October 17, 2018

Zacks Small-Cap Research

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Document Security Systems (DSS-NYSE-Amer)

DSS: Initiating Coverage – DSS's Anti-Counterfeiting System Could Solve a World of Problems

Based on blended multiples from its peers of 1.8 times enterprise value to sales, we believe DSS stock is worth $2.17 per share.

Current Price (10/16/18)	$1.03
Valuation	**$2.27**

OUTLOOK

Document Security Systems is a small company with extensive patented expertise in authentication, anti-counterfeiting, and document and packaging printing. It also has an IP technology enforcement and licensing business. It has recently introduced a novel authentication system that allows customers to track and authenticate products using inked or etched marks that can be read by a generic smartphone. The company has signed and is implementing this system with a Fortune 50 customer and expects to announce other customers in the next few months, which should lead to revenue growth and profits.

SUMMARY DATA

52-Week High	**$2.58**
52-Week Low	**$0.61**
One-Year Return (%)	**38.0**
Beta	**3.1**
Average Daily Volume (sh)	**25,161**
Shares Outstanding (mil)	**16.8**
Market Capitalization ($mil)	**$17.3**
Short Interest Ratio (days)	**3.9**
Institutional Ownership (%)	**4**
Insider Ownership (%)	**25**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**1.6**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2018 Estimate	**-6.5**
P/E using 2019 Estimate	**N/A**

Risk Level	**High**
Type of Stock	**Small-Blend**
Industry	**Business Services**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2016	4.3 A	4.1 A	5.0 A	5.8 A	19.2 A
2017	4.8 A	3.9 A	4.2 A	5.8 A	18.7 A
2018	4.4 A	4.1 A	4.3 E	6.0 E	18.7 E
2019					21.0 E

Earnings Per Share

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2016	-$0.05 A	-$0.02 A	$0.00 A	$0.00 A	-$0.07 A
2017	-$0.01 A	-$0.02 A	-$0.02 A	$0.01 A	-$0.04 A
2018	-$0.01 A	$0.16 A	-$0.02 E	$0.01 E	$0.13 E
2019					-$0.04 E

Zacks Projected EPS Growth Rate - Next 5 Years % **N/A**

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KEY POINTS

- Document Security Systems is a decades old company with expertise in security printing, but with revenues that have been flat for the past few years. Sales are primarily from printing and packaging, but future growth is expected come from its anti-counterfeiting and authentication expertise, which has resulted in a new SaaS product that is just beginning to make inroads with customers.

- DSS has introduced a unique and patented authentication solution that enables corporate customers, as well as end user consumers, to track and authenticate products throughout the supply chain. Its novel approach, which uses double blind labeling, competes with taggants and RFID tracking but is far cheaper and can be used without specialized equipment. The system **allows anyone with a smartphone to scan a product to determine if it is genuine**. It is competing with solutions that require specialized hardware to determine authenticity--- putting it outside the reach of the consumer customer. We believe its technology would be of huge benefit for highly counterfeited consumer products such as those sold by Gucci, Tiffany, and Rolex, and industrial and OEM products such as those sold by GM and Samsung. It could reduce counterfeiting, shrinkage, and warranty fraud by orders of magnitude for any company implementing it. It can enable both consumers and reseller platforms like EBAY to easily determine whether a product is authentic, which not only would be a game changer in commerce, but also could save lives when used with pharmaceuticals, vitamins, and even baby formula.

- The company has its first Fortune 50 customer for this product, called “AuthentiGuard,” and expects other customers to sign on in the next few months as they see the unique value in its solution. We believe an increase in marketing effort, combined with a high-visibility reference customer, could be the catalysts to rapid growth for DSS. We think if the company could land a marque reference customer, it would gain the publicity to cross the chasm to acceptance resulting in rapid growth.

- DSS has had a recent revamp of its board of directors. Shareholders have elected a slate of members eager to push a growth strategy after years of complacency. The board is now composed of directors that want to invest in technology, sales, and marketing to grow.

- DSS has a uniquely structured IP enforcement business that has seven different actions in process in areas of LED and Bluetooth technology that could be monetized in the next few years. Its biggest potential win is a suit against Apple for Bluetooth technology, which is used in virtually all its products. On July 28, 2018, the court lifted the stay in the suit after the decision of PTAB against DSS was reversed. The company is now awaiting results of its Markman and a trial date. The company has recently restructured its IP enforcement efforts to avoid costs while allowing it to participate in the upside of successful monetization events.

- At an enterprise value of $17 million, which is only 0.9 times EV to its trailing 12-month sales we believe the stock has considerable upside should the company begin to show signs of growth. Based on metrics of its peer group, **we believe it is worth $2.27 per share** using a blended average EV/sales of 1.8 times and an estimate of $21.0 million in sales in 2019. Any upside from the successful resolution of its IP enforcement efforts has not been factored into this valuation and adds considerable incremental potential for shareholders. Near term we believe announcements of new customer wins could drive the stock.

OVERVIEW

Document Security Systems was founded in 1984 as New Sky Communications, and changed its name in 2003. It went public in 2004, is headquartered in Rochester, NY, and employs 98 people. Its technology has its foundation from the beginnings of the anti-counterfeiting industry, when the founder David Wicker's father, Ralph Wicker, invented several first-generation anti-counterfeiting print security techniques. The Wickers then used their expertise and ideas to combat counterfeits created on the rapidly improving copiers and printers that emerged in the 1980s and 90s. Rochester known for its expertise in both digital photography and copiers from Kodak and Xerox had the knowledge base to succeed. In 2013, DSS expanded its business focus by merging with DSS Technology Management, Inc., formerly known as Lexington Technology Group, Inc., which acquires intellectual property assets and enforces its IP through licensing and litigation. It has patents in Bluetooth and LED technology and is in litigation with a number of major technology companies. The CEO Jeff Ronaldi came on-board with this acquisition due to his expertise in IP enforcement. The company's main business is focused on developing anti-counterfeiting technologies and solutions. It creates and sells fraud proof packaging, IDs, documents, and currency as well as has systems to protect digital products. Its largest revenue source at this time however, is the printing of packaging for photo processing businesses.

The company reports revenues in two segments, Printed Products and Technology Sales, Services and Licensing.

PRINTED PRODUCTS was responsible for 90.4% of revenues for the first half of 2018. Its revenues are from:

DSS Packaging and Printing Group - produces custom paperboard packaging serving clients in the pharmaceutical, beverage, photo packaging, toy, specialty foods and direct marketing industries, among others. The group also provides secure and commercial printing services for end-user customers along with technical support for licensees. It produces a wide array of printed materials such as: security paper, vital records, prescription paper, birth certificates, receipts, manuals, identification materials, entertainment tickets, secure coupons, parts tracking forms, brochures, direct mailing pieces, catalogs, and business cards. It also serves as a test facility for the company's anti-counterfeiting research.

