

## Initial Report

*Investors should consider this report as only a single factor in making their investment decision.*

### ALR Technologies Inc.

**Rating: Speculative Buy**

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April 4, 2012

#### ALRT \$0.09 — (OTC BB)

	2010A	2011A	2012E	2013E
Total revenues (in millions)	--	-	--	\$ 11.4
Earnings (loss) per share	(\$0.14)	(\$0.21)	(\$ 0.03)	(\$ 0.02)
52 - Week range	\$0.24 – \$0.06		Fiscal year ends:	December
Shares outstanding as of Nov. 14, 2011	214 million		Revenue/share (ttm)	-
Approximate float	96.6 million		Price/Sales (ttm)	NA
Market Capitalization	\$19.3 million		Price/Sales (2013)E	NA
Tangible Book value as of Dec. 31, 2011	NA		Price/Earnings (ttm)	NA
Price/Book	NM		Price/Earnings (2013)E	NA

ALR Technologies Inc., based in Richmond, Virginia, has developed Health-e-Connect (HeC), an FDA-cleared Internet-based system that links patients and clinicians. HeC records and transmits diagnostic data, e.g., self-monitored blood glucose data collected by patients, which can be uploaded to a personal computer and transmitted over the Internet to clinicians. The data is reviewed by clinicians who can communicate over HeC to patients or their caregivers. HeC is useful for managing patients with diabetes and other chronic diseases that lend themselves to self-monitoring, and for recording usage of self-monitoring test supplies. Data collected by HeC can also enable health insurers to monitor patient compliance by accurately tracking their consumption.

#### Key Investment Considerations:

*Initiating as Speculative Buy with a \$0.50 per share (12-month) price target based on five-year revenue potential.*

*Internet-Based Glucose Monitoring Systems (IBGMS) are poised to assume a key, lucrative role in the management of millions of diagnosed US diabetics.*

*One such system, ALR's Health-e-Connect (HeC), offers a low-cost, universally compatible means of facilitating effective disease management through the exchange of patient self-monitored diagnostic data and clinician feedback over the Internet.*

*The data gathered through these exchanges can improve diagnostic and pharmaceutical compliance, and provide a reliable basis for reimbursement claims, thereby reducing waste and contributing to cost containment.*

*IBGMS's data gathering and analytical capabilities underlie substantial revenue potential. By our estimates, the support these systems can offer to health insurers, pharmaceutical manufacturers, and pharmacists can develop into a \$7.8 billion industry within five years after the effective date of a health insurance industry policy requiring electronic verification of reimbursement claims for diabetes diagnostic supplies.*

*Revenue should ramp rapidly in the aftermath of a Medicare mandate but ALRT will have to leverage a first-to-market advantage and raise substantial additional financing during its expansion phase.*

**See disclosures on pages 17 - 19**

## ***Investment Recommendation***

### **Investment rating – Speculative Buy. \$0.50 (12-month) price target.**

Our target is based on an Internet services and software sector price to (trailing) sales multiple of 2.4X applied to projected 2017 revenue of \$290 million (\$1.10 per share), discounted by a factor of 40% to arrive at a year-ahead value of \$0.50. The discount reflects significant regulatory, execution, competitive and financing risks. Our valuation is based on a 2017 fully diluted share count of around 265 million that reflects the exercise of options outstanding as of December 31, 2011.

A comparison group of 47 Internet service and software providers with market values under \$100 million is trading at a trailing price to sales multiple, excluding extreme highs, of 2.4X. During the next 12 months, stock price appreciation could be driven in part by progress toward a health insurance industry requirement that reimbursement for diabetic supplies be supported by electronic verification of glucometer test strip consumption.

**In our view, the stock has considerable longer term upside potential but regulatory, execution and acceptance risks make it suitable only for patient, highly risk tolerant investors.**

## ***Overview***

ALR Technologies, headquartered in Richmond, Virginia, was established in 1987. ALR assumed its present name and became a public company in 1998, the year it began distributing a pharmaceutical compliance device. ALR's efforts now center on Health-e-Connect (HeC), an Internet-based compliance monitoring system cleared by the FDA in October 2011. The HeC software package supports patients' compliance with their treatment regimens and enables clinicians to remotely monitor and communicate with patients to make adjustments to treatment plans between office visits.

ALR has targeted the US diabetes care market due to its size, the growing prevalence of the disease, its cost burden on the healthcare system, lax patient compliance and waste in the form of health insurers' overpayments for diabetic supplies. A health insurance payer requirement (especially by Medicare) for electronically registered blood glucose self-monitoring data, which is significantly more accurate than paper logs that are often indifferently maintained by patients, could accelerate the large-scale commercialization of Health-e-Connect.

The company is formulating a multi-pronged marketing strategy that aims to offer HeC-based data and services to three end markets: test supply (pharmaceutical) manufacturers, retail drug stores, and health insurers. As acceptance of the system widens, revenue growth momentum should accelerate, enabling ALR to establish an initial presence in all three markets within two years after HeC is commercialized.

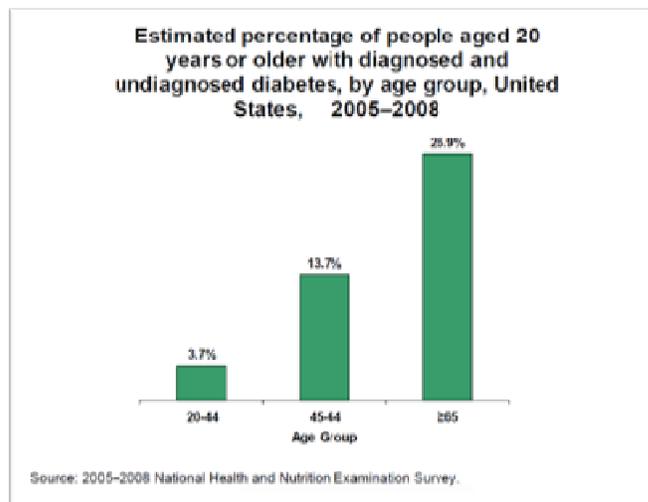
By our estimates, ALR's revenue could ramp to \$290 million by 2017, its first-to-market advantage enabling the company to secure up to an estimated 35% share of the IBGMS market. We project modest market penetration within the first half of 2013 with revenue showing a substantive ramp in 2014.

## ***Outlook***

In addition to 20 million diagnosed diabetics in 2010, there were an estimated six million undiagnosed cases and almost 80 million prediabetes cases in the US. In 2010 there were 40 million persons aged 65 and older in the US, roughly 13% of the population. This age group, all of which are Medicare beneficiaries, accounts for 11 million out of 20 million diagnosed diabetics in the US. In 2010, 390,000 of this age group accounted for 21% of all newly diagnosed cases of diabetes. By 2050 the age 65+ segment of the population is projected to more than double to almost 90 million, or 20% of the population.

