



**ÆGIS** e-journal

***Addressing threats that affect your bottom line***

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## **1. Due Diligence — Why it is hard to sue big companies and win**

There are companies that spend a lot of money on attorneys. When this is the case, the practice is often used to help reduce the likelihood of successful litigation against the organization.

It is a safe guess that *some* of the money spent on legal fees is being spent on specialized services, where there are a relatively small number of attorneys who can handle the work competently. This means that all the rest is work that could be handled by virtually any competent attorney with little risk to your organization.

Some corporations identify those law firms and individual lawyers competent enough to cause them problems if they were to be sued, and well-funded enough to be able to handle a case on contingency. And then put them on retainer to handle something. Actually, to handle anything!

Let us assume that an organization spends something in the neighborhood of \$100 million each year on attorneys, and that more or less half their legal expense goes to one or more principal firms. This leaves \$50 million they can dole out in \$10,000 chunks to other firms. Five thousand of them, to be exact.

The downside to this practice would be that they have to add an extra staff member or two to co-ordinate what is being done.

The upside is that an additional 5,000 firms have been removed as possible opposing counsel because of potential conflict of interest issues. This greatly reduces the likelihood of a litigant finding competent counsel, and thus decreases the likelihood of a successful suit against them.

Is it possible to sue a large company and win? Sure. This editor remembers that when he was a youngster someone took New York Bell to small claims court, which forced the rewiring of a central office. And anyone who has seen Erin Brockovich knows the power of a class action suit.

## **2. OPSEC, Economic Espionage, and Competitive Intelligence — How attractive are you?**

If you habitually spend time with models, dancers, singers, and thespians, you can skip this article and move on. If you don't, keep reading.

One of the basic tools of illegal intelligence gathering is sex. Because of this, it is important that if you have information that could be of importance to an adversary, and meet someone you normally wouldn't expect to be interested

in you socially or sexually, you should be aware of the *possibility* that the interest is professional, not personal.

Now, we concede that there are several possibilities here.

- For a start, it is not impossible that the person is actually interested in you, for you. We know of people who habitually, inexplicably, and annoyingly (jealousy on our part) are able to associate with people of great interest and attractiveness, but for whom we can see no compensating virtues or benefits. And we know of people who have had the most unlikely others fall in love with them, and have lived happily ever after.
- Another is that the person may be interested in you for what you have to offer financially or professionally, but are not trying to steal information.
  - As an example, we know of a case in which a handicapped man married his caregiver, a former stripper. The man recognized that this might not be true love, but, with the appropriate financial protections, was absolutely a fair tradeoff.
  - In another case, a man with no social skills was interested in marrying a Russian woman. He had chosen an age-appropriate woman, but then got a letter from an 18 year old girl in Vladivostok who was “interested” in him. Since he didn’t normally date girls in their teens, it was obvious that she was interested in him because she lived, literally, in Siberia.
  - And we know of men and woman who simply won’t date anyone who doesn’t have a lot of money, on the theory that it is as easy to fall in love with a rich person as a poor person.
  - We know of singers who have married conductors and actors who have married directors, and of others who have made similar career choices through marriage.

What if you aren’t wealthy or in a position of power, but do have information of value to someone? Well, you ought to be aware that in casual – and in some cases longer-term – relationships you may be being used merely as a source of information. If sharing what you know will compromise something you are doing, get you fired, or get you arrested, you should think *very* carefully before trading information for sex.

### **3. Executive Protection — They've got to get you there safely and on time, again and again**

Contributed by Basilio Bob Reyes Jr., Executive Protection Officer and Security Driver, Conoco/Phillips ([Basilio-bob-jr.reyes@conocophillips.com](mailto:Basilio-bob-jr.reyes@conocophillips.com)). Contributed articles do not necessarily reflect the viewpoint of the ÆGIS e-journal.

In the field of corporate executive protection, one of the key tasks of the protective team is the day-to-day transportation of you, the principal. Getting you from point A to point B (during which you are most exposed and least protected, and where more than 80% of attacks on executives occur) in a safe and expedient manner is very important! One will usually find that the chairman, CEO, VIP, or celebrity has achieved their status by being a hard worker and in the office early. If your driver wants to witness you or your corporate security manager get anxious and angry, or have them breathing down their neck, they just have forget to pick you up, or get you to an appointment late.

One can see that the position of a security driver is critical to the safety and survival of the principal, and therefore requires an extensive background check and interview process with all the appropriate individuals.

In looking at the role of a security driver, it quickly becomes clear that there is a lot to learn, and it takes a proper attitude, good training, and continued learning on the part of the driver to become successful. The driver must be courteous, punctual, clean, and a non-smoker. The driver should also be a person who is good at working alone, and able to think on their feet, which is very important. Why? Because at times situations / multiple targets will appear and they must be prepared to keep a cool head, deal with the situation or situations, and literally move on.

Should your driver be ex-military or ex-law enforcement, or should you look for someone from within the company, with no prior experience? I think it all depends on the mission requirements. If you're living and working in Bogotá, South Africa, or parts of the Middle East, you want someone *very* qualified (ex-military / ex-law enforcement): trained in EP work, armed, and a part of a protective team.

Keep in mind that security driving is a skill, and that driving is not always easy, especially if something unusual is happening (thus explaining why 2,500 Americans are killed each year in *rollovers* of SUVs, vehicles which require professional training to drive safely in unusual circumstances). Remember that after a driver is trained, they need to maintain that attitude of always learning and always training. This driver has found that two driving

schools per year are sufficient to maintain the appropriate skill level and degree of readiness.