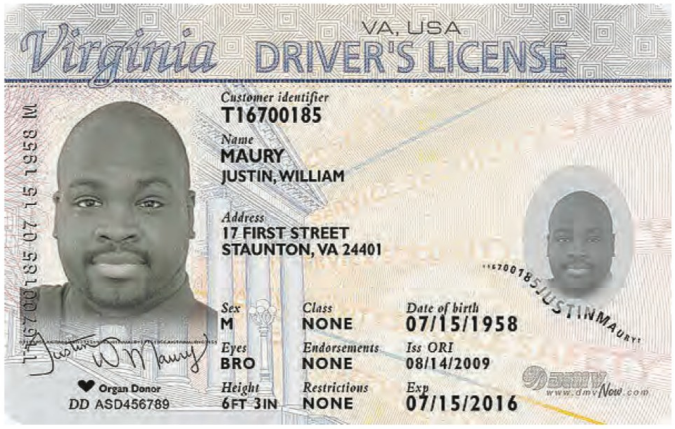
DSS two largest customers, Walgreens and Shutterfly bought $2 million or 24% of revenues and $1.2 million 14% respectively of revenues in the first half of 2018 from the Packaging and Printing group. They use DSS's products for packaging for photo processing. In September Walgreens announced it is adding a net 1,300 Rite Aid stores to its chain. The photo processing part of the integration is expected to be complete by August 31 of 2019. This would be a 16% net increase in stores and should correspond somewhat to a 16% increase in DSS's business with them, which we estimate would be an additional $700,000 in annual revenue. In April, Shutterfly bought Lifetouch, Inc. and in June reported a more than doubling of revenues for its June quarter due to that purchase. It is unknown if this acquisition will add to DSS's business with Shutterfly.





DSS Plastics Group - manufactures laminated and surface printed cards which can include magnetic stripes, bar codes, holograms, signature panels, invisible ink, micro fine printing, guilloche patterns, biometric, radio frequency identification (RFID) and watermarks for printed plastic documents such as: ID cards, event badges, and driver's licenses. The AuthentiGuard suite of patented, printed security features can be laminated into a card. This group markets primarily through resellers. It has provided badges for the Superbowl for the past five years and has technology that allows trade show badges to track attendees for marketing data.





TECHNOLOGY SALES, SERVICES AND LICENSING is 9.6% of sales comprised of revenue generated from:

DSS Digital Group - develops and markets digital authentication solutions, including *AuthentiGuard*, a smartphone-based application system that integrates traditional printed optical deterrent technologies with proprietary digital data security-based solutions for brand protection and product diversion prevention. This group holds the greatest promise at its new solution is a significant improvement over competing technologies. It has signed its first major customer, a Fortune 50 auto manufacturer that is in the process of rolling out DSS's solution throughout its parts business in the effort to both prevent liability in the use of counterfeit OEM parts as well as to insure that parts returned under warranty are actually genuine parts. Initially the customer will be using DSS technology on its paper shipping boxes and plastic bags as it is embedded in the ink itself, but could eventually add it through engraving to the metal and plastic parts themselves. Management expects to be announcing the signing of several new customers for this business in the next few months as they reach the end of their test periods and decide to move forward.

The key to understanding DSS' competitive strength and why its technology should gain traction is to look at why it won the Fortune 50 customer. Five main factors added up to a win for DSS and are applicable to all potential customers.

1. **Ease of implementation**

   DSS has a product that is the easiest to implement in a very complicated production environment. Most of the competitors require the customer to buy something from them and apply it to the packaging-- a special label, a tag of some sort, or even a hologram. To implement any of these, the customer has to change its production. Take a specialized label for instance; this requires the customer to add a machine, or another step to the manufacturing process, to apply that label. For a large company, that literally has thousands of manufacturing partners that is an enormous change-- so big in fact that most won't do it. DSS's solution is just integrated through the printing process. DSS marks don't require any new materials or equipment. Instead, marks are printed using existing printing processes during packaging production. There are no changes at all to production.

2. **Resistance to Counterfeiting**

   DSS marking technology is extremely advanced and resistant to most counterfeiting attempts. That creates an extremely attractive proposition to very large producers. Most of competitors still use visual identification factors (like a hologram) which is easy to counterfeit and very hard to authenticate.

3. **More Cost Effective**

   It is much more cost effective too since there is no label or hologram to buy. These can easily cost two to five cents each. This adds to a lot of money when dealing with billions of units a year. At that volume, a DSS solution would cost hundredths of a cent per unit.

4. **Can Be Authenticated by the End User Customer**

   Since a DSS mark can be scanned using just a smart phone, end user customers can authenticate the product themselves. Competitive hologram solutions are easily counterfeited and worthless to a consumer who doesn't know what the hologram should even look like as a way to authenticate a product.

5. **Provides Feedback to Find the Counterfeits**

   When a product is scanned, the manufacture is given feedback. The scans create a tremendous amount of data on the backend so the manufacturer and distributors have a better idea of what is going on in the market such as where the fakes are. Holograms and other technologies don't provide any feedback.

In order to expand its reach and provide stability to customers, DSS entered into a partnership with Sun Chemical to cross-market and sell one another's anti-counterfeiting products in January of 2017. Sun Chemical is leading producer of printing inks, coatings and supplies, pigments, polymers, liquid compounds, solid compounds, and application materials. It is selling DSS' proprietary suite of *AuthentiGuard* anti-counterfeiting technologies, which include smartphone authentication, hidden images, and copy protection, and DSS can sell Sun Chemical's solutions, including multiple covert taggant-reader systems, special effect inks, and smart sensor technology. Sun Chemical gives DSS a much larger partner that can instill confidence in customers reluctant to do business with a small company as well as offering DSS access to a large worldwide sales force selling directly to printers.

DSS Digital also provides outsourced IT support for companies. In recent quarters the company has taken steps to eliminate unprofitable contracts and deemphasize this business.