Demographic trends and the threat of unchecked increases in obesity point to a sharp increase in the number of US diabetics during the next 40 years. If the prevalence of diabetes among the elderly is unchanged, the number of age 65+ diabetics could increase to 24 million during that time frame. The prevalence of diabetes (diagnosed cases) in the age 18 to 64 group, currently around 5%, is relatively low but a comparable rate in 2050 would translate to 13 million diabetics in that population segment for a total of 37 million diagnosed US diabetics.

Those estimates suggest that by 2050, an estimated 8.4% of the US population will be diagnosed diabetics, up from 6.4% in 2010. The Centers for Disease Control estimates that diabetes cost the US healthcare system \$117 billion, almost all of that outpatient care, in direct costs in 2007. That figure may not reflect the full cost of treating diabetes-related conditions such as cardiac and kidney disease.



The cost of treating diabetes, particularly among the elderly, will rise sharply during the next 40 years. Estimates of the cost of treating diabetes over varying time frames vary widely, with some projecting increases to around \$350 billion annually by 2020 (United Healthcare) or 2034 (University of Chicago), and at least one projecting a \$1 trillion annual treatment cost (Type II only) by 2031 (Milliman, Inc.)

While projections may vary, there is no disputing the outlook for a sharp increase in diabetes treatment costs, even under scenarios of improved management of the disease. While changes in lifestyle (diet and exercise) could slow its progress, diabetes is in large measure an age-related disease, making the implications of demographic trends inescapable.

### ***Vast Revenue Potential***

There is substantial revenue potential for data services that can cost effectively improve disease management for 20 million diagnosed US diabetics. Excluding the 11 million diabetics who are Medicare beneficiaries, there are another nine million diagnosed diabetics, of whom an estimated 78%, or seven million, are covered by healthcare insurance.

Target Customers	Application	Monthly fee per patient
Pharmacies	Market data	\$ 1.00
Pharmaceutical manufacturers	Claims documentation	\$ 5.00
Health insurers	Disease management	\$ 30.00

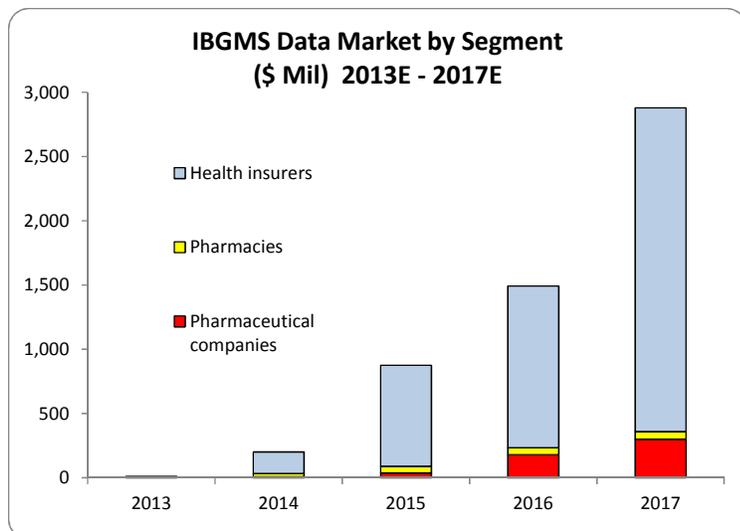
Source: Alert Technologies

Defining the current market for IBGMS as diagnosed diabetics with healthcare coverage places the number of potential HeC enrollees at 18 million patients. Figures maintained by the National Diabetes Information Clearinghouse show that 16% of all diagnosed US diabetics observed in 2007-2009 did not receive any drug treatment (either insulin or oral medication). Non-treatment is arguably a consequence of lack of healthcare coverage. That proportion represents slightly more than the number of estimated diagnosed diabetics without healthcare coverage.

ALRT's proposed fee structure is shown in chart the above. At those fees, the sale of data developed from up to 18 million patients to the pharmaceutical, pharmacy and health insurer market could potentially generate annual revenue of almost \$8 billion.

At this point HeC is the only provider that could launch its service on short notice, potentially achieving a first-to-market advantage that should enable the company to entrench itself before competing services are fully functional. HeC consists of a proprietary set of programs. However, the system is not protected by intellectual property and could potentially be replicated.

So establishing an early presence could be crucial, as customers are not likely to migrate away from a system that has delivered on its promise. We believe, however, that as soon as public and private health insurers’ intent to formulate and implement an electronic verification policy is clear, competition will rapidly intensify. By the time the policy is in force, competition and target industries’ reluctance to rely on a single IBGMS data provider is likely to limit ALR’s market despite its potential first-to-market advantage.



IBGMS service providers could initially target insulin-dependent (partially or totally) diabetics who make up only a quarter of the patient population but account for more than half of the US market for diabetes drugs. Insulin-dependent diabetics probably account for a disproportionately large share of the diabetes supplies. Under Medicare guidelines, insulin-dependent diabetics are covered for three times as many test strips and lancets as diabetics on oral medication. But even before the insulin-dependent patient population is fully enrolled, service providers could begin targeting the most severe cases of non-insulin dependent diabetes.

Based on the fee structure envisioned by ALRT, the market for IBGMS encompassing insulin-dependent diabetics could potentially grow to \$2.2 billion within five years of health insurers’ establishment of a universally adopted electronic verification requirement. Without a widely adopted verification policy, especially by Medicare, multi-industry uptake of IBGMS is likely to be a slower process.

Jun 2012	CMS announces electronic verification requirement
Aug 2012 - Jan 2013	CMS solicits, reviews public comments on proposed requirement
Apr 2013	Policy issued
May 2013 - Apr 2014	HeC launched in initial target markets

In light of concerns raised by waste and abuse, the Center for Medicare and Medicaid Services (CMS) could take the lead in promoting health insurers’ acceptance of electronic verification. A public policy proposal could be issued by June 2012, followed by public comment through late 2012. Public hearings should culminate in a mandate to implement electronic verification by April 2013. Implementation of the policy, the uptake of IBGMS (including HeC), patient recruitment, diagnostic data gathering and the adoption of HeC services by pharmacies, health insurers and pharmaceutical manufacturers is a process that could take up to a year (early 2014) to unfold.

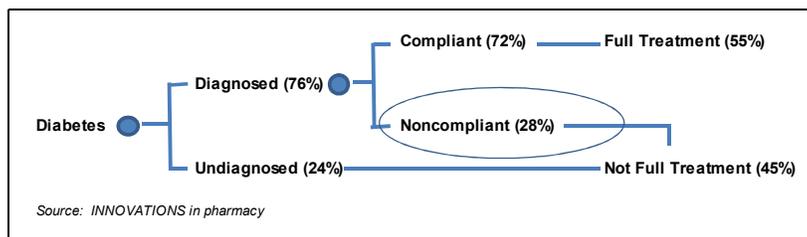
***Broad, Multi-Faceted Role for Information Technology***

Health-e-Connect (HeC) would provide significant utility, offering the means to increase revenue and contain healthcare costs while improving patient outcomes on a broad scale. ALRT aims to establish a presence in three major end markets - pharmaceutical manufacturers, pharmacy chains and health insurers. Patient diagnostic data systematically collected by IBGMS on a large scale could potentially underlie dramatic improvements in outcomes and significantly reduce waste by enforcing more stringent requirements for reimbursement.