How well-trained a driver do you need? In the U.S., where the threat level is low, a person trained in protective driving techniques by a reputable security school (there are several good schools in U.S.) would be sufficient for driving the CEO. Most courses are two or three days in length, but can be longer if taken in conjunction with an EP course. Before signing-up for a school one should do their homework and check out the school before any money is exchanged or reservations are made.

One last thing on EP / driving schools. I have found that most of the training offered is the same from school to school, but that I still learn something different from each school. Once the driver is done with the school, they should keep their instructor's name and contact information on file, and follow-up with them from time to time to ask for advice, or share an incident where their training helped you. I have found that most instructors like hearing from their former students, plus it helps in building their contact list. It's a small world out there, and you never know when your driver may be working a detail and run into a former instructor or fellow classmate.

Here is some of the information that is covered in EP / driving schools

- Analysis of terrorist attacks
- Route analysis
- Surveillance detection
- Attack recognition
- Countering surprise
- Instinctive driving exercises
- Weapons (if applicable)
- Immediate first aid
- Vehicle search techniques
- Night driving

So now you're driver is ready for the driver's seat, has been trained, and has the correct mindset: It's show time! Here are some points a driver should keep in mind while performing their EP / security driver duties.

- Utilize your training

- Take care of your vehicle and it will take care of you
  - Check vehicle fluids
  - Keep track of tire pressure and tread condition
  - Read and know your vehicle owners manual
- Be on time
- Look sharp (clothes, shoes, et cetera)
- Develop contacts
- Use your training aids
- Be aware, including awareness of people seen again and again at different times or in different places.
- Constantly ask yourself “What if...,” or even better, “What when....”
- Be prepared for situations, and adjust quickly to them.

Also, drivers need to take care of themselves. They need to eat properly as much as possible, and stay away from junk food, sweets, and soft drinks. Eat fruits, vegetables, low-fat meats, and drink plenty of water. I know it can be tough for a driver – or you – to try and squeeze in a regular exercise program, but it can be done. Exercise when possible: fifteen to twenty minutes on a treadmill or ski machine or stationary bike are extremely beneficial. If possible, a thirty-minute program of strength-training exercises is good. Stretching is good.

Your driver must be able to work with the executive secretary and both executive and non-executive staff: This is key in executing their duties. The executive secretary or executive assistant is invaluable in assisting them with their security driver duties. On the flipside, as your driver gets more comfortable in their position, situations will arise in which they will be able to return the favor. It’s a team concept. Viewed that way, it will help in building a team atmosphere among the troops.

Also, I have found that developing business relationships in the city or area in which the driver works is extremely beneficial. As they are out driving with you, they should develop contacts with law enforcement, fellow corporate drivers, travel personnel, et cetera. They need to develop and nurture these contacts: They could be beneficial in the performance of their duties.

I like to think that what goes around comes around in anything we do. By being professional and courteous, by always learning, and by always, always

doing the right thing, your driver will be successful in the field of executive protection and security driving.

One last thing: Good communication is very important not only between you and your driver, but between you and your driver's corporate security manager or director. One must remember that it is usually the security manager or director who approves your driver's training, and has significant input when it comes to approving a pay raise. Bobby Gillham, The Global Security Manager for ConocoPhillips, has always been there for this driver, as have all the accomplished professionals on our corporate security staff.

#### **4. Technical Issues — Speech recording and transcription - Towards increased and smarter deployment**

Contributed by Private Transcription Solutions (PrivaTrans) (<http://www.privatrans.com/>), AlluriTech, Inc. (<http://www.alluritech.com/>). Contributed articles do not necessarily reflect the viewpoint of ÆGIS e-journal.

Wouldn't it be nice if all of our important thoughts and spoken words were automatically recorded in textual form and stored as both audio and text files on a memory device that we wear on our bodies? And what if this information was well organized, summarized, wirelessly communicated, mapped into tasks, instantly retrievable and acted upon in a timely manner to the great benefit? Sound far off and futuristic? Think again: A revolution in speech recording and transcription (SRT) and speech content management (SCM) is in the making.

Wherever the stakes are high you will find that SRT is taking place. Doctors, lawyers, qualitative researchers, investigators, and journalists all deploy SRT to great advantage. In fact, they would hardly be in business without it. But what about all the other professionals out there in the business world who are not making use of SRT? Don't they stand to gain some competitive advantage or indeed define entire new competitive market spaces through the use of SRT?

While many of you already working daily with SRT may find that this article constitutes "preaching to the choir", the hope is that by presenting the main messages herewith in as many channels as possible the vast majority of the population currently not making use of SRT will have gained a strong new calling. Increased use of SRT means both challenge and opportunity for business security professionals. While the government sector is much more up to speed on SRT, the commercial sector, for which this article is primarily intended, is indeed poised for an explosion in usage – and this leaves nobody unaffected.

So, what in simple terms are we proposing? Basically, on an individual basis, we are proposing increased recording of speech throughout each day, transcription of that speech. and organization and usage of the original recordings and the textual permutations in a way which assists the user in more effectively reaching their goals and contributing to the success of their organization.

Transcription is accomplished through the deployment of internal and/or external, outsourced transcription services providers (TSPs), in some cases aided by computer speech recognition (speech-to-text).

Some of the reasons why only a few of the many who could benefit from SRT are doing so are as follows:

- Speech recording technology and its capabilities are not widely known, as the technology is relatively new and not yet specifically marketed on a broad scale.
- The quality of available speech recording technology varies with more visible, widely available, low end products providing only incomplete and discouraging results.
- Speech-to-text technology requires more computing power and higher quality audio hardware and software normally limited to larger, less portable systems and even in the case of best-class hardware and software the speech-to-text results can leave much to be desired.
- Wireless communications with sufficient ubiquity and transfer speed required for compressed digital audio file transfer from anywhere have been lacking until recently.
- The human-intensive work of speech transcription requires human resources (skills and man-hours) which the potential beneficiary perceives that it/he/she cannot afford, whether deployed internally to the organization or outsourced.
- SRT brings with it its share of privacy, confidentiality, legal, information integrity and security issues.
- Potential beneficiaries simply have not become enough aware of the capabilities and benefits of SRT, and have thus not built it into their strategies and integrated it into their operations.
- Potential beneficiaries have lacked awareness of and know-how in the domains of practice known as speech content management (SCM) and speech knowledge management (SKM).