Blockchain-- the Future of Anti-Counterfeiting and Supply Chain

DSS plans to have a blockchain offering available in Q4 of 2018. The main benefit provided by blockchain for anti-counterfeiting is **interoperability**. The counterfeiting problem is driven by the lack of interoperability in the supply chain. For example, without exaggeration, a large car manufacturer might have 20,000 other companies involved in its supply chain. Current systems are based on a central location where all information is gathered and would require the integration of the systems of these 20,000 companies with this one central system. Not only is that daunting and expensive, it creates a huge security vulnerability by opening up 20,000 doors into each other's systems, and, as a result, nobody does it. Since there is then no control over the supply chain, a security hole is created that is the root of the counterfeiting problem. Blockchain offers a potential solution to this integration problem as data then just needs to be uploaded to the blockchain network and security is maintained as nobody has access to the central system. Security is also increased since blockchain data is protected both by heavy encryption, as well as an inability to be changed because the data is being written to multiple ledgers. The supply chain also needs a digital signature for physical goods in order to track them. The

DSS mark is essentially a **secure digital signature**. Many competitors, like Brady, use a QR code. QR codes are very simple to forge and have no security to them. The DSS mark is very secure and can function as a valid digital signature, which provides a better representation of the product in a digital system.

AuthentiChain is being built as a network to which any app or solution can write. It will have application programming interfaces (APIs) so that non-DSS applications or systems can also contribute data or information. DSS will launch *AuthentiGuard* and *AuthentiSite* smartphone apps for counterfeiting applications but expects an ecosystem of outside developers to contribute to the utility of the blockchain. DSS will provide a very high capacity network that will allow all these potential contributors to also submit data. Combined with the digital signature on each product as well as some other capabilities, DSS can provide the network to make all these supply chain systems interoperable with each other. Anti-counterfeiting will be just one component. All other systems such as ERP systems, shipping systems, warehouse inventory systems, and online commerce portals can all write data to the blockchain so that there is one unified record down to the individual unit level.

DSS Technology Management acquires or internally develops patented technology or intellectual property assets (or interests therein), with the purpose of monetizing these assets primarily through investments in the development and commercialization of patented technologies, licensing, strategic partnerships, and litigation. In Q2 of 2018, this group realized a one-time gain of $3.5 million on the extinguishment of liabilities with the transfer of some of its patents to a third-party funder that will also reduce future interest and patent amortization expense. DSS has now structured the enforcement business to be primarily funded by outside partners while still being able to participate in successful outcomes in excess of expenses. The company's current IP enforcement activity is shown in the table below.

Table 1. STATUS OF LITIGATION

Company	Date and Location	Status	Patent numbers
Apple	Case originally filed in the United States District Court for the Eastern District of Texas on November 26, 2013. The case is currently pending in the United States District Court for the Northern District of California	Stay lifted July 27, 2018. Markman held, awaiting results. (Bluetooth)	6,128,290
Seoul Semiconductor	United States District Court for the Central District of California, on June 7, 2017	IPR's pending with PTAB	6949771, 7256486, 7524087
Everlight	United States District Court for the Central District of California on June 8, 2017	IPR's pending with PTAB	7256486, 7524087, 6949771, 7919787
Cree	United States District Court for the Central District of California on June 8, 2017	IPR's pending with PTAB	7256486, 7524087, 6949771
Lite-On	United States District Court for the Central District of California on August 15, 2017	Lite-On has not filed IPRs.	6949771, 7524087, 7256486
Nichia	United States District Court for the Central District of California on December 7, 2017	IPR's pending with PTAB	7919787, 7652297, 6949771, 7256486

INDUSTRY OUTLOOK

DSS operates in two main industries: the **anti-counterfeiting** industry, which is expected to provide all the growth for the company and the **paperboard packaging industry**, which currently accounts for the majority of its sales.

The Anti-Counterfeiting Industry

For DSS, anti-counterfeiting and supply chain markets are the key markets relevant to its growth. Counterfeiting has increased 50% in the last 10 years and perpetrators have become more sophisticated using technology. Counterfeit goods are now 2.5% of global trade. Industry is moving from just using enforcement to combating fakes, to being proactive and implementing systems to track and authenticate goods along the supply chain. For the first time, authentication is able to be done all the way down to the consumer by using a smartphone app. Holograms have been heavily used by industry to help identify authentic goods. According to The Market Reports, the global holographic anti-counterfeiting marks market was valued at $710 million in 2017 and will reach $920 million by the end of 2025, growing at a CAGR of 3.3% during 2018-2025. Hologram protection has a significant flaw-- copies can be easily bought from China for as little as half a cent each, making them virtually useless. DSS's solution is to put its secure mark on a label on a package (or in many cases the product itself.) This mark can't be copied, can't be photographed, and can't be scanned, and provides data along its route when someone validates that mark. It is the same secure technology used on currency and bank notes. That data can be where the product was manufactured, when it expires, who shipped it, when it was shipped and where it is suppose to be. So this methodology provides multi-factor authentication much like payment systems use to authenticate a transaction. It looks at not only if the mark is real, but also if the product is supposed to be in that location. This big data approach can spot places in the supply chain that are trouble whether it be a plant, a port, a distributor, or a store. With DSS's solution even a consumer can take out a smartphone and discover if a product is a fake or real if it is bought Amazon, or even EBAY or "just fell off a truck." With data sent to the corporate cloud, a brand owner can quickly move to take action without depending on enforcement officials. While RFID can do much of this tracking it is much more expensive and it leaves the consumer out of the feedback loop as RFID equipment is needed to identify packages.

The 2018 Global Brand Counterfeiting Report stated that counterfeiting globally reached $1.2 trillion in 2017 and is expected to reach $1.8 trillion by 2020. The U.S. Customs and Border Patrol (CBP) published data for the FY 2017 that showed 34,143 seizures of intellectual property rights (IPRs), and that the total manufacturer's suggested retail price (MSRP) of the seized goods would have been approximately $1.2 billion.

The 2017 report, The Future of Anti-counterfeiting, Brand Protection and Security Packaging to 2022, by Smithers forecasts this global market will grow at a CAGR of 5.3% between 2017 and 2022, to reach $3.6 billion. Food is the largest market for brand protection followed by industrial and consumer goods. According to estimates from The Organization for Economic Co-Operation and Development, in 2016 the cross-border counterfeit market accounted for **between $461 billion and $1.7 trillion**. They explain there are many reasons for fighting counterfeits: health and safety risks, possible recalls, lost trade and tax revenue, cost to seize, store, and destroy adulterated products, and dilution of brand value. In addition counterfeiter profits often go to organized crime and use exploited labor.

The Paperboard Packaging Industry

The global paperboard industry was valued over $130 billion in 2016 and the industry will grow by a CAGR of more than 7.5% up to 2024 according to Global Market Insights. In North America, paperboard packaging is $10 billion industry according to RISI. In the five-year period between 2017 and 2021, this industry is expected to grow at an average annual rate of 2.3% in sales.