The diabetes care burden - \$117 billion and rising – must be contained. The failure of lifestyle and diet modification to stem the rise of diabetes in an increasingly elderly population will intensify pressure on the healthcare system to improve adherence to treatment guidelines, including those that cover drug treatment regimens and frequency of glucose self-monitoring. Accurate and timely patient diagnostic provided to health

insurers/providers, pharmaceutical manufacturers and pharmacies could greatly facilitate the achievement of these objectives.

A 2011 study designed by Kockaya et al attempted to calculate the US healthcare costs directly relating to non-compliance among diabetic patients, figuring that if all 20 million diagnosed diabetics were fully compliant with their treatment plans, the US healthcare system would save more than \$9 billion annually.



A Markov decision tree model used by Kockaya et al suggests that cost containment will hinge in large measure on the diagnosis of the estimated six million diabetics that are not compliant. The \$9 billion potential cost reductions achieved through effective management of 20 million diagnosed patients is somewhat significant but long term savings would be much larger if full treatment was administered to the undiagnosed six million US diabetics.

More aggressive pursuit of noncompliant patients, potentially enabled by insurers' enrollment of diagnosed diabetics in IBGMS, could be a key to driving improvement in adherence. Infrequent or spotty uploads of diagnostic data, irregular glucose measurements, and consistently high glucose readings could indicate weak adherence, signaling a need for intervention by clinicians or insurers.

### Target Markets

**Health Insurers** Health insurers, both public and private, would arguably reap the largest benefit from the use of IBGMS data. The ability to monitor self-testing and pharmaceutical compliance, and intervene more quickly when necessary, could enable more effective disease management on a vast scale. Better compliance and more timely intervention would improve treatment outcomes and reduce costs relating to long-term complications.

**Pharmaceutical Manufacturers** Diagnostic data could also reveal the extent of noncompliance with prescribed drug regimens, a significant problem that invariably undermines the effectiveness of drug therapy and leads to increased complications and healthcare costs. The analysis of aggregated diagnostic data could enable pharmaceutical firms to target patient population segments by geography, age bracket, severity of disease, etc., potentially driving sales gains while raising compliance rates.

Estimates of the US market for diabetic management products vary but composites from different research services place the market at around \$45 billion, with drugs accounting for roughly 62% of that market. The drug segment consists mainly of insulin (injectable drugs) sales estimated at \$16 billion, and oral agents of around \$11 billion. Sales of devices – test strips, glucometers, lancets, insulin pumps – account for an estimated \$16 billion, almost 40% of the market. Compliance patterns revealed by analyses of aggregate diagnostic data gathered by IBGMS could enable pharmaceutical and device manufacturers to craft more focal marketing strategies. The largest of these targeted customers are the Roche Diagnostics (unit of Roche Holding Ltd.), Johnson & Johnson, Abbott Laboratories and Bayer AG.

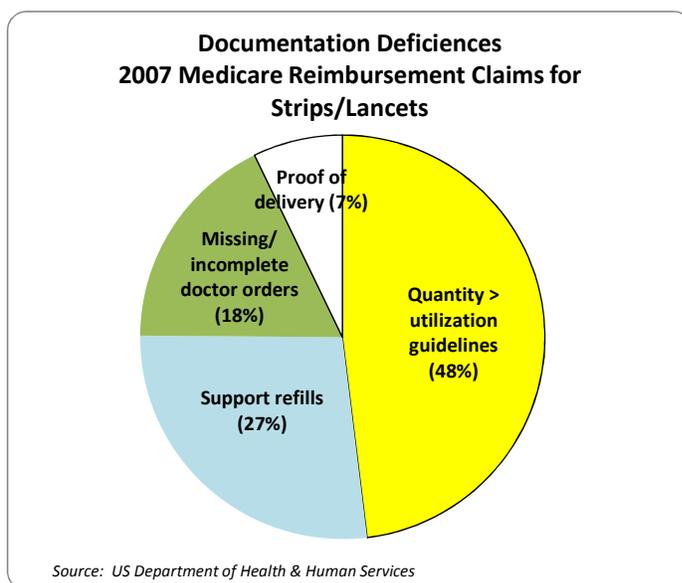
**Pharmacies** Glucometer test strips have commanded increasing attention, as they account for a large portion of the \$16 billion spent annually on diabetic supplies. They are widely used but accountability is lax and inefficiencies appear to deprive the underinsured of necessary supplies while providing other patients with far more than needed. Excess supply has fed an unregulated black market trade where counterfeit, damaged and out-of-date strips can put unwary patients at risk. Weak control over strip distribution, including filling prescriptions for new supplies before previously dispensed supplies have been consumed, can result in substantial waste and excess cost, both of which stem mainly from the lack of accountability.

Medicare, which insures more than half of the diagnosed diabetics in the US, allows up to 100 test strips and 100 lancets every month for insulin-treated diabetics and every three months for non-insulin-treated diabetics. Reimbursement requirements are explicit: (1) a physician order specifying the items to be dispensed, frequency of testing, dated physician's signature and (2) proof of delivery. The supplier, i.e., the pharmacy, may refill an order only when the patient's previous supply is "nearly exhausted" and specifically requests additional supplies.

Additional requirements apply for reimbursement of claims for quantities of test strips and lancets that exceed the utilization guidelines (high utilization claim). The patient's medical records must document the specific reason for the additional supplies and the physician's or supplier's records must document the actual frequency of testing. Further, the physician must have seen the patient and evaluated his or her diabetic management within six months before ordering a quantity of supplies that exceeds the guidelines.

Lapses in accountability mask abuses such as auto-fill programs which provide diabetics with a glut of supplies, some of which are sold to black market operators who resell them online at cut-rate prices to the uninsured or patients whose reimbursement limits are restrictive. The unchecked flow of excess test strips, which are covered by insurers, are an ongoing source of revenue for pharmacies and pharmaceutical manufacturers but represent a significant waste.

Recent audits show that these guidelines are observed mainly in the breach. In a review of 2007 reimbursements for test strips and lancets, the Inspector General of the US Department of Health & Human Services determined that Medicare made "inappropriate" payments totaling \$209 million. Of the total sample of reimbursement claims, 76% were not supported by adequate documentation (chart at right), mainly for order quantities exceeding utilization guidelines and for some proof that previously dispensed supplies were nearly exhausted.