So where do we stand today? The premise of this article is indeed that we stand on the brink of an SRT revolution - driven by advances in technology and compelling examples of high return on investment coupled with recognized need to better manage information and knowledge in order to survive, compete and win.

### ***CONNECTIONS TO COMPETITIVE INTELLIGENCE, KNOWLEDGE MANAGEMENT, CONTENT MANAGEMENT, ASSET MANAGEMENT AND AN ARRAY OF ACRONYMS***

The competitive and security issues concerning businesses today are largely in the domain of intangible, intellectual property assets. There is an ongoing desire to better “capture” the data and knowledge fleeting through far-from-perfect human memory. Accurate, swift and complete codification of this information, storage of it in more reliable digital systems memory and subsequent organization, sharing and presentation with the assistance of advanced technologies is for many a convincingly worthwhile goal.

Companies are increasing their emphasis on information-intensive operations conducted far beyond the corporate office walls with missions to proactively seek out, discover, capture, analyze and act upon a host of essential and critical facts and insights from the business environment, a process described by some as business intelligence (BI) or competitive intelligence (CI).

A goal of knowledge management (KM) as stated in the early days of its discussion has been to fully explore and exploit the interfacing and transformations between tacit knowledge and explicit knowledge, soft and hard, cerebral and textual, that which is known and that which can be described, shared and acted upon to great advantage. SRT comprises some of the most important operational activities for realization of the objectives of strategic BI/CI and KM domains of practice at the interface where these programs meet.

Other industry terms describing domains of practice relevant to this discussion are Digital Asset Management (DAM) and Digital Content Management (DCM). SRT is a key component of BI/CI, KM, DAM and DCM efforts, and we can hereby define terms focused more on the program, process and management levels from permutations of the terms audio, speech, content, asset, knowledge and management as relevant sub-entities which we expect will be used increasingly in the literature. There are, namely, Audio Content Management (ACM), Speech Content Management

(SCM), Audio Asset Management (AAM), Speech Asset Management (SAM), Audio Knowledge Management (AKM) and Speech Knowledge Management (SKM). For the purposes of this article, we will place preference upon the terms Speech Content Management (SCM) and Speech Knowledge Management (SKM).

## **TYPES OF SRT USERS**

We can think of SRT users as *primary users* and *secondary users*, with primary users those recording the speech to be transcribed (those with microphones) and secondary users those who otherwise use and benefit from the results of the recording and transcription. Primary SRT users can be broadly categorized as *strategic thinkers* and *operational practitioners*. Strategic thinkers are typically managers, entrepreneurs, strategy advisors and business leaders who require that their visionary thoughts, ideas, inspirations and insights be recorded and transformed to textual format and then processed to maximum strategic effect. Operational practitioners might consist of human source intelligence collection specialists, investigators, reporters, researchers, etc. who need factual and insightful record of the speech transpiring in first hand interaction with a variety of human sources. They might also consist of technicians, industrial workers, sales representatives, real estate brokers, creative professionals and various other knowledge workers who need to record observations, data and ideas while conducting day-to-day operations. Secondary users can be literally anybody inside or outside the organization with whom the organization deems it should be shared, and associated with these secondary users is the non trivial task of building and operating an effective SCM/SKM system complete with encryption, access rights management and audit trail functionality.

## **TYPES OF SPEECH CONTENT**

Speech content can be described in the following three broad type categories:

- Factual: facts, data, observations (answers to the questions who? what? where? when? why? how?).
- Insightful: insights, ideas, inspirations, visionary thoughts.
- Tasking: tasks (categorized descriptions of action items, things to get done, with delegations and due dates often as a result of facts and insights).

You are at a conference and your ears are met with a barrage of factual information such as contact names, numbers, details of new initiatives and

relationships, etc. and without SRT much would go in one ear and out the other, passing through a pitifully overworked, information-overloaded, incapable space, never to be remembered nor acted upon. You are walking along the beach and have a sudden flash of inspiration in the form of a new idea for a new business and SRT assists you in getting it on track for realization. In most cases you conceive tasks for yourself or others to complete in order to act upon the facts and insights you gain while in the field. Most of the better inspirations come not while sitting in front of a desktop computer but rather while out and about doing all the other things people do during both night and day, whether that be driving to work in a car, having lunch, sunbathing, walking on the beach, on a date, swimming, working out in the gym, fishing, meditating, sleeping.... Inspiration comes in a flash – anywhere or anytime – and SRT helps you exploit it to the maximum.

A competitive edge can clearly be gained by recording (original or dictated summaries thereof) and transcribing ideas, tasks, event/scheduling data, business calls, business meetings, negotiations, agreements, interviews with media and analysts, investigative/research interviews, brainstorming sessions, discussion groups, user group meetings, conferences, exhibitions, demonstrations, web casts, lectures, news broadcasts, newspaper, magazine, and newsletter articles, and observed data such as descriptions of persons, license plate numbers, movement of persons and vehicles, distances and directions of travel, locations, departure and arrival times, *et cetera*.