INDUSTRY POSITION

There are a lot of anti-counterfeit, authentication, and brand protection solutions in the market including holograms, RFID-based tags, random 2D graph, scratchable QR codes, and digital number-based SMS systems.

COMPETITORS

Authentication Solutions

Honeywell Authentication Technologies is a division of Honeywell (NYSE-HON) the $123 billion company. This division provides covert luminescent materials and electronic detection devices for authentication. It pioneered the development and production of luminescent materials and uses it for currency, brand, and document authentication systems worldwide.

Brady Corp. (NYSE-BRC) is a $2.1 billion company founded in 1914 and headquartered in Milwaukee, Wisconsin. It manufactures and supplies identification solutions (IDS) and workplace safety (WPS) products to identify and protect premises, products, and people internationally. The IDS segment offers safety signs, pipe markers, labeling systems, spill control products, and lockout/tagout devices for facility identification and protection; materials and printing systems for product identification, brand protection labeling, work in process labeling, and finished product identification; and hand-held printers, wire markers, sleeves, and tags for wire identification, as well as software and services for safety compliance auditing, procedure writing, and training. Its products also comprise nametags, badges, lanyards, and access control software for people identification; wristbands and labels for tracking and enhancing the safety of patients in hospitals; and custom wristbands for use in the leisure and entertainment industry, such as theme parks, concerts, and festivals.

Graphic Security Systems Corp. (GSSC)

GSSC was founded in 1981 and is based in Lake Worth, Florida. It is a small anti-counterfeiting technology company that provides document security and brand protection solutions. GSSC technology uses advanced optical decoding, as well as smartphone authentication that is used on billions of brand products and documents worldwide. According to LinkedIn it has less than 20 employees.

Applied DNA (Nasdaq: APDN) is a small public start-up company in Stony Brook, NY founded in 1983 and selling molecular-based security and authentication solutions. It generated $3.9 million in sales in the last twelve months, has a $38 million market cap, and employees approximately 57 people. It has had $20 million in funding and went public in 2002 through a shell. Its solution puts custom DNA markers in label ink but to analyze that ink requires extensive analysis and equipment.

De La Rue (LSE: DELR) is $655 million, 200 year-old commercial banknote, and document printer based in Basingstoke, UK. It sells to governments, central banks, and commercial organizations in over 140 countries.

Zebra Technologies (ZBRA) is a $9.2 billion company based in Lincolnshire, IL. It designs, manufactures and sells a range of automatic identification and data capture products including: mobile computers, barcode scanners, RFID readers, wireless LANs, specialty printers for barcode labeling and personal identification, real-time location systems, related accessories and supplies, and utilities and application software.

Systech International is a private company founded in 1985 in Princeton, New Jersey with approximately 250 employees. It generates approximately $75 million in sales worldwide. Its UniSecure solution analyzes existing barcodes to create a digital fingerprint so manufacturers can authenticate its packages. It recently announced a strategic partnership with FarmaTrust, a leader in pharmaceutical supply chain security to provide a blockchain-enabled solution for the pharmaceutical industry that leverages FarmaTrust's blockchain and AI technologies to ensure product authenticity from the manufacturing floor to a patient's hands.

SURYS Group was founded in 1984 as a hologram provider and is headquartered in Bussy-Saint-Georges, France with offices in Poland, Germany, Amsterdam, and the US. It has more than 110 employees worldwide. It provides ID cards, travel documents as passports and visas, and fiduciary documents or products and insure an efficient traceability to fight against fraud. Its expertise is in authenticating and protecting the document variable data, with know how in image analysis and fingerprinting algorithms. SURYS provides products from optical laminates to complete document personalization, as well as authentication through software and mobile smart devices for traceability.

Packaging and Printing

The Packaging and Printing group competes with many companies with the main ones being Mid-York Press, Mod-Pack, two local private packaging companies, Graphic Packaging (NYSE-GPK) the largest North American folding carton and paper cup manufacturer with over $4 billion in sales, located in Atlanta, and WestRock a $20 billion global company that provides paper and packaging solutions for the consumer and corrugated markets that is also based Atlanta.

FINANCIALS

First Half 2018

For the first six months of 2018 DSS generated $8.5 million in revenue slightly down from last years $8.6 million. Of that printed products was $7.6 million compared to last years $7.8 and technology sales, services and licensing was $816,000 versus $825,000 a year ago. Technology sales, services, and licensing was down due to a decline in general IT services and royalty licensing revenues as the company continues to reduce its IT services business. Gross margin dollars declined from $3.7 million to $3.2 million or 37% from 42%.

Total expenses increased from $3.9 million to $4.3 million primarily due to the addition of payroll and consulting costs for the new DSS office in Hong Kong and increases in salaries for sales personnel and

to certain members of the senior management team. Also professional fees increased 63%, during the six months ended June 30, 2018, as compared to the six months ended June 30, 2017 as a result of increases in consulting services for the Technology group, new consulting services for DSS International, and increases in legal services for patent litigation.

Operating losses were $1.2 million versus a loss of $254,000 a year ago.

During the second quarter the company had a gain on the extinguishment of $3.5 million related to its IP business, which pushed the company into the black.

The company paid no taxes and has a $42.3 million tax loss carry forward.

After other expenses and gains, the net income reported was $2.3 million versus a loss in last year's first half of $449,000. On a non-GAAP basis, taking out the one-time gain and stock-based compensation the company lost $1.2 million versus a loss of $257,000 a year ago.

On a GAAP basis this was an EPS of $0.15 versus a loss last year of $0.03. On a non-GAAP basis it was a loss of $0.07 versus a loss of $0.02 for EPS. Shares outstanding increased from 13.7 million shares on June 30, 2107 to 16.6 million on June 30, 2018, up 21.2%.

Forecasts

2018 Year

While DSS is making progress and has a large pipeline of prospects, we do not expect to see this reflected in revenues in the next two quarters. This year we expect somewhat flat revenues that could total $18.7 million close to 2017 revenues. The operating margin is expected to decline as the company increases spending on *AuthentiGuard* development and marketing and production capacity. With the one time gain, we expect the company to report a profit of $2.2 million or $0.13 per share for the year versus a loss of $556,000 and -$0.04 a year ago. Without the one time gain and stock-based compensation the non-GAAP loss is expected to be $1.3 million or $0.08 per share.