If Medicare mandates electronic verification of glucose self-monitoring (and supply consumption), prescriptions and refill histories, documentation deficiencies would fall dramatically. Electronic verification would compel pharmacies to obtain supporting data as a condition for filling prescriptions and securing reimbursement. With Medicare's adoption of electronic verification, the requirement is highly likely to be taken up by private payors.

***Improved Control = Reduced Complications and Costs***

There is general agreement that improved control or management of diabetes reduces complications that contribute significantly to the health care bill. However, achieving that control requires a broad based effort that should involve patients, their families, clinicians, public health authorities, pharmaceutical and device manufacturers, and public and private payers.

Several studies, none of them disputed, conclude that improved management of diabetics (and prediabetics) can significantly reduce costly complications. A 2001 study of 1994-98 data on 2,400 diabetic patients by Menzin et al found that tight glycemic control achieved a significant reduction in in-patient admissions for the treatment of short term complications of diabetes, mainly hyperglycemia (excessive blood glucose), hypoglycemia (abnormally low blood glucose) and cellulitis (severe skin inflammation). In the patient group studied by Menzin et al, 251 were hospitalized on 447 occasions, with admission rates varying significantly according to the quality

of glycemic control. Only 13 out of 100 patients with well controlled blood glucose were hospitalized, vs. an admission rate of 31 out of 100 patients with poor glycemic control.

A 2010 study by United Healthcare projected a \$250 billion reduction in diabetes-related US healthcare costs during the 10 years through 2020 if intensive prevention strategies were implemented across the entire at-risk patient population. More specific interventions, mainly improved compliance with treatment regimens and lifestyle changes, could, particularly in overweight diabetics, reduce blood pressure, cholesterol, A1c and triglycerides, cutting health cost for this patient group by 28% during the 10 years through 2020.

An April 2010 Milliman Inc. study commissioned by Sanofi-Aventis calculated that improved control of blood glucose (hemoglobin A1C), blood pressure and HDL (high-density lipoprotein) cholesterol would significantly reduce the number of diabetics who suffered heart failure, stroke, kidney failure, amputation and loss of vision. This study projected a reduction of around 5% in complications if improved controls were achieved in 10% of the diabetic patient population.

With controls extended to 50% of the patient population, reductions in the number of patients with complications would drop by 18% to 23%. The complications most significantly reduced were heart attack, stroke, ischemic heart disease, congestive heart failure and loss of vision. Interestingly, the Milliman study projected that control of 50% of diabetic Medicare beneficiaries would reduce the number of cases with complications by 240,000.

To guide better outcomes, however, clinicians require accuracy in diagnostic data that is not always forthcoming. The accuracy of paper logs maintained by patients usually leaves much to be desired. In 1984, when memory glucometers were still in their infancy, Mazze et al compared manually recorded glucose readings reported by 19 patients over a 12 to 14 day period to the data stored in the glucometer memory and noted glaring discrepancies. Differences in readings ranged up to 109 mg/dl; an average of 26% of manually logged entries were not identical to readings recorded by the glucometer and the addition of “phantom” or nonexistent values averaged 40%

A 2006 study of a mixed group (Type I and Type II diabetics) of 60 patients by Kalergis et al also noted inaccurate manual recording of blood glucose. In a comparison of roughly 1,500 meter and manual records, the Type I group’s manually recorded data was only 49% accurate. This group’s accuracy improved to 93% in a second test phase. The Type II group also showed significant discrepancies between manually and meter recorded results, with accuracy rates no better than 76%.

Both studies, as well as others, strongly suggest that provided the patient adheres to self-monitoring guidelines, data stored in glucometers is a better basis for making treatment decisions.

### ***Health-e-Connect***

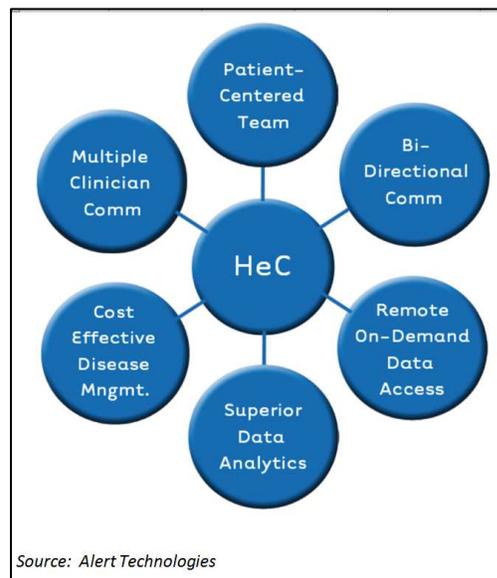
Health-e-Connect (HeC), used in the 2010 Tildesley et al study, is a software platform that was 510(k) cleared by the FDA in October 2011. HeC is compatible with electronic medical records systems and is compliant with HIPAA (The Health Insurance Portability and Accountability Act of 1996). HeC facilitates management of diabetes by providing patients, healthcare providers and other interested parties with the means to exchange data, monitor adherence to treatment guidelines and communicate among each other. The patient can download HeC software from ALR’s website and run it on a personal computer. The only other hardware necessary is a USB cable that connects the patient’s glucometer to a personal computer, enabling the transfer of blood glucose data recorded by the glucometer during the self-monitoring process.

The data is transmitted over the Internet to the HeC server to healthcare providers and other intended recipients of the data. As noted in the Tildesley et al study, patients in the intervention group uploaded their self-monitored blood glucose data every two weeks to ALRT’s website. ALR’s system (HeC) enabled the intervention patients to enter information about their medication, set alerts, view data summaries and send messages to their clinician. The physician viewed patients’ readings and sent feedback over the Internet-based system. Patients in the control

group simply maintained paper logs of their SMDG readings to present to their clinician during their three-month visits.

These data are presented in table and graph formats according to the time of day, and automatic calculations show the average, standard deviation, and range for specific time periods. The cost to the patient is minimal, possibly (if not reimbursed) limited to the cost of a USB cable.

The chart on the right summarizes key HeC capabilities in addition to patient upload of diagnostic data and a communication between patient and healthcare providers. HeC can also analyze diagnostic data to reveal changes in the state of the disease that require modification of treatment, provide interest parties remote access to data on demand, and enable multiple clinicians to communicate among themselves.



Designed as a highly scalable Internet-based disease management system, HeC is also capable of organizing self-monitoring blood glucose data that lends itself to programs that promote patient adherence to treatment guidelines and vendor accountability for diabetes test strip usage, an increasingly important aspect of reimbursement claims.

### ***Internet Access Not a Limiting Factor***

Computer ownership appears sufficiently widespread to enable IBGMS access by a large proportion of the US diabetic patient population. An October 2009 report from the US Census Bureau showed that out of 119 million US households, 82 million, almost 70% of the total, had access to the Internet at home. Rates of Internet use at home varied widely according to head of household educational attainment, ranging from 32% for those who did not complete high school to almost 90% for those with an undergraduate degree or higher.