### ***INFRASTRUCTURE: EXPLOITING ADVANCEMENTS IN TECHNOLOGY***

Whereas historically we have been limited to the options of analog tape recorders and wireless microphones, today we have mobile/wearable computer systems equipped with high quality recording hardware, microphones, software, and wireless connectivity. These mobile systems find different applications depending upon their size, portability, wearability, and other functions. Notebook computers have computing power but lack the portability and wearability demanded in many practical speech capture scenarios. Personal Digital Assistants (PDAs) are coming of age with improved recording capabilities, larger memories and wireless communications capabilities. Wearable computers, designed specifically for hands-free use, have sufficient computing power, storage capacity, input device options and networking/communications options, and represent compelling options for the most demanding in-field SRT tasks.

While in the field, we can either record speech directly to our mobile systems or to a remote server via a wired (LAN, PSTN) or wireless (802.11, RF, GSM,

CDMA) communications network. The recorded speech can then be routed to human transcribers or a speech recognition application, or both, for processing.

A voice mailbox system enabling recording of messages over a Public Switched Telephone Network (PSTN) line or mobile wireless telephony connection and automatic routing of messages to transcribers via the internet requires an internet-connected computer, voice capable modem on a PSTN line and affordable software. In this way the user can dial into their own private message box at any time from a mobile telephone and leave messages including processing instructions to be routed as jobs to internal or external TSPs. For situations where keeping no record of the recording on one's person for matter of security and/or convenience is required and where advanced audio quality levels are not necessary, recording in this manner to a remote system is feasible. In other cases, the preferred solution is to record at the very location where the speech is happening and just use the communications channels to transmit the compressed files as needed. In some situations it may be desirable to capture audio in stereo or even in 16-bit, CD-quality form, and neither the PSTN nor mobile wireless are up to the task.

Wireless microphone-transmitter units communicating to receiver-recorder units over various frequencies still enjoy active usage in the clandestine world, and may be used legally in some instances by business users in conjunction with setups already discussed. Thanks to advances in alternative, commercially standardized technology, this is not the only game in town anymore, which is certainly a relief to many experienced practitioners!

Just a few years ago, before the wide availability of quality digital speech recorders, a standard stereo cassette recorder was one of the best and least expensive solutions. For undercover reporting operations, some standard stereo microphones could easily be disassembled to separate the two microphones and mount one on each shoulder by sewing them into the shoulder pads of a business suit. The noise and echo defeating characteristics of these distance-separated stereo microphones at near mouth and ear level produces results superior to many alternatives. Using standard 90 minute (45 minute per side) or 120 minute (60 minute per side) tapes with long-play (2X) and auto-reverse capabilities some 4 hours of recording time could be accomplished. Powered by two AA-sized alkaline batteries, the unit fits comfortably enough for some in a suit jacket pocket. Some of the biggest problems with this legacy system are:

- Individual recordings cannot be immediately produced as individual digital files, labeled, annotated, and categorized.

- Dictated notes cannot be inserted between recordings.
- Digitization requires interfacing to a separate computer and is time consuming.
- The digitized audio files then need to be broken into smaller files corresponding to particular interviews and dictated notes, labeled, categorized, and organized, which is quite human resource intensive.
- Recordings cannot be immediately transmitted from in the field via wireless communications networks to TSPs for processing.
- The device is several times larger than digital devices.
- The device generates more noise than digital devices, and an end-of-tape "click" can raise eyebrows!
- Record time for each tape is more limited than with digital devices.
- Batteries can and do run out of juice, albeit not before recording a lot of material at increasingly slow speeds.

Today, there are digital speech recording devices on the market with vastly improved features. For example, one device, that sells for about \$260, can fit very comfortably (4 x 1 x 0.5 inches) in your pocket and record 64 hours of quality speech on a 128 MB memory chip. Standard 2.5 mm female connectors enable connectivity of small pen microphones, boom microphones, and other professional microphones that can pick up audio from hundreds of feet away. Super-sensitive voice activation functions mean recording starts within 1/10th of a second after speech is detected. Alarm circuitry enables presetting record start and stop times. PSTN and mobile telephone accessories enable the recording of phone conversations. The device uses standard, re-usable MMC memory cards and interfaces via USB to mobile or desktop computers where special software facilitates the management of the speech content.

Another producer offers a full range of digital speech recorders and hybrid products which feature various combinations of speech recorder, stereo MP3 playback, FM tuner, and digital camera in small form factors, powered by two AAA batteries. One such device of dimensions 4.80 x 1.22 x 0.86 inches, weight 2.18 ounces, can capture 36 hours of speech and 1000 640x480 pixel images (faces, business cards, documents...).

There are other devices on the market which also can fit in a pocket, although not quite as comfortably, and feature standard 20 GB or 30 GB notebook hard disk drives with minimal accompanying electronics, enabling high quality stereo recording for many more hours than you might

practically need. Some devices in this class are specifically designed to record not only audio but broadcast quality color video.

And then there are PDAs, which are rapidly becoming for many the speech recording and hybrid function device of choice.

In somewhat larger form factors are wearable computers, the likes of those from Xybernaut (<http://www.xybernaut.com/>), Charmed Technology (<http://www.charmed.com/>) and others, which feature standard 10-30+ GB notebook hard disk drives, powerful processors, plenty of RAM, standard interfaces such as USB, serial and PCMCIA, sound hardware and run standard operating systems such as Windows and Linux. These systems can be worn on a special belt, in a backpack or strapped in a special harness elsewhere on the body. A high quality headset such as the Plantronics (<http://www.plantronics.com/>) DSP-500 Headset featuring highly sensitive and noise canceling microphone and stereo headphone speakers, can be used along with specialized recording/dictation software to produce high-quality speech recordings while at a desktop or in the field. There are other, more discrete, earphones and microphones, including some that can record inaudible speech from movement of the facial and head structures.