2019 Year

The 2019-year should show meaningful revenue growth. Not only should the company have the opportunity to capture more business from Walgreens and Shutterfly, but also revenues will start to ramp with its Fortune 50 customer as the system is implemented throughout its organization. This coupled with sales wins expected from its fertile pipeline should propel the company to a conservative $21 million in revenues for 2019, up 12.3%. While new business should be profitable and at higher margins, we expect the company to continue to spend to grow while keeping EBITDA positive. We are initiating a 2019 EPS estimate of a loss of $0.04 or $652,000.

MANAGEMENT

Jeff Ronaldi
CEO

Jeff Ronaldi has served as a director and the CEO of DSS since July 1, 2013. He was previously the CEO at Lexington Technology Group before it was acquired by DSS. He has 25 years of experience managing and successfully growing technology-based businesses, including, ImageExpo, a division of SPX Corporation where he oversaw a $60 million patent infringement verdict against Microsoft. He was also involved in a $20 million verdict against Citrix, and helped to manage a $50 million verdict against Genzyme. He also worked at Concentric Networks, UUNET, and Newsletters.com. As Product Manager

at UUNET he oversaw the explosive growth of an industry standard-setting product that continues to generate billion dollars in annual revenue. He was involved in the IPOs of both UUNET and Concentric. As CEO of Turtle Bay, an IP licensing firm, Jeff was responsible for defining overall strategy and for managing the company's approximately $50 million investment. Jeff earned a BS in Finance from the University of Maryland in 1987.

Jeff D'Angelo
VP General Council

Jeff has served as Vice President, General Counsel of DSS since February 2011. Prior to DSS, he was a member of Woods Oviatt Gilman LLP's Business & Finance practice group and a management executive for Prudential Financial. Jeff earned a law degree from the Benjamin N. Cardozo School of Law in 1988, and a BA in General Management/Marketing from Purdue University in 1983. He is a member of the New York State Bar Association and is admitted to practice in New York and Massachusetts.

Philip Jones
CFO

Phil joined DSS in 2005 as Controller and Principal Accounting Officer and has been CFO since 2009. He is also Vice President of Finance and Treasurer. Phil has 17 years of experience in the accounting and finance beginning as a CPA at Arthur Andersen and PriceWaterhouseCoopers. He worked for Zapata Corporation and American Fiber Systems and was involved in multiple mergers and acquisitions and capital raises, including the successful spin-off and IPO of Zapata's Internet subsidiary. Phil earned bachelor's degree in Economics from SUNY Geneseo and an MBA from the Rochester Institute of Technology.

David Wicker
VP of R&D

David has been with DSS since 2002 when the company he founded was sold to DSS. He is responsible for product awareness and the development of solutions for clients' documents and brand packaging needs and brings over 24 years of experience in the commercial printing industry. Since 1991, when he founded the Wicker Group he has been involved in security printing licensing and technology implementation to printers worldwide. He has introduced "safety paper" to over 400 paper distributors. In 1995 was granted U.S. patent No. 5,454,598 for perforations designed to thwart fraud.

Michael Caton
CTO

Michael joined DSS in 2004 and directly serves the technical needs of the licensees of DSS' anti-counterfeiting system. He has helped develop some of the most sophisticated anti-counterfeiting technologies in the world for documents such as currency, car titles, and travelers' checks and has several international patents to his name. He brings over 29 years of experience in pre-press and printing, 25 of which have been in the security field. Michael had been a consultant for the Wicker Group and Thomas Wicker Enterprises as a DSC partner while continuing his work for a variety of large printers and pre-press houses.

Mike Tobin
Vice President of Marketing & Product Management

Mike has been with DSS since 2016. He is a marketing veteran with almost 25 years of experience in marketing technology, telecommunications, and B2B products to the enterprise, government, and consumer markets. Prior to joining DSS, Mike was the founder and managing partner of Marketative

Consulting, which he started in 2004. Marketative was a marketing consulting firm focused on building marketing programs based upon quantitative metrics for technology companies and startups. Mike has also served in a variety of marketing roles for emerging and Fortune 500 companies including marketing leadership positions with UUNET Technologies, Eyecast Corporation, and Cable & Wireless. At DSS he is tasked with gathering feedback from customers and prospects and distilling it into solutions that solve the difficult brand protection problems currently challenging the market. Mike earned a BS in Economics from Marquette in 1991.

BOARD OF DIRECTORS

Jeff Ronaldi
CEO

Heng Hai Amrose Chan

Heng Fai Amrose Chan has served as a director since February 12, 2017. He is an expert in banking and finance and has restructured 35 companies in various industries and countries during the past 40 years. Mr. Chan currently serves as the CEO of Singapore eDevelopment Limited (SED.) He is also a director of BMI Capital Partners International Ltd., a wholly owned subsidiary of SED and Holista CollTech Limited, a publicly traded company listed on the Australian Securities Exchange. Previously he served as Managing Chairman of Heng Fai Enterprises Limited, and SGX Catalist-listed SingHaiyi Group Ltd. He was the Executive Chairman of China Gas Holdings Limited, and director of both Global Med Technologies and Skywest Limited. He was Chairman and Director of American Pacific Bank, which he bought out of bankruptcy in 1987, recapitalized, and sold to Riverview Bancorp.

Joseph Sanders

Joseph Sanders has served as a director since October 1, 2015. Since 2001, he has been a Registered Investment Advisor with Newport Coast Securities, which was recently acquired by WestPark Capital. Between 1983 and 2001, Mr. Sanders served as a financial advisor at Dean Witter, EF Hutton, Shearson Lehman, Bateman Eichler, AG Edwards, Sutro, and Morgan Stanley. He worked as a financial analyst at Hughes Aircraft for two years after receiving a license as a financial advisor in 1981. He earned a BS in Business Administration and Finance from the University of Southern California and an MBA in Finance from Loyola Marymount University.

Pamela Avallone

Pamela Avallone joined the board in August 2017. She is a registered U.S. Patent Attorney and medical doctor focused on intellectual property litigation and transactions, science and technology law, and regulatory matters as both in-house and outside counsel. She is a consultant for Brickell Key Asset Management and previously served as Director of Intellectual Property Investments and Head of Underwriting for Juridica Asset Management. From 2012 to 2014, Pam was a shareholder at the law firm Polsinelli P.C. and before that, an attorney at the law firms of Edwards Wildman Palmer LLP (2007-2012), and Frommer Lawrence & Haug LLP (2002-2005). Dr. Avallone was Intellectual Property Counsel for Rembrandt IP Management (2005-2007), where she managed IP litigation and acquisitions. She was in-house counsel for Cequent Pharmaceuticals from 2007 to 2010 and GnuBIO from 2007 to 2014. Prior to practicing law, Dr. Avallone worked in clinical research in cardiothoracic surgery at Yale-New Haven Hospital from 1991 to 1995 and worked in research for both Neurogen and Bayer. Pam earned a J.D. from Yeshiva University, Cardozo School of Law, an M.D. from University of Medicine and Health Sciences, an M.S. from Southern Connecticut State University, and a B.S. from the University of New Haven.