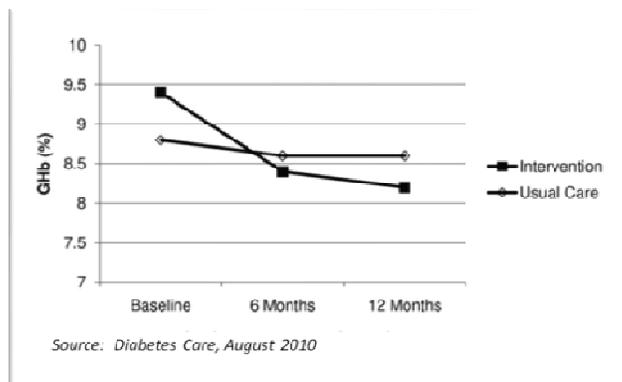
We have no indication as to rates of Internet access by diabetics but IBGMS access is likely to be more restricted among the less educated, and by inference, less affluent, segments of the patient population. However, with almost 100 million households headed by persons with high school or higher educations, large swaths of the diabetes patient population should have ready access to IBGMS. Patients from households without Internet access could establish connections through the workplace, schools or community libraries.

### ***Taking Diabetes Care to the Next Level***

Information technologies should be able to put that data to use, collecting and analyzing it, and transmitting the diagnostic data to clinicians, vendors and payors. Data accessed by providers could trigger interventions or changes in treatment, provide a means for timely feedback to patients, and track utilization of certain diabetic supplies and related costs. Information systems in service have yet to be integrated in such a way that enables accurate tracking of diagnostic (blood glucose) data, analysis of that data, clinician review of data on demand, and communication with the patient.

But while limited in scope, Internet-based glucose monitoring systems (IBGMS) have improved diabetic patients' outcomes. In a three-month 2004 study by Kwon et al, 50 patients (vs. a comparable number managed in the usual outpatient care) were treated via an IBGMS. During this study, patients in the intervention group logged onto the study website, usually from their home computers, sending data on self-monitored blood glucose level, diabetes medication and dosage, and when necessary, changes in blood pressure and weight.

Physicians were able to review this information for each of their patients, who were able to view laboratory data and recommendations from the physicians. Patients in the control (outpatient) group met with a physician two or three times during the study. They received recommendations on medication and dosage, and lifestyle changes. Additional consultation with a nurse or dietitian was available.



The IBGMS group showed a reduction in Hemoglobin A1c (HbA<sub>1c</sub>) to 6.94% from 7.59%. HbA<sub>1c</sub> is a more reliable measurement of glucose levels over the preceding three months, as it does not vary as widely as measurements based on periodic finger pricks. The normal range is 4.0% to 5.9%. It is 8.0% or higher in poorly controlled diabetes and 7.0% or lower in controlled patients.

For added comparison, the study made a distinction between patients with a baseline HbA<sub>1c</sub> of <7% vs. >7%. Among patients in the intervention group with HbA<sub>1c</sub> <7%, HbA<sub>1c</sub> at the end of the study was 6.38% vs. 6.99% for control group patients with HbA<sub>1c</sub> <7%. For patients in either group with HbA<sub>1c</sub> >7%, the difference was more significant – 7.38% in the intervention group and 8.12% in the control group.

Kwon et al acknowledge that improved glucose control in the intervention group was driven in part by more frequent patient contact with physicians, medical recommendations based on recent diagnostic data, and, due to participation in the Internet-based study, greater patient motivation to control their glucose.

In 2010 Davis et al studied 160 diabetic women in rural South Carolina, managing an intervention group of 85 patients through community health center-based videoconferencing managed by a nurse/CDE (certified diabetes educator) and a dietitian. The intervention group, which visited designated community health centers 13 times, achieved a more significant reduction in glycated hemoglobin (HbA<sub>1c</sub>) than the control group, which attended only one 20-minute diabetes education session. While this study was not Internet-based, it demonstrates how videoconferencing can effectively support diabetes management in relatively underserved rural areas.

A 2010 study (Tildesley et al) of 46 Type II diabetics treated with insulin, or insulin in combination with oral diabetes medication, also concluded that patient management with an Internet-based glucose monitoring system (IBGMS) significantly reduced HbA<sub>1c</sub> levels, which were measured three and six months after the study began. Inclusion criteria were a recent HbA<sub>1c</sub> >7% and prior training in self-monitoring of blood glucose. All participants were asked to self-monitor their blood glucose three times daily, and submit to a laboratory blood test and visit their endocrinologist every three months.

At three months, HbA<sub>1c</sub> in the intervention group dropped from 8.8% to 8.2%, then dropped further to 7.6% when measured at six months. The control group's HbA<sub>1c</sub> dropped from 8.5% to 8.3% at three months but increased to 8.4% at six months. The authors believe that greater motivation, continuous communication between patient and endocrinologist, and an ability to act more quickly on diagnostic data that was uploaded every two weeks (vs. the control group's endocrinologist reviews every three months), may have contributed to HbA<sub>1c</sub> improvement in the intervention group,

**Competition**

The apparent effectiveness of IBGMs in improving diabetes management outcomes underlies a number of efforts to commercialize this technology. Several companies, including those listed here, offer programs with capabilities that overlap to some degree with HeC's.

Medtronic's CareLink® is an online program designed for use mainly with Medtronic insulin pumps that also feature continuous glucose monitoring. CareLink also processes information uploaded from third party glucometers. Charts, tables and graphs generated by CareLink enable patients to easily keep track of changes in their measurements. The data can be reviewed remotely by healthcare providers to make adjustments in therapy

Microsoft's HealthVault® is essentially a data storage and self-management tool that can be linked with glucometers to upload and store patients' diagnostic data through a Microsoft center. HealthVault can enable the patient to connect to a website used by healthcare providers to access diagnostic data and transmit messages, as well as other websites that enable patients to monitor their condition. HealthVault is not yet cleared by the FDA and is not compliant with HIPPA.

Positive ID Corp's iGlucose is a self-monitoring system for diabetics. Online enrollment by a healthcare professional, caregiver or individual online takes less than five minutes. After the patient connects iGlucose to a compatible glucometer, the system does the rest. Blood glucose readings are automatically communicated wirelessly (via GSM technology) to a secure iGlucose database. The web application automatically creates custom reports and data which are accessible through the online diabetes management portal. The patient controls who receives their glucose readings. iGlucose can be costly as it entails upfront enrollment and monthly service fees.

WellDoc's DiabetesManager® is a mobile phone- and Internet-based patient self-management and coaching system with a provider decision and communication link. Patients enter (manually) blood glucose values, diabetes medications, and lifestyle behaviors into a mobile phone (I Phone) application and receive automated real-time educational and lifestyle-related advice. Providers receive quarterly reports summarizing patient's glycemic control, diabetes medication management, lifestyle behavior, and treatment options based on data provided by patients. This program also reminds patient to maintain medication and blood glucose monitoring schedules. WellDoc's principal shortcoming is its reliance on manually entered glucose values, which have proven unreliable.

