accessed via a set-top box (STB).

Until DCAS is widely deployed, STBs will likely be replaced more often by a CABLE CARD — another CableLabs product that is a set-top box on a card. Televisions, and other signal receivers, built to the OCAP specification can have one of these cards inserted and provide all the features previously supplied by the set-top devices. Of course, as with most emerging technologies, there are some temporary limitations. Early versions of the cards are only capable of one way communications and single channel decryption ... not so good for interactive services.

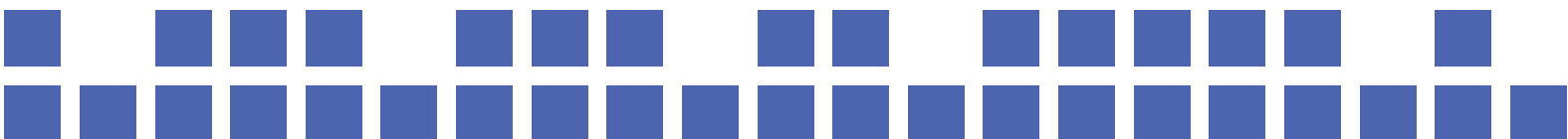
Regardless of where interactive television is deployed here in North America, the *back channel* is always a requirement to allow for two-way communications between transmitter and receiver. There are basically three languages (protocols) used for this communication: Aloha — ANSI/SCTE SS-1, used in Motorola cable systems; DAVIC — ANSI/SCTE SS-2, used in Scientific Atlanta (recently acquired by Cisco) systems and DSG — ANSI/SCTE-106, used by a variety of other cable systems.

Only receiving devices (TV sets, set-top boxes, CABLECARDS), built to the CableLabs Open Cable Host 2.0 spec include transmitters capable of supporting all three upstream protocols. Products built to what at first glance would appear to be the ideal standard — the Federal Communications Committee (FCC) Digital Cable Ready (DCR) requirement — are unidirectional only and therefore cannot support two-way services.

If you read part one of this article in the previous edition of Tech Talk (Fall 2006), you may recall the reference to the “battle” between VHS and Beta formats for dominance of the VCR market. That battle was ultimately won by VHS. Similarly, interactive television is currently at a stage of technology adoption that is characterized by rapid change and competing technologies. Two other examples from recent history are the emergence and almost ubiquitous utilization of mobile communication

(cell phones) and the Internet. As students of technology management, we can apply some of the principles of technology assessment and implementation taught in the TMGT program as we try to make our own decision regarding High Definition and/or Interactive television. We are lucky enough to be observing in real-time a technology adoption affecting an industry and corporations involved in that industry. Their growth — and even their survival — is dependent on how the technology develops, what other technologies and applications spawn from this development and how market factors will impact the products and services available to the end user.

So, what is a person to do? The answer: get informed, choose carefully and don't be in a rush to invest all your retirement savings in an interactive television device. Before you do buy, you might want to check out the CableLabs website. There is still much technology to be sorted out — and lots of product iterations to be promoted — before you are likely to be affecting the content of the broadcast television programming you receive. In the meantime, why not look at that shiny new motorbike, or sewing machine, or maybe now is the time to take that really great vacation you have been dreaming about. There are lots of ways of wiling away spare time; television and all your favourite programs will still be here when you get back. You can even record them while you



SAFETY MANAGEMENT SYSTEMS | BY JIM HENDRY

Technology Management [TMGT] has lately become involved with studying and understanding the implementation procedures for effective Safety Management Systems (SMS). An SMS can be thought of as a “system of systems” for risk identification and risk management in any operational environment. It is also a term that means different things to different people and organizations, large and small, each of which may have its own specific interpretation. In any event it is something important that involves technologies, processes and people.

In TMGT’s case, we have begun with SMS in the aviation sector, engaging with a wide range of stakeholders that includes Transport Canada, the Canadian Association of Deans of Aerospace, Canadian Aviation Maintenance Council, Nav Canada, Pacific Region Aviation Safety Council and many others. In November 2006 we made a presentation to Transport Canada’s SMS information session on how SMS education and training might be integrated into the Canadian college and institute curriculum. This was presented to a group of 300 registrants from across Canada and elsewhere during a 2-day session of many stakeholder interest groups. In Canada’s case, it is planned by Merlin Preuss, Director General of Transport Canada’s civil aviation group, that SMS will be in place throughout the industry by 2010, making Canada’s outstanding

aviation safety record the benchmark for other countries. Several large carriers are well along in this pursuit.

From a technology management perspective in this context, SMS embrace virtually every technological aspect of the contemporary aviation industry. Moreover, SMS concepts and practices extend to a variety of business and process environments, including the likes of railways, mining, nuclear plants, air traffic control, electronics engineering and medical radiography. In all cases the goal of SMS practices is to raise the bar on safety-oriented behaviours and to do this in a holistic and integrated fashion, thus bypassing isolated or “stove-pipe” responses to safety related issues and problem solving. Is there a place for SMS in your world?

OSTEC CAREER FAIR 2006

This September the Okanagan Science & Technology Council (OSTEC) hosted a one day Technology Career Fair in Kelowna, BC. This was the first time for such an event where technology career opportunities in the Okanagan area were showcased. Local technology companies supported the event by lending their staff to speak to individuals who may be interested in a career in the technology sector.

TMGT and the Okanagan College’s Engineering Technologies group were co-sponsors of this inaugural event.

“SPEAR PHISHING”

BY JIM HENDRY

There are two primary forms of phishing: ‘spoofing’ sends e-mails that appear to come from a legitimate source (perhaps by accessing the target’s private e-mail list or posing as having an origin from a legitimate website); ‘social engineering’ is a broad term used to reflect multiple ‘assaults’ on a target, possibly by a combination of e-mail, text messaging, direct telephone calls and even direct personal contact.

Victims are tricked or ‘soothed’ into revealing key private information, everything from date of birth to bank account numbers, SIN, passwords and credit card numbers. In some cases the unwanted traffic can be bi-directional ... valuable private information out, malware brought on board.

When spoofing and social engineering come together the methodology leads to a newer phenomenon called ‘spear phishing’ in which the assaults can be very highly targeted such as to a single large institution, corporation or public body. Then it becomes, for the intruder, a question of playing the odds — make a thousand hits and one might bear fruit, potentially compromising an entity’s most important and private data.

Regardless of which variant, phishing is illegal and the technology management challenge is to implement processes to detect activity, protect data and educate users. See Wikipedia for more.