Due to the adequate power of these systems, computer speech-to-text can also be accomplished in the field. Wearable computers systems distinguish themselves from PDAs, notebooks, tablets, and other systems in that they are worn on the body leaving the user with hands free to accomplish normal everyday tasks, and, with head-mounted displays (HMDs) and other interfaces, the computer is on at all times and in constant communication with the user. HMDs, including some very discrete displays consisting of a square centimeter built into otherwise normal eyeglasses, can be used for SRT status and other communications. Equipped with top-class wireless communications, these systems provide a complete solution for the most advanced SRT users. These systems will continue to become both smaller and more powerful with time making them the systems of preference for the most demanding SRT applications.

### ***Communications: GSM and CDMA wireless***

Using wearable, tablet, or notebook computers equipped with PCMCIA cards such as the Sierra Wireless Aircard, GSM, GPRS, or CDMA 1x versions, one can accomplish transfer speeds today of up to 40 Kbps or 156 Kbps, respectively, over standard mobile wireless networks offered by the likes of (in the US) AT&T Wireless, Cingular, and T-Mobile (GSM), or

Verizon and Sprint (CDMA). Some PDAs are also being equipped now with small form factor GPRS modems. Note: *General Packet Radio Service* (GPRS) is a 2.5G technology offered by *Groupe Speciale Mobile* (GSM) operators (worldwide) and 1x is a 2.5G technology offered by CDMA operators (largely in the US). The forthcoming 3G technologies WCDMA (Europe and elsewhere) and CDMA-2000 (USA) will provide improvements in transfer speed, ranging from 144 Kbps to 2 Mbps (depending on speed of mobility of user ranging from over 120 km/hour to under 10 km/hour).

At present, the CDMA network wins out over the GSM network in the USA for transmission of compressed audio files over wireless internet with CDMA offering significantly faster transfer speeds (up to 156 Kbps) and unlimited data plans (at the time of this writing, unlimited data transfer plans are offered by Verizon at \$99 per month and Sprint at \$80 per month), though T-Mobile offers stand-alone unlimited data transfer plans at \$29.99.

### ***Communications: 802.11 and Bluetooth wireless***

Systems can also be equipped with 802.11 “WiFi” PCMCIA cards or integrated devices for wireless transfer up to 56 Mbps (in case of 802.11g). So whether at the office, at home, at an industrial work site or at one of the mushrooming wireless hotspots, 802.11 is now becoming the preferred way to rapidly upload and download compressed speech files. Bluetooth enables device-to-device communication over shorter distances.

### ***VoIP***

One of the most promising technological developments is Voice-over-IP (VoIP) for wireless networks (note: IP = internet protocol). One player of note, TeleSym (<http://www.telesym.com/>), of Bellevue, Washington, USA, is developing next-generation technology for wireless IP telephony. The company claims that its SymPhone software delivers high-quality, cost-effective voice communications over wireless enterprise networks and has a publicly stated goal to become “the worldwide leader in advanced software solutions for wireless voice-over-IP.” TeleSym, with investment of the Intel Communications Fund over \$150 million, claims an extensive portfolio of intellectual property (patents pending) and software assets (audio compression algorithms, latency management software, VoIP software 'engines', protocol stacks, *et cetera*) that underlie its VoIP solutions, and which are aimed at licensing for integration in software and hardware products.

And you can hardly speak of VoIP without mentioning Cisco (<http://www.cisco.com/>), the world leader in internetworking products, which announced in April of 2003 that it would start shipping its Cisco Wireless IP Phone 7920 in June of 2003. Also, in April of 2003, rival SpectraLink (<http://www.spectralink.com/>) announced its NetLink Wireless Telephone portfolio with prices starting at \$400.

Basically, wireless VoIP will turn wearable computers, PDAs, notebooks, and desktops into wireless super-telephones. Technological advances are expected to overcome quality of service problems known to-date with IP: Jitter, delays, echo, and the like. What all this wireless VoIP talk really boils down to is that we will have cost-effective, if not totally free, feature-rich alternatives to the wireline telephone companies of the past (and that, with no stretch of the imagination, is reason for the majority of us all to grandly celebrate), and the ability to manage speech content with vastly expanded degrees of freedom.

### ***Wireless video over IP, wireless IP cameras, GPS, and other technologies***

At the risk of getting off the topic, it is perhaps worthy of mention that wireless video and voice over IP opens up entire new fields of applications. One company, TABLETMedia (<http://www.tabletmedia.com/>), is now shipping its iFON product, which turns a PDA into a wireless video and audio device. Air Broadband Communications (<http://www.airbb.com/>) just announced on May 1st 2003 that it will integrate its Soft-Roaming Wireless Access technology with the iFON, which will enable seamless roaming for voice and data over 802.11 wireless networks. Basically, users will be able to maintain secure voice connections as they roam across various subnets and access points, opening the doors to applications such as video conferencing, video surveillance monitoring and control, distance learning and remote expert guidance. Add to the picture 802.11 wireless web cameras (DLINK has one now with Axis, Canon and other heavy duty web camera producers planning to soon introduce theirs too), increasingly miniaturized and wearable digital video cameras, and global positioning system (GPS) technology and there is indeed reason for great excitement, and need for well thought out integration and management.

### ***Server side hardware and software***

Our overview of enabling technology would not be complete without mention of server-side hardware and software including automatic speech recognition, speech-to-text, text-to-speech, VoiceXML, automatic call

distribution, storage systems, search and retrieval solutions, 128-bit encryption, etc. but this is all largely beyond the scope of this introductory article. We will mention, however that there has been vast improvement in automated speech-to-text but highest accuracy also demands a higher price for speech-to-text server implementations and that specialized acoustic models need to be implemented to handle multiple input sources such as digital voice recorder, PDA, wearable/notebook/desktop, PSTN phone, and mobile phone, as well as the different acoustics of various locations (at party, in conference room, in car, outdoors, etc.).