In a one-year trial that evaluated DiabetesManager through July 2011, the intervention group achieved a reduction of 1.9% in HbA<sub>1c</sub> vs. a reduction of only 0.7% in the study's control group. This clinical trial studied 163 privately insured patients in the care of 26 private physician practices. Patients do not have to use their mobile phones to use DiabetesManager. All information can be transmitted and received over the Internet.

## ***Projections***

***Operations*** In 2012 ALR's loss will widen to an estimated \$7.3 million or (\$0.03) per share from 2010's loss of \$5.3 million, or (\$0.02) per share. Losses will increase due mainly to a six fold increase in market development costs to \$3.7 million as the company prepares for HeC's launch. We also project a related 46% increase in SG&A expenses to \$1.2 million. The threefold increase in operating expenses to \$5.5 million will be offset in part by a 45% drop in interest expense to \$1.8 million due to lower rates of interest paid on shareholder loans and notes, but the loss for the year will be up 40% to \$7.3 million.

Losses will moderate in 2013 as ALR earns an estimated \$11.4 million with the commercialization of HeC. Although operating expenses double to \$10.8 million as the business continues to expand, gross profit (we project a gross margin of 75%) should offset most of the rise in operating expenses, narrowing the operating loss to \$2.3 million from \$5.5 million in 2012. But interest expenses will rise 45% to \$2.6 million as the company raises additional shareholder loans to cover ALR's cash needs. The net loss for 2013 will narrow to an estimated \$4.9 million, or (\$0.02) per share.

***Finances*** 2012 cash burn of \$3 million will be offset in part by a \$480,000 reduction in working capital stemming from an increase in interest payable. Cash of \$21.6 million used in operations and \$150,000 in capital

## ALR Technologies Inc.

expenditures should be covered by additional shareholder loans of \$3.2 million, which will increase cash by \$480,000 to \$491,000 at the end of 2012.

Due mainly to a projected 4Q13 profit, ALR should show 2013 cash earnings of \$1.1 million, partly offset by a \$363,000 increase in working capital stemming from an increase in receivables. Cash of \$747,000 from operations will fall short of capital expenditures of \$1.5 million but \$1 million in additional shareholder loans will cover the shortfall and increase cash by \$250,000 to \$740,000 at the end of 2013.

### 2011 Results

In 2011, the company earned no revenue and lost \$5.3 million, or (\$0.02) a share. In 2010 ALRT lost \$2.1 million, or (\$0.01) a share. The larger loss reflects sharp increases in expenses, led, in dollar terms by interest expenses, which increased almost threefold to \$3.3 million as notes and loans payable to the principal shareholder and his family increased to \$8.1 from \$6.1 million at the end of the prior year. The increase in interest expense represents the fair value of stock options issued to the principal shareholder and his spouse.

Market development expenses of \$659,000, up from none in the prior year, increased sharply as consultants and professionals were engaged to help formulate marketing plans as HeC progressed through regulatory approval. SG&A expenses increased 80% to \$821,000 due mainly to stock option benefits. The increase in SG&A was due in part to increased salaries and investor relations expenses. R&D expenses increased by 21% to \$150,000 due mainly to product studies and clinical trials, most of which related to adapting Health-e-Connect to FDA requirements.

	Year ending December 31:		
	2011	2010	% +/-
Expenses			
SG&A	821	459	79%
Market development	659		
R&D	339	250	36%
Professional fees	150	124	21%
Total	1,968	833	136%
Operating loss	(1,968)	(833)	136%
Interest expense	3,312	1,238	168%
Write down - equipment		4	
Other expense (income)	(3)		
Total other	3,309	1,242	166%
Net Loss	(5,277)	(2,075)	154%
Total loss per share	(0.02)	(0.01)	151%
Average shares outstanding (mil)	214	212	
<i>Source: Company reports</i>			

**Finances** 2011 cash burn of \$2.2 million was partly offset by a \$490,000 decrease in working capital stemming mainly from an increase in interest payable. Cash of \$1.7 million used in operations was covered by a comparable amount of loan proceeds, which increased cash by \$9,000 to \$11,000 at the end of the year.

### Management

The following are the company's principal operating officers. As of December 31, 2011 Sidney Chan beneficially owned 46.2% of outstanding shares. Jaroslav Tichy and Lawrence Weinstein owned 2.9% and 0.93%, respectively. Officers and directors as a group owned 50.03%

**Sidney Chan** Active in ALR since 1997. BS Engineering (Mineral Economics), 1973, McGill University.

**Lawrence Weinstein** President and chief operating officer. Joined ALR in July 2010. Has more than 25 years of medical device development and management experience from several companies, including Cordis Corporation, DHD Healthcare and PARI Respiratory Equipment. BS Chemical Engineering, Rensselaer Polytechnic Institute. MS Industrial Engineering, MBA, University of Miami.

**Jaroslav V. Tichy. PH D** Vice president of technology. Joined ALR in 2000. From 1984 to 2000 was a systems design specialist with Weir-Jones Engineering Consultants Ltd. Has conducted research and lectured on a wide range of subjects, including asynchronous switching theory, signal theory and pattern recognition. Has engaged in development projects such as analog, digital and mixed circuit design, digital signal processing and microprocessor and microcontroller based systems. PH D and MSc Computer Technology, Technical University (Czech Republic).

## **Risks**

In our view, these are the principal risks underlying the stock:

Going Concern Issues The company has earned little revenue, and no manufacturing profit, since it was established. If prospects for large-scale commercialization of H-e-C do not materialize, the shareholders could decide to discontinue the business.

Regulatory Potential demand for self-monitored glucose data stored by H-e-C will be based in large measure on a requirement by CMS (Centers for Medicare and Medicaid Services) that claims for reimbursements of diabetic test strips are supported by electronic usage data. Without a CMS mandate, a key source of potential revenue may not materialize.

Liquidity Since inception, ALRT has burned \$20 million in cash, funded largely by loans from the principal stockholders. Failure to secure needed capital could constrain efforts to commercialize HeC.

Competition and Intervening Technology The quest for improved clinical outcomes, based in large measure on cost containment imperatives, underlies widespread efforts to develop information technology applications aimed at improving the management of chronic diseases. Potential competitors include large companies with a substantial presence in medical and information technology, as well as startups with innovative approaches that could potentially leapfrog existing applications.

Concentration of Ownership The majority of common shares are owned by Sidney Chan and members of his family, who are able to influence decisions that may not be in the best interests of the general shareholders.

Acceptance HeC does not have to penetrate the diabetes management that deeply to develop an ongoing revenue stream. However, without sufficient mass, the company may not be able to effectively leverage the SBMG data collected by HeC in the targeted adherence and reimbursement claims documentation markets.

Potential Dilution The sale of additional common shares would dilute the holdings of current shareholders.