Clark A. Marcus

Clark A. Marcus also joined the board in August of 2017 and has been Chairman of the Board and CEO of Advanzeon Solutions since May 2009. From 1993 until 2008, he served as Chairman of the Board of The Amacore Group and before that as Chief Executive Officer and President. Clark has been a practicing attorney since 1968 and was a partner in the New York law firms of Victor & Marcus and Marcus & Marcus.

Frank D. Heuszel

Mr. Heuszel was elected to the board this year and is an attorney, CPA, and a Certified Internal Auditor with four decades of experience. His law practice focuses on the regulation and operation of banks, corporate restructures, and mergers and acquisitions. From 2011 to 2016 he was General Council of Patriot Bank. From 1988 to 2011 he was with BBVA Compass managing commercial loan portfolios. He earned a BA in Accounting and Business Management from UT Austin in 1979 and a JD from South Texas College of Law in 1990.

VALUATION

Document Security Systems is comprised of two main businesses with public comparables. Companies that are primarily providers of packaging and printing and those involved in higher margin anti-counterfeiting type solutions. Since in 2019 we expect revenues at DSS to be roughly 90% packaging and 10% anti-counterfeiting, we are using a blended multiple of enterprise value to sales to calculate valuation. As that percent shifts, we expect the multiple to increase proportionally.

Using Applied DNA, Digimarc, and Zebra as the anti-counterfeiting revenue comps and the rest for packaging, we get a blended multiple of 1.8 times EV to sales. Applying that to $21 million in revenues gets an enterprise value of $38 million, a market value of $39 million and a price per share of $2.27.

		Cal. Revenue			EBIDTA	Enterprise Value / Sales		EV/EBITDA	Included	
Company	Ticker	2018E	LTM	EBITDA	Margin	2018E	LTM		in Average?	Ent. Value
Applied DNA	APDN	$6	$4	-10.2	-265%	6.6x	10.8x	-4.1x	y	42
Brady Corp.	BRC	$1,181	$1,170	178.0	15%	1.7x	1.7x	11.0x	y	1,950
De La Rue	DLAR	NA	$494	80.6	16%	NA	1.1x	6.7x	n	540
Digimarc	DMRC	$22	$25	-27.7	-113%	10.9x	9.8x	-8.7x	y	240
Graphic Packaging	GPK	$6,090	$5,230	812.5	16%	1.2x	1.5x	9.4x	y	7,600
Huhtamaki	HUH1V.HE	$3,110	$2,990	392.2	13%	1.1x	1.2x	9.1x	y	3,550
WestRock	WRK	$16,350	$16,110	2700.0	17%	1.0x	1.1x	6.3x	y	17,020
Zebra	ZBRA	$4,150	$3,950	736.0	19%	2.5x	2.6x	14.2x	y	10,430
Average					**-43%**	**3.6x**	**4.1x**			

RISKS

- In 2017 two customers, Walgreens and Shutterfly were responsible for 46% of revenues. For the first half of 2018 they were 38% of revenues: one being 24% and the other 14%. Loss of either customer would affect results significantly.

- DSS is small and not profitable and potential customers may be hesitant to do business with it particularly when implementing long term solutions due to its financial situation and limited resources.
- The company bases a lot of its potential on the success of its new AuthentiGuard product. While being competitively superior in price and capability compared with alternative solutions, it has not yet gotten traction with customers. Future growth will depend of the success of marketing to convince manufacturers to take a chance an implement its new technology.
- The company is not currently profitable and as such, has limited resources to fund growth initiatives.
- The stock trades based on the company's progress in its lawsuits against various companies in it IP enforcement efforts. It lawsuits, and primarily the one against Apple, will drive events that is expected to affect the stock price.

PATENTS

Main Patent for AuthentiGuard

System and method for analysis and authentication of covert security information using a smart device
US Patent No: US9171347B2
Filed: 10/12/2012

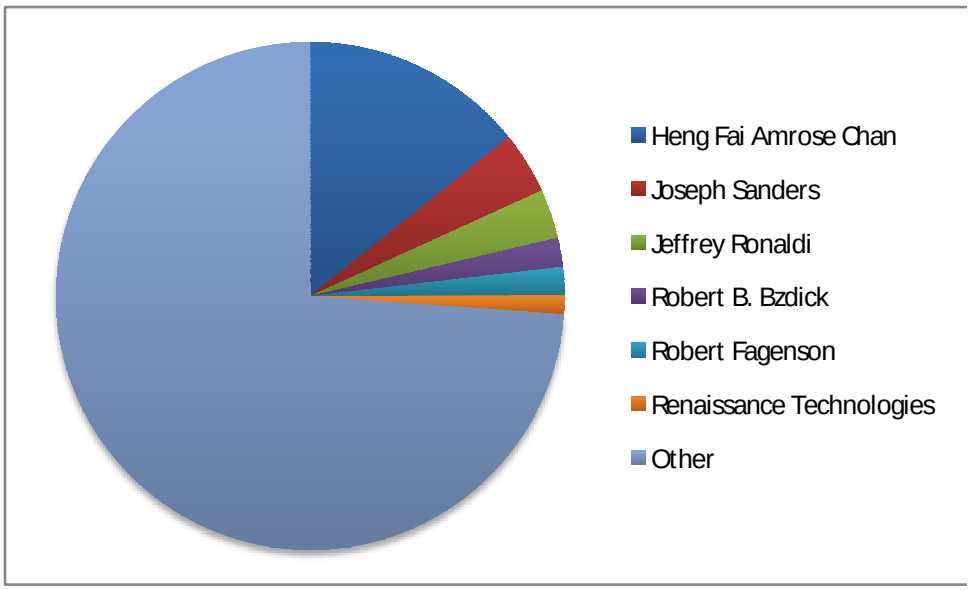
Abstract
A system and method for hidden security feature detection, analysis, and authentication using a smart device is disclosed. The smart device can detect and analyze hidden security features using the camera capability of the smart device to capture a digital image, and then analyze and authenticate that image using a security service including a database of security feature data, processing rules, and other information. The security service can support a variety of smart devices and security features. The smart device includes a security-specific autofocus function that allows the smart device to be positioned within a range of distances and angles from a target document that includes hidden/covert security feature(s). The smart device can display an enhanced image showing the hidden security feature(s) and/or report if the security feature is valid or invalid, along with related information, via beeps, vibration, display, text messaging, or other reporting capabilities.