### ***RECORDING/DICTATION AND JOB UPLOADING IN ACTION***

And how might the recorded speech be transcribed and otherwise processed? Although tape recordings may still be transcribed by some people using a variable speed tape playback device, the preference of modern transcriptionists is a digital audio file on a computer equipped with transcription software, speakers/headphones and input devices such as foot pedals, mice, and, of course, a keyboard. Basically, there will be some specially developed recording/dictation software which can accomplish the basic functions record, stop, rewind, insert, overwrite, pause, fast forward and end recording. The software will support a wide range of encoding and compression formats and encryption for desired recording quality, smaller file size and secure transmission. It will also accomplish transfer of the recorded files via a wired LAN, wireless network, internet, e-mail, or internet FTP upload. The functions of the dictation process can be activated by mouse actions, function keys, foot pedal movements, mechanical buttons, voice commands, or even rapid eyebrow movement.

Ah, but if only it were all so simple! Process needs to be well thought-out in the recording/dictation and job uploading stage if the overall result is to be efficient and advantageous. Written or recorded data can be attached to digital speech files to facilitate proper routing and action. The recorded speech files routed to transcriptionists might include specifications of important parameters including required turnaround, accuracy, routing, privacy measures, and tasking and event/scheduling information. In addition, they may be categorized as ideas, tasks, event/scheduling, interviews/meetings, interview/meeting summaries, calls, call summaries, observations/data, *et cetera*, and these with further coding for various businesses and projects with which the primary user may be involved.

Some special file formats allow text annotations to attach to and accompany the audio file throughout transmission to facilitate processing. In cases

where such information cannot be attached, such as recording over the PSTN to a recording/dictation server, this information may be provided through interaction with a server-based menu system, or by including it all in audio form at the start of the audio file, to be extracted by transcriptionists as a first step in processing prior to transcription of the actual messages.

### ***TRANSCRIPTION IN ACTION***

As a rule, in the absence of advanced technologies and many hours of experience in the transcription business, you can expect to spend some 10 hours transcribing for every one hour of recorded speech. A well trained transcriptionist may insert descriptions of soft insights and context from the audio recording that would otherwise be lost if only the speech was transcribed; for example, “sure” said in an agreeable tone as opposed to a disbelieving tone. Transcriptions will also often feature index numbers which map back into the audio recording so that particular portions of the work can be rapidly located and listened to in the original audio form. Inaudible and otherwise unintelligible words must also be flagged for review by other transcription specialists and perhaps the client who can apply contextual knowledge to better determine elusive words.

The products of the transcription process can be classified into the following four broad type categories:

- Human transcription (highly effective, quality depends on quality of recorded speech and skill of transcriber).
- Computer transcription/speech-to-text (fast but error-prone).
- Human transcription aided by computer transcription/speech-to-text (can speed transcription time).
- Human transcription summary (highly effective, quality depends on skill of transcriber/summarizer, sometimes delivered alone, other times with a complete word-for-word transcript depending on client requirements)

### ***SOME PRACTICAL SRT APPLICATION SCENARIOS***

- A corporate marketing specialist is at a conference and records presentations and question/answer sessions, transmitting concise, hand-typed, time-sensitive alerts to corporate users via email over the mobile wireless network. Summaries of conversations conducted during breaks and other networking opportunities are recorded and the compressed, digital audio files are transmitted via 156 Kbps mobile wireless CDMA

Internet connection to internal corporate transcription specialists for immediate processing. Computer generated transcriptions of the conversation summaries are immediately delivered with the human-transcribed summaries following within six hours to multiple need-to-know recipients as specified previously in the job specification. Upon returning the next day to a local office with a broadband internet connection, the audio files containing the recorded speech of the conference presentations are uploaded to internal corporate transcription specialists for turnaround within 48 hours. The summaries and transcripts of the conference papers are stored along with PDF files of the original published papers within the corporate digital content management system along with question/answer session transcripts and conversation summaries, all with appropriate access rights in place.

- An investigative reporter for a niche electronic media company spends over 6 days and nights at a major trade show interviewing 46 sources on the floor during exhibition hours, attending 6 press conferences and participating in 5 parties and informal networking events, generating 20 hours of digital audio recordings in 98 separate files, 3.5 hours of video recordings and 167 digital still images, plus a collection of hand-written notes. Compressed audio files and digital images (including images of handwritten notes) are uploaded at a local 802.11g hotspot via broadband internet connection to headquarters where they are routed to internal transcription, editing and production specialists for immediate processing. Stories are written, reviewed, corrected, authorized for publication and published electronically within hours of discovery as opposed to days and weeks typical of print media operations.
- An executive is walking on the beach at sunset on a Sunday evening when sudden inspiration comes in the form of new ideas to boost sales performance through the building of a synergistic relationship with a key industry player and launching of a co-branding campaign. He records the ideas to a digital speech recorder and upon return to his car uploads the files via the CDMA 1x network to a dedicated outsourced TSP which works through the night to have a complete transcript and summary of the notes in his assistant's email inbox by 7:00 on Monday morning. The assistant updates the executive's and sub-ordinates' delegated tasks and meeting appointments in Microsoft Outlook by 7:30 and all are present for a strategic brainstorming meeting scheduled for 8:00.