Microcap Concerns Shares of ALRT have risks common to the stocks of other microcap (which we define as market capitalizations of \$250 million or less) companies. Liquidity risk, typically caused by small trading floats and very low trading volume, can lead to large spreads and high volatility in stock price, and stock price discounts from the valuations of larger-capitalization stocks. The company has approximately 97 million shares in the float. On average, approximately 46,400 shares are traded daily.

Miscellaneous Risks The company's financial results and equity values are subject to other risks and uncertainties known and unknown, including but not limited to competition, operations, financial markets, regulatory risk, and/or other events. These risks may cause actual results to differ from expected results.

ALR Technologies Inc.

Annual Income Statements  
(\$ 000)  
2009 –2013E

	2009A	2010A	2011A	2012E	2013E
Sales					11,400
Cost of revenue					2,850
Gross profit					8,550
Expenses					
Depreciation				3	25
SG&A	3,462	2,805	821	1,200	1,600
Market development			659	3,700	8,000
R&D	780	333	339	400	800
Professional fees			150	200	400
Total	4,242	3,138	1,968	5,503	10,825
Operating loss	(4,242)	(3,138)	(1,968)	(5,503)	(2,275)
Interest expense			3,312	1,815	2,620
Other			(3)		
Total other			3,309	1,815	2,620
Net Loss	(4,242)		(5,277)	(7,318)	(4,895)
Total loss per share	(0.14)	0.00	(0.02)	(0.03)	(0.02)
Average shares outstanding (mil)	30	30	214	214	214

Source: Company reports and Taglich Brothers estimates

**Quarterly Income Statements**  
**(\$ Thousands)**  
**2011A - 2013E**

	1Q11A	2Q11A	3Q11E	4Q11E	2011E	1Q12E	2Q12E	3Q12E	4Q12E	2012E	1Q13E	2Q13E	3Q13E	4Q13E	2013
Sales											600	1,200	2,100	7,500	11,400
Cost of revenue											150	300	525	1,875	2,850
Gross profit											450	900	1,575	5,625	8,550
Expenses															
Depreciation					0			1		3				8	25
SG&A	116	354	146	205	821	200	300	300	400	1,200	400	400	400	400	1,600
Market development	3	208	422	25	659	200	500	1,000	2,000	3,700	2,000	2,000	2,000	2,000	8,000
R&D	60	84	77	118	339	100	100	100	100	400	200	200	200	200	800
Professional fees	82	19	21	27	150	50	50	50	50	200	100	100	100	100	400
Total	262	665	666	375	1,968	550	950	1,451	2,552	5,503	2,704	2,704	2,708	2,708	10,825
Operating loss	(1,704)	(665)	(666)	(375)	(1,968)	(550)	(950)	(1,451)	(2,552)	(5,503)	(2,254)	(1,804)	(1,133)	2,917	(2,275)
Interest expense	1,704	697	375	536	3,312	410	427	458	521	1,815	596	658	702	664	2,620
Other				(3)	(3)										
Total other	1,704	697	375	533	3,309	410	427	458	521	1,815	596	658	702	664	2,620
Net Loss	(1,704)	(1,362)	(1,041)	(908)	(5,277)	(960)	(1,377)	(1,909)	(3,072)	(7,318)	(2,850)	(2,462)	(1,835)	2,252	(4,895)
Total loss per share	(0.01)	(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	0.01	(0.02)
Average shares out (mil)	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214

Source: Company reports and Taglich Brothers estimates

ALR Technologies Inc.

Annual Balance Sheets  
(\$ 000)  
2009 –2013E

	2009A	2010A	2011A	2012E	2013E
<b>ASSETS</b>					
Current assets					
Cash + equivalents	1	2	11	491	738
Accts receivable					1,250
Prepayments & other			4	20	30
Total	1	2	15	511	2,018
Fixed assets (net)	4			98	473
<b>TOTAL ASSETS</b>	<b>5</b>	<b>2</b>	<b>15</b>	<b>609</b>	<b>2,491</b>
<b>LIABILITIES AND EQUITY</b>					
Current liabilities					
Accts pay and accruals	797	802	868	950	1,200
Payroll payable	18	9			
Interest payable	968	1,470	1,931	2,343	2,989
Advances payable	266	214	101	500	500
Lines of credit			2,812	6,000	7,000
Promissory notes	5,275	6,121	5,286	5,286	5,286
Total	7,325	8,615	10,998	15,079	16,976
Shareholders' equity	(7,320)	(8,614)	(10,983)	(14,470)	(14,484)
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>5</b>	<b>2</b>	<b>15</b>	<b>609</b>	<b>2,491</b>

Source: Company reports & Taglich Brothers estimates

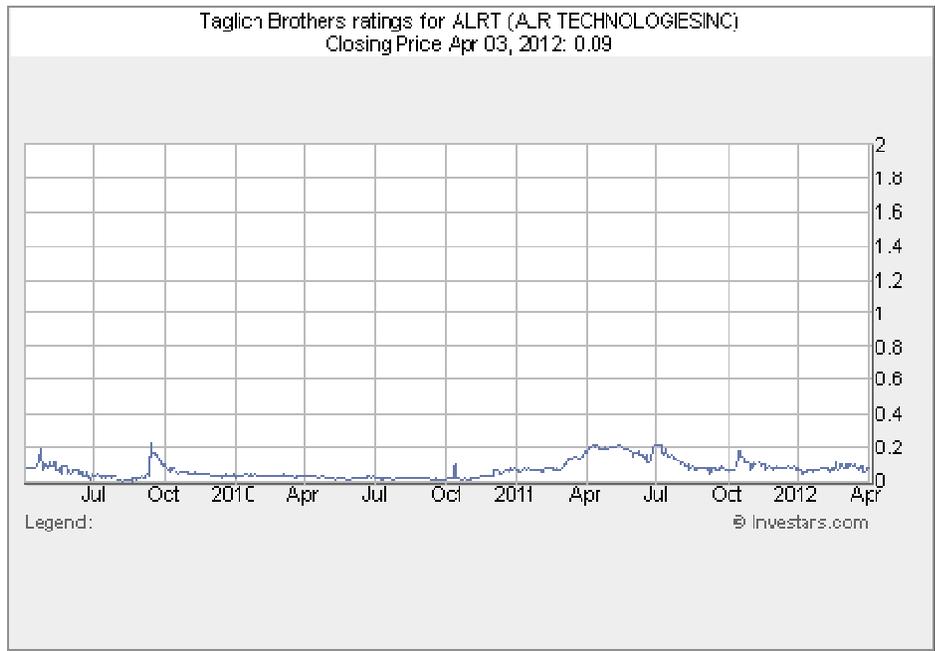
ALR Technologies Inc.