Apple Lawsuit Patent:

Personal data network
US Patent No: 6128290
Filed: October 14, 1997

Abstract
The data network disclosed herein utilizes low duty cycle pulsed radio frequency energy to effect bidirectional wireless data communication between a server microcomputer unit and a plurality of peripheral units located within short range of the server unit, e.g. within 20 meters. By establishing a tightly synchronized common time base between the units and by the use of sparse codes, timed in relation to the common time base, low power consumption and avoidance of interference between nearby similar systems is obtained.

OWNERSHIP



PROJECTED INCOME STATEMENT

	Mar 31, 2017	Jun. 30, 2017	Sep. 30, 2017	Dec. 31, 2017	Mar 31, 2018	Jun. 30, 2018	Sep. 30, 2018E	Dec. 31, 2018E	2016	2017	2018E	2019E
Revenue:												
Printed products	$ 4,403,058	$ 3,382,563	$ 3,767,334	$ 5,473,292	$ 3,923,279	$ 3,724,980	$ 3,857,750	$ 5,578,379	$ 17,277,172	$ 17,026,247	$ 17,084,388	$ 18,500,000
Technology sales, services and licensing	367,533	477,600	431,356	359,136	454,275	362,081	400,000	400,000	1,900,427	1,635,625	$ 1,616,356	$ 2,500,000
Total revenue	**4,770,591**	**3,860,163**	**4,198,690**	**5,832,428**	**4,377,554**	**4,087,061**	**4,257,750**	**5,978,379**	**19,177,599**	**18,661,872**	**18,700,744**	**21,000,000**
Yr-Yr Growth	9.9%	-5.2%	-15.7%	0.8%	-8.2%	5.9%	1.4%	2.5%	9.6%	-2.7%	0.2%	12.3%
Costs and expenses:												
Cost of revenue	2,788,350	2,190,901	2,400,883	3,628,748	2,581,615	2,756,447	2,500,000	3,700,000	11,119,780	11,008,882	11,538,062	12,800,000
Gross Margin	1,982,241	1,669,262	1,797,807	2,203,680	1,795,939	1,330,614	1,757,750	2,278,379	8,057,819	7,652,990	7,162,682	8,200,000
Gross Margin %	41.6%	43.2%	42.8%	37.8%	41.0%	32.6%	41.3%	38.1%	42.0%	41.0%	38.3%	39.0%
Selling, general and administrative (including stock based compensation)	1,725,881	1,490,132	1,619,066	1,629,937	1,782,568	1,802,096	1,810,000	1,900,000	7,326,063	6,465,016	7,294,664	8,024,130
Depreciation and amortization	342,774	346,975	352,040	372,049	345,667	346,816	197,000	197,000	1,391,815	1,413,838	1,086,483	788,000
Total costs and expenses	2,068,655	1,837,107	1,971,106	2,001,986	2,128,235	2,148,912	2,007,000	2,097,000	8,717,878	7,878,854	8,381,147	8,812,130
Operating (loss) income	(86,414)	(167,845)	(173,299)	201,694	(332,296)	(818,298)	(249,250)	181,379	(660,059)	(225,864)	(1,218,465)	(612,130)
Operating Margin	-1.8%	-4.3%	-4.1%	3.5%	-7.6%	-20.0%	-5.9%	3.0%	-3.4%	-1.2%	-6.5%	-2.9%
Other expense:												
Interest expense	(57,600)	(54,801)	(58,164)	(48,547)	(46,064)	(30,735)	(10,000)	(10,000)	(279,214)	(219,112)	(96,799)	(40,000)
Amortized debt discount	(35,288)	(37,144)	(40,854)	(40,856)	(27,731)	(6,168)	0	0	0	(154,142)	(33,899)	0
Gain on extinguishment of liabilities, net	0	0	0	0	0	3,532,659	0	0	0	0	3,532,659	0
Loss before income taxes	(179,302)	(259,790)	(272,317)	112,291	(406,091)	2,677,458	(259,250)	171,379	(939,273)	(599,118)	2,183,496	(652,130)
Income tax expense	4,737	4,737	4,734	(35,170)	0	0	0	0	10,730	(20,962)	0	0
Net loss	(184,039)	(264,527)	(277,051)	147,461	(406,091)	2,677,458	(259,250)	171,379	(950,003)	(578,156)	2,183,496	(652,130)
Other comprehensive loss:												
Interest rate swap gain (loss)	6,899	(1,050)	3,943	12,482	14,889	6,963	0	0	18,354	22,274	21,852	0
Comprehensive loss:	$ (177,140)	$ (265,577)	$ (273,108)	$ 159,943	$ (391,202)	$ 2,684,421	$ (259,250)	$ 171,379	**$ (931,649)**	**$ (555,882)**	**$ 2,205,348**	**$ (652,130)**
Non-GAAP earnings	(50,232)	(206,974)	(265,300)	159,212	(404,840)	(770,201)	(174,250)	256,379	(950,003)	(578,156)	(1,323,502)	(312,130)
Non-GAAP EPS	$ (0.00)	$ (0.02)	$ (0.02)	$ 0.01	$ (0.02)	$ (0.05)	$ (0.01)	$ 0.01	$ (0.07)	$ (0.04)	$ (0.08)	$ (0.02)
Basic and diluted loss per share	**$ (0.01)**	**$ (0.02)**	**$ (0.02)**	**$ 0.01**	**$ (0.01)**	**$ 0.16**	**$ (0.02)**	**$ 0.01**	**$ (0.07)**	**$ (0.04)**	**$ 0.13**	**$ (0.04)**
Yr-Yr Growth	-80.0%	0.0%	1642.6%	-1088.3%	0.0%	-896.9%	0.0%	-11.9%	-94.2%	-44.9%	-436.6%	-129.8%
Basic shares outstanding	13,624,522	13,664,503	14,087,849	14,100,000	16,599,327	16,599,327	16,813,613	16,860,000	13,068,329	14,424,344	16,718,067	16,860,000
Diluted shares						16,842,204	17,096,613	17,143,000			17,000,000	17,143,000