- A corporate salesman visiting the sites of several corporate prospects per day over a period of three days to give presentations and influence sales while also interacting via cell phone with several other prospects and customers uses the time between meetings while traveling by rental car from one location to the next to summarize important facts, record insights and formulate tasks. The recorded speech files are transmitted via a mobile wireless network to headquarters where SCM specialists transcribe the messages, route results to relevant parties and update tasking and calendaring/scheduling sections in Microsoft Outlook. Some of the dictated notes are sent as alerts and reports to the Competitive Intelligence unit. The salesman accesses his Microsoft Outlook via a wireless virtual private network (VPN) connection and keeps up to date on all tasks and meetings.

### ***TO OUTSOURCE OR NOT TO OUTSOURCE? - LARGELY A QUESTION OF PRIVACY***

To outsource or not to outsource? That is the question. Outsourcing work to transcription services providers (TSPs) can convincingly offer a lower cost solution, holding constant quality of service and speed of turnaround. The key issue is privacy. Encryption should be deployed to ensure the privacy of recorded speech files in transfer. In the healthcare industry, uploaded files are encrypted as required by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) because, clearly, patient data must be kept private. 128+ bit encryption, detailed audit trail and other security features are standard with professional solutions but this is far from the entire picture. The largest threat to privacy of organizations' recorded and transcribed speech is from human beings who come in contact with it anywhere along the way from recording to dissemination of the final products. These potential threats must be assessed both in the form of human beings working for outsourced TSPs and those TSPs, other SCM workers and any other persons internal to the organization who come in contact with the speech content. Some TSPs deploy independent contractors, others full-time employees. Some limit their workers to the home country, others exploit talent living abroad. Some professional outsourced TSPs claim special know how in managing highly efficient, self-motivated transcription specialists who typically work from home or any location of their choosing. Professional work that can be performed anywhere where the workers have a computer and internet access is increasingly in high demand by a special breed of workers. These workers do not thrive awaking to alarm clocks each

day, commuting long distances in traffic, punching time clocks, being subjected to cramped working quarters, corporate politics, unhealthy food, foul air, keystroke monitoring and constant video surveillance. This breed of professionals disdain the fixed working hours of most normal jobs which would prevent them from running their own businesses, subcontracting, doing part-time work, etc. for supplementary income and would put a limit on their earnings. They prefer to work from the comfort of their own homes, at the beach, on a boat, in a cafe, on a mountaintop – anywhere in the world where they wish to roam and at the time of their choosing. Some may be housewives and others may be cultural tourists exploring the third world. Some TSPs strive to work with team members located in regions within a country where the cost of living is lower or, especially as with the case of the English language, in working with team members who are living in other countries where the cost of living is considerably less. So, TSPs are keenly in tune with their team members' motivation and in return for the unique benefits of this type of work they perform to high quality standards at performance-based rates which allow the TSPs to profit, invest in technical infrastructure and marketing, and expand their businesses.

There are some very large TSPs that are focused on the healthcare market. Some examples include:

- MedQuist (NASDAQ: MEDQ): 70% owned by Philips Electronics (Netherlands). Claims to deploy some 10,000 transcriptionists and serve 3,000 hospitals, physician groups, and other health care organizations nationwide. 2002 revenues of \$486.2 million.
- Transcend Services (NASDAQ: TRCR): Utilizes Internet-based technology to convert doctors' digital voice recordings into high quality electronic medical record documents. Claims to accept digital files from 30,000 registered physicians into its new \$1.5M+ Atlanta-based hub for workload balancing and distribution and from there distributes the files, based on priority and difficulty, to a network of 250+ highly skilled, company employed, U.S. based medical language specialists. 2002 revenues of \$12.2 million.
- Total eMed: Private company founded in 1998 and based in Franklin, TN, USA Leading provider of outsourced electronic medical transcription and one of the first to utilize a completely web-based system connecting physicians to experienced medical transcriptionists on a highly secure VPN. Total eMed uses integrated voice, text and data to connect physicians and medical transcriptionists. Employs over 500 staff to

support its client base. Teamed with IDX Systems Corporation (NASDAQ: IDXC), an information technology systems integrator focused on the medical industry with 2002 revenues of some \$460.1 million.

There are scores of small TSPs focused on the legal marketplace, which can be found by tapping into scores of PSTN and Internet listings. SRT is, of course, a well-established practice in the media and public events industry.

Some TSPs provide consulting and integration services in addition to transcription services, assisting in the strategic development of new capabilities, recommending technology products, providing training and delivering a range of other advanced services. In the role of Speech Content Management (SCM)/Speech Knowledge Management (SKM) consultant and systems integrator, some of these TSPs may, according to client needs assessment, assist a company in developing a complete SCM/SKM program, increasing deployment of SRT in the organization and establishing an internal TSP function for all or some portion of the transcription work. The costs for SCM program infrastructure can range from very low to very high depending on lots of factors including the size of the organization and depth of functionality.

Business sectors outside of the medical, legal and media sectors, represent especially large, untapped opportunities for innovative new TSPs and other SCM/SKM specialists.

We are rapidly entering an age of ubiquitous, wearable computing and communications with human speech playing an integral role. It is clear that one of the most challenging aspects is the privacy and confidentiality of information. Some TSPs offer elaborate systems deploying innovative policies, procedures, technologies and controls to ensure maximal privacy and confidentiality of clients' content, taking great care to optimally match transcription personnel to client content with privacy always in the forefront. In many cases, potential clients will need to be convinced that the TSP personnel who work with client content do not have client identification information and TSP administrative personnel do not have access to client content in order for the TSP to win their business.

In light of milestone developments in technology, advances in thinking about information management and examples of early adopter success, companies in scores of industries which have to-date largely ignored SRT will significantly increase deployment of SRT, and put serious resources behind the development of cutting edge SCM/SKM programs, thereby gaining advantage in the ever intensifying race for competitive edge.