Annual Cash Flow Statements  
(\$ 000)  
2009 –2013E

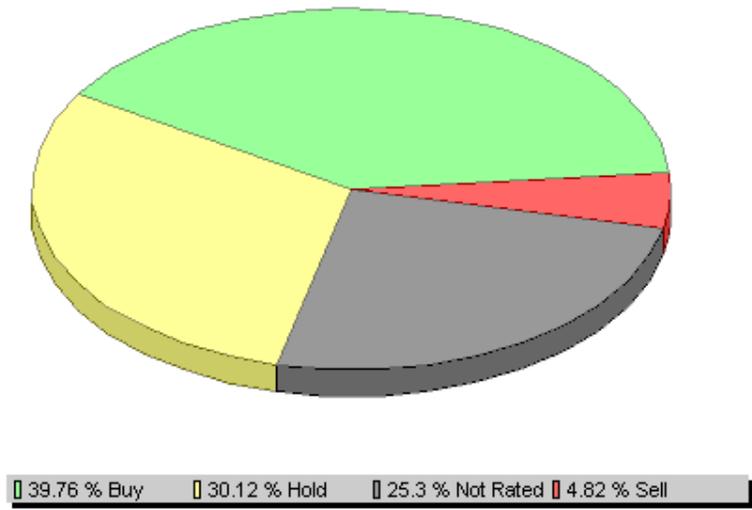
	2009A	2010A	2011A	2012E	2013E
Operating activities					
Net income (loss)	(2,200)	(2,075)	(5,277)	(7,318)	(4,895)
Depreciation/ amortization	2			3	25
Gain (loss) - disposal of equip		4			
Stock based compensation	127	597	2,683	2,700	2,700
Other non-cash items in net loss		1			
Unpaid interest - line of credit			216	1,400	3,100
Non-cash imputed interest	350	184	179	180	180
Equity instruments issued to settle liabilities					
Cash burn/throwoff	(1,721)	(1,289)	(2,199)	(3,035)	1,110
Changes in working capital	1,107	445	490	477	(363)
Net cash from operations	(615)	(844)	(1,709)	(2,558)	747
Cash from investing activities					
Capital expenditures				(150)	(1,500)
Net from investing activities				(150)	(1,500)
Cash from financing activities					
Proceeds - issuance of shares	10				
Proceeds - lines of credit				3,188	1,000
Proceeds - promissory notes	597	846	1,718		
Net from financing activities	607	846	1,718	3,188	1,000
Net change in cash	(7)	1	9	480	247
Cash - beginning	8	1	2	11	491
Cash - ending	1	2	11	491	738

Source: Company reports and Taglich Brothers estimates

**Price Chart**



**Taglich Brothers Current Ratings Distribution**



<b>Investment Banking Services for Companies Covered in the Past 12 Months</b>				
<u>Rating</u>	<u>#</u>	<u>%</u>		
Buy				
Hold		<b>N</b>	<b>O</b>	<b>N</b>
Sell				<b>E</b>
Not Rated				

### **Important Disclosures**

As of the date of this report, we, our affiliates, any officer, director or stockholder, or any member of their families do not have a position in the stock of the company mentioned in this report. Taglich Brothers, Inc. does not have an investment banking relationship with the company mentioned in this report and was not a manager or co-manager of any offering for the company within the last three years.

All research issued by Taglich Brothers, Inc. is based on public information. In November 2011 the company paid an initial monetary engagement fee of US\$4,500 to Taglich Brothers, Inc. representing payment for the first three months of creation and dissemination of research reports, after which the company will pay Taglich Brothers, Inc. a monetary fee of US\$1,500 per month for a minimum of three more months of such services.

### **General Disclosures**

The information and statistical data contained herein have been obtained from sources, which we believe to be reliable but in no way are warranted by us as to accuracy or completeness. We do not undertake to advise you as to change in figures or our views. This is not a solicitation of any order to buy or sell. Taglich Brothers, Inc. is fully disclosed with its clearing firm, Pershing, LLC, is not a market maker and does not sell to or buy from customers on a principal basis. The above statement is the opinion of Taglich Brothers, Inc. and is not a guarantee that the target price for the stock will be met or that predicted business results for the company will occur. There may be instances when fundamental, technical and quantitative opinions contained in this report are not in concert. We, our affiliates, any officer, director or stockholder or any member of their families may from time to time purchase or sell any of the above-mentioned or related securities. Analysts and members of the Research Department are prohibited from buying or selling securities issued by the companies that Taglich Brothers, Inc. has a research relationship with, except if ownership of such securities was prior to the start of such relationship, then an analyst or member of the Research Department may sell such securities after obtaining expressed written permission from Compliance.

### **Analyst Certification**

**I, Juan Noble, the research analyst of this report, hereby certify that the views expressed in this report accurately reflect my personal views about the subject securities and issuers; and that no part of my compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report.**

### **Public companies mentioned in this report**

Abbott Laboratories	(NYSE: ABT)	Microsoft	(NasdaqGS: MFST)
Bayer AG	(BAYRY.PK)	Roche Holding Ltd.	(RHHBY.PK)
Johnson & Johnson	(NYSE: JNJ)	Sanofi	(NYSE: SNY)
Medtronic	(NYSE: MDT)	UnitedHealth Group	(NYSE: UNH)

### **Meaning of Ratings**

**Buy** - the company is undervalued relative to its market and peers. We believe its risk reward ratio strongly advocates purchase of the stock relative to other stocks in the marketplace. Remember, with all equities there is always downside risk.

**Speculative Buy** - We believe that the long run prospects of the company are positive. We believe its risk reward ratio advocates purchase of the stock. We feel the investment risk is higher than our typical “buy” recommendation. In the short run, the stock may be subject to high volatility and continue to trade at a discount to its market.

**Neutral** - We will remain neutral pending certain developments.

**Underperform** - We believe that the company may be fairly valued based on its current status. Upside potential is limited relative to investment risk.

**Sell** - We believe that the company is significantly overvalued based on its current status. The future of the company's operations may be questionable and there is an extreme level of investment risk relative to reward.

**Dropping Coverage** – we have discontinued research coverage due to the acquisition of the company, termination of research services, non-payment for such services, or departure of the analyst.

### **Some notable Risks within the Microcap Market**

**Stocks in the Microcap segment of the market have many risks that are not as prevalent in Large-cap, Blue Chips or even Small-cap stocks. Often it is these risks that cause Microcap stocks to trade at discounts to their peers. The most common of these risks is liquidity risk, which is typically caused by small trading floats and very low trading volume which can lead to large spreads and high volatility in stock price. In addition, Microcaps tend to have significant company specific risks that contribute to lower valuations. Investors need to be aware of the higher probability of financial default and higher degree of financial distress inherent in the microcap segment of the market.**

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From time to time our analysts may choose to withhold or suspend a rating on a company. We continue to publish informational reports on such companies; however, they have no ratings or price targets. In general, we will not rate any company that has too much business or financial uncertainty for our analysts to form an investment conclusion, or that is currently in the process of being acquired.