CASH FLOWS

	March 31, 2017	June 30, 2017	Sept. 30, 2017	Dec. 31, 2017	2017	March 31, 2018	June 30, 2018
Cash flows from operating activities:							
Net income (loss)	$ (184,039)	$ (264,527)	$ (277,051)	$ 147,461	$ (578,156)	$ (406,091)	$ 2,677,458
Adjustments to reconcile net income (loss) to net cash used by operating activities:							
Depreciation and amortization	342,774	346,975	352,040	372,049	1,413,838	345,667	346,816
Stock based compensation	133,807	57,553	11,751	11,751	214,862	1,251	84,922
Paid in-kind interest	18,000	18,000	18,000	18,000	72,000	12,000	0
Change in deferred tax provision	4737	4,737	4,737	66,152	80,363	0	0
Amortization of deferred financing costs	35,288	37,144	40,854	40,856	154,142	27,731	6,168
Gain on extinguishment of liabilities, net	0	0	0	(219,364)	(219,364)	0	(3,532,659)
Decrease (increase) in assets:							
Accounts receivable	(133,989)	150,604	75,361	(226,279)	(134,303)	25,689	92,802
Inventory	2,854	(320,356)	(389,233)	261,866	(444,869)	51,699	237,814
Prepaid expenses and other current assets	(27,076)	79,572	18,342	(19,429)	51,409	13,329	(41,100)
Restricted cash	0	0	(158,563)	80,167	(78,396)	0	0
Increase (decrease) in liabilities:							
Accounts payable	(419,482)	(26,108)	(61,159)	(386,682)	(893,431)	188,795	115,112
Accrued expenses	(259,678)	(2,513)	(605,511)	806,911	(60,791)	(103,928)	13,610
Other liabilities	0	(393,842)	393,842	(944,834)	(944,834)	(249,594)	(357,334)
Net cash used by operating activities	(486,804)	(312,761)	(576,590)	8,625	(1,367,530)	(93,452)	(356,391)
Cash flows from investing activities:							
Purchase of property, plant and equipment	(66,206)	(299,453)	(72,691)	(520,469)	(958,819)	(132,937)	(178,465)
Purchase of intangible assets	(4,949)	46	0	(6,649)	(11,552)	(15,780)	(4,357)
Net cash used by investing activities	(71,155)	(299,407)	(72,691)	(527,118)	(970,371)	(148,717)	(182,822)
Cash flows from financing activities:							
Payments of long-term debt	(203,647)	(204,001)	(204,771)	(205,913)	(818,332)	(206,542)	(551,760)
Borrowing from eqt line of credit	0	0	0	522,000	522,000	0	0
Issuance of common stock, net	0	0	783,094	168,024	951,118	0	0
Subscription receivable, net	0	0	0	0	0	288,000	0
Net cash used by financing activities	(203,647)	(204,001)	578,323	484,111	654,786	81,458	(551,760)
Net decrease in cash	(761,606)	(816,169)	(70,958)	(34,382)	(1,683,115)	(160,711)	(1,090,973)
Cash and restricted cash at beginning of period	6,049,347	5,287,741	4,471,572	4,400,614	6,049,347	4,444,628	4,283,917
Cash and restricted cash at end of period	$ 5,287,741	$ 4,471,572	$ 4,400,614	$ 4,366,232	$ 4,366,232	$ 4,283,917	$ 3,192,944
Operating Cash Flow	$ 350,567	$ 199,882	$ 150,331	$ 436,905	$ 1,137,685	$ (19,442)	$ (417,295)
Free Cash Flow	$ 279,412	$ (99,525)	$ 77,640	$ (90,213)	$ 167,314	$ (168,159)	$ (600,117)

BALANCE SHEET

	Jun. 30, 2018	March 31,	Qtr-Qtr Growth	Jun. 30, 2017	Yr-Yr Growth
Current assets:					
Cash	$ 3,051,593	$ 3,728,086	-18.1%	$ 4,068,745	-25.0%
Restricted cash	141,351	555,831	-74.6%	402,827	-64.9%
Accounts receivable, net	1,906,793	1,999,595	-4.6%	1,874,366	1.7%
Inventory	1,361,733	1,599,547	-14.9%	1,523,879	-10.6%
Prepaid expenses & other curr assets	289,095	247,996	16.6%	297,793	-2.9%
Total current assets	6,750,565	8,131,055	-17.0%	8,167,610	-17.3%
Property, plant and equipment, net	4,764,223	4,762,554	0.0%	4,593,990	3.7%
Investment	484,930	484,930	0.0%	0	NM
Other assets	83,376	83,376	0.0%	45,821	82.0%
Goodwill	2,453,597	2,453,597	0.0%	2,453,597	0.0%
Other intangible assets, net	605,756	1,066,888	-43.2%	1,556,682	-61.1%
Total assets	15,142,447	16,982,400	-10.8%	16,817,700	-10.0%
Current liabilities:					
Accounts payable	1,032,559	917,451	12.5%	1,767,768	-41.6%
Accrued expenses & deferred revenue	986,486	1,004,025	-1.7%	940,736	4.9%
Other current liabilities	2,495,967	2,933,591	-14.9%	2,982,175	-16.3%
Short-term debt	**0**	**3,714,129**	-100.0%	**3,552,705**	-100.0%
Current portion of long-term debt, net	**624,281**	**806,202**	-22.6%	**834,416**	-25.2%
Total current liabilities	5,139,293	9,375,398	-45.2%	10,077,800	-49.0%
Long-term debt, net	**1,640,621**	**1,659,291**	-1.1%	**1,730,287**	-5.2%
Other long-term liabilities	783,300	1,137,821	-31.2%	1,893,995	-58.6%
Deferred tax liability, net	125,982	125,982	0.0%	55,094	128.7%
Stockholders' equity					
Common stock	331,987	331,987	0.0%	273,778	21.3%
Additional paid-in capital	106,707,881	106,622,960	0.1%	104,553,417	2.1%
Accumulated other comp loss	(1,217)	(8,180)	-85.1%	(39,494)	-96.9%
Accumulated deficit	(99,585,400)	(102,262,859)	-2.6%	(101,727,177)	-2.1%
Total stockholders' equity	7,453,251	4,683,908	59.1%	3,060,524	143.5%
Total liabilities and stockholders' equity	$ 15,142,447	$ 16,982,400	-10.8%	$ 16,817,700	-10.0%
Current ratio	1.3	0.9	51.5%	0.8	62.1%
Quick ratio	1.0	0.7	50.5%	0.7	59.1%
Working Capital	1,611,272	(1,244,343)	-229.5%	(1,910,190)	-184.4%
Net cash	3,051,593	3,728,086	-18.1%	4,068,745	-25.0%
Debt	2,264,902	6,179,622	-63.3%	6,117,408	-63.0%
Debt/TA	15%	36%	-58.9%	36%	-58.9%

HISTORICAL STOCK PRICE



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