## 5. Real Stories from the Field — Cognitive dissonance theory and the recovery of stolen assets

The LUBRINCO Group has been quite successful in aiding in the location and recovery of lost and stolen assets, and, in the average year, we participate in the location and recovery of assets in the \$600,000,000 - \$800,000,000 range. Finding these assets is time-consuming work, and there are a number of things beyond the actual circumstances surrounding the loss that can happen to make the process more difficult.

The major impediment to the recovery of *stolen* and hidden assets is best explained through cognitive dissonance theory, which says that when there is a conflict, or dissonance, between belief and action, your beliefs will change. The classic example of cognitive dissonance theory at work is generally to be found in abusive relationships. To the outsider, it would seem reasonable that, when someone is abusing you, you would leave. In general, however, abused partners adjust their belief system and tell themselves that they are staying because they love the abuser so much: After all, if they didn't love the abuser so much they would not put up with the abuse....

People who have had money stolen often develop this same kind of deep, near-religious belief that the money was legitimately lost, rather than having been stolen: These people wouldn't steal from *me*!

Now, in a successful recovery, you generally figure out where the assets have been hidden, freeze the assets, and convince the courts to give the money back to the good guys. Obviously, the longer it takes to recognize that you have been robbed, rather than being the victim of the economy, or the longer it takes to decide your husband really should have more money than that, the more work it takes to trace the assets as they bounce around the world.

Because of this, whenever large amounts of money or other assets disappear, or if you suspect they might disappear, it is best not to wait too long before you start looking. And it is generally a good idea not to have the looking done by people that may be involved in the disappearance.

Once it is realized that there *might* be a problem with hidden assets (on rare occasions the money has been legitimately lost), you need to fund the recovery and begin the search. In divorces this can be a problem, because divorce attorneys sometimes don't give much thought to nailing down the assets, and by the time they think of it, they have spent so much of the wife's money that there is nothing left to invest in identifying the husband's actual

assets. Thus, in a divorce, it is best to start the identification process early, rather than later. Unfortunately, experience shows that in many divorce cases the spouse hiring you will fight you tooth and nail in the discovery process for which they have hired you.

When assets are simply taken, the victims can be left without sufficient remaining funds to attempt recovery. In one unfortunate case, the estate of a fairly wealthy man was put into the care of his attorneys, who apparently took as their own assets amounting to roughly three quarters of a billion dollars. Because even half a billion dollars buys you a lot of influence (not to mention death threats, homicide attempts, and general threats), the children were left with neither appropriate counsel nor the ability – or will – to recover.

When we are brought into these cases we calculate that there is a 50/50 chance that the potential client will go forward with the case. If they are committed to recovering the assets, we put them together with an appropriate attorney (there is generally only a handful of appropriate attorneys, depending on where the cases were domiciled), and hopefully locate, freeze, and recover the assets.

In many cases, however, cognitive dissonance theory kicks in, and the potential client will decide either to walk away from the money, or will turn to the people who got them in trouble to help get them out of it. This is known in the trade as a *reload*: You shoot them once, then reload and shoot them again. This can happen with even sophisticated investors, and with losses in the hundreds of millions.

## **6. Book and Product Reviews -- Why we aren't reviewing encrypted mobile phones**

As our readers know, we consider the safety of information to be very important. You should shred anything that has writing on it (do you really want people to know your marketing plans, your vacation plans, or where you get your lunch?) that you should encrypt all e-mail, and that all telephone calls should be encrypted. Why then, are we not reviewing encrypted mobile phones?

The answer is that if you need satellite communications you can get a system with data capability (encryption uses a lot of bandwidth, so if you were using *Inmarsat*, you couldn't use a reasonably-priced Mini M system, but would have to go to a more-expensive M-4 system) and attach an encryptor like the *L-3 Privatel* (<http://www.l-3com.com/cs-east/programs/infosec/privatel.htm>).

With a mobile phone you need GSM, since that is the most widely used technology, worldwide. Putting aside the issue that there are areas in which there is no GSM coverage (you will need to use an encrypted landline, or not talk), there are now four frequencies used: 850 MHz, 900 MHz, 1800 MHz, and 1900 MHz. If you travel in Latin America you will need all four. In North America you will need 850 MHz and 1900 MHz, and in Europe and Asia and Australia you will need 900 MHz and 1800 MHz.

The problem is that 850 MHz is relatively new, and there are no quad-band handsets, let alone encrypted quad-band handsets.

Would you spend \$2,500 (because they are so expensive they don't sell many of them; because they don't sell many they are very expensive) for a mobile phone that is, in essence, technologically outdated? Would you want to buy an encrypted handset for \$2,500 and not be able to use it in Bogotá? We wouldn't.

Would you spend \$2,500 for a quad-band encrypted handset? Well, at that price some have estimated the demand worldwide to be between 20,000 units and 30,000 units. On the other hand, we have seen estimates that if the price dropped to the \$600-\$800 range the demand could be a million or more. Would you spend \$600 for one? We would!

Is it feasible to make an encrypted terminal at that price? You don't need to develop the actual handset. You want to use an add-on to an existing handset, the way Nokia used the AMPS module on the 6190 (and still took a 3800 MAh battery!), or the way General Dynamics used the Tri-band Motorola *Timeport* in their *Sectera Secure Wireless Phone* (<http://63.226.32.24/sectera/gsm/index.html>). This would reduce the handset portion to under \$100. If a quad-band *Timeport* were available, or if the upcoming Motorola *V-600* could take such a module, then we believe General Dynamics could change their marketing approach on the *Sectera* from expensive government small quantity marketing to large quantity marketing for law enforcement and industry, and make a more-substantial profit on the lower-cost/larger run product. L-3 Communications could do the same thing with their encryption technology.

Meanwhile, I suspect we will all have to content ourselves with using encryptors on landlines and satellite communications systems.

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