INVISION TECHNOLOGIES INC Form 424B3 July 18, 2002

QuickLinks -- Click here to rapidly navigate through this document

Filed Pursuant to Rule 424(b)(3) Registration No. 333-91336

PROSPECTUS

100,000 Shares

Common Stock

The selling stockholder named in this prospectus is selling all 100,000 shares. We are not selling any shares of our common stock under this prospectus and we will not receive any of the proceeds from the shares of common stock sold by the selling stockholder. The shares are quoted on the Nasdaq National Market under the symbol "INVN." On July 16, 2002, the last reported sale price of our common stock on the Nasdaq National Market was \$27.07 per share.

The selling stockholder may sell the shares of common stock described in this prospectus in a number of different ways and at varying prices. We provide more information about how the selling stockholder may sell its shares in the section entitled "Plan of Distribution" on page 15.

Investing in the common stock involves risks that are described in the "Risk Factors" section beginning on page 2 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is July 17, 2002.

TABLE OF CONTENTS

Page

Prospectus Summary	1
Risk Factors	2
Forward-Looking Statements	13
Use of Proceeds	13
Selling Stockholder	14
Plan of Distribution	15
Legal Matters	16
Experts	16
Where You Can Find More Information	16
Incorporation of Certain Documents by Reference	17

You should rely only on the information contained or incorporated by reference in this prospectus. We have not authorized any other person to provide you with different information. If anyone provides you with different information, you should not rely on it. The selling stockholder is offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. This prospectus may only be used where it is legal to sell these securities. The information in this prospectus and the documents incorporated by reference may only be accurate as of their respective dates, regardless of the time of delivery of this prospectus or of any sale of our equity shares. Information contained in our web site does not constitute part of this document.

InVision®, QScan®, Quantum Magnetics® and The Quantum Magnetics logo are our registered trademarks in the United States and other jurisdictions. The InVision logo, CTX, CTX 2500, CTX 5500 DS, CTX 9000 DSi, i-Portal 100, StereoScan, YieldMaster, LogMaster, TrimMaster, CantMaster and WaneMaster are also our trademarks. This prospectus also contains registered trademarks or servicemarks of other entities.

PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus. This summary does not contain all of the information that you should consider before making an investment decision. This prospectus contains forward-looking statements that involve risks and uncertainties. Our results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those in the section entitled "Risk Factors" and elsewhere in this prospectus. References to "we," "us" and "our" mean InVision Technologies, Inc., Quantum Magnetics, Inc., and Inovec, Inc.

InVision Technologies, Inc.

Introduction

We are the leading provider of Federal Aviation Administration, or FAA, certified explosives detection systems, or EDS, used at airports for screening checked passenger baggage. Our EDS products are based on advanced computed tomography, or CT, which is the only technology for explosives detection that has met the FAA certification standards. We were the first, and are currently one of only two manufacturers, whose EDS products have been certified by the FAA for screening checked baggage. We also design, develop and manufacture products used for weapons detection and for non-aviation applications, including maximization of timber industry output and landmine detection. Our wholly-owned subsidiary, Quantum Magnetics, Inc., uses quadrupole resonance and magnetic sensing technologies for the inspection, detection and analysis of explosives, concealed weapons and other materials. Our Wood division consists of our wholly-owned subsidiary, Inovec, Inc., which manufactures laser-based technologies to increase sawmill yields, and WoodVision, which is developing our CT technology to increase the value of harvested timber.

We were incorporated in Delaware in 1990. We maintain our principal offices at 7151 Gateway Boulevard, Newark, California 94560, and our telephone number is (510) 739-2400. Our web site is located on the World Wide Web at invision-tech.com. Information contained on our web site does not constitute part of this prospectus.

1

RISK FACTORS

You should carefully consider the risks described below before investing in our common stock. If any of the following risks actually occur, our business, financial condition or results of operations may suffer. As a result, the price of our common stock could decline, and you may lose part or all of your investment. This prospectus contains forward-looking statements that involve risks and uncertainties, including statements about our future plans, objectives, intentions and expectations. Many factors, including those described below, could cause actual results to differ materially from those discussed in any forward-looking statements.

Risks Related To Our Business

Our operating results are difficult to predict and may vary from investor expectations, which could cause our stock price to drop.

Our past operating results have been, and we expect our future operating results to be, subject to fluctuations resulting from a number of factors. We reported net income from 1997 through 1999, we reported a net loss for 2000 and we reported net income for the year ended December 31, 2001 and the quarter ended March 31, 2002. The factors that may cause our results to fluctuate include:

the timing and size of orders from our major customers, including most prominently, the FAA, the Transportation Security Administration, or TSA, and other government agencies;

public awareness of aviation security and legislative actions leading to fluctuations in demand for aviation security products and services;

delays in product shipments caused by the inability of airports to install or integrate our products in a timely fashion;

our ability to expand manufacturing capacity sufficiently to meet any increased demand for our products;

the availability and cost of key components;

the acceptance and timing of software and hardware enhancements to our existing products;

the introduction and acceptance of new products offered by us or our competitors;

changes in pricing policies by us, our competitors or our suppliers, including possible decreases in average selling prices of our products caused by customer volume orders or in response to competitive pressures; and

our sales mix to domestic and international customers.

A significant portion of our quarterly and annual operating expenses are, and will continue to be, relatively fixed in nature. This means that revenue fluctuations will cause our quarterly and annual operating results to vary substantially. We also may choose to increase spending to pursue new market opportunities, which may negatively affect our financial results. Accordingly, we believe that period-to-period comparisons of our results of operations are not meaningful and cannot be relied upon as indicators of future performance. Because of all of the foregoing factors, our operating results have from time to time in the past been, and may again in the future be, below the expectations of public market analysts and investors. Failure to meet market expectations has in the past resulted, and may again in the future result, in a decline in the trading price of our common stock.

2

We may not have enough capacity to manufacture a sufficient number of units of our EDS products to meet increased demand, resulting in lost revenue opportunities.

If we cannot increase production rapidly enough, we may fail to meet the demand for our products, which could result in lost revenue opportunities and market share. During the first quarter of 2002, we manufactured a total of 40 EDS units. We currently have plans that would allow us to expand our internal production capacity to approximately 50 EDS units per month by the end of 2002. We intend to contract with outside manufacturers, including CoorsTek, to produce approximately 100 additional EDS units per month by the end of 2002. The increase in demand is placing significant demands on our management, working capital and financial and management control systems. For example, to increase production capacity, we are hiring and training a significant number of new employees, ordering key components which have long lead times and training and monitoring our outside contract manufacturers. Even with our anticipated increased capacity, our total production capacity may not be sufficient to meet the significant increase in demand. If the U.S. government is not satisfied that we have sufficient manufacturing capacity to produce significant numbers of our EDS products or, if we fail to deliver EDS products on a timely basis, we may not

receive further orders from the U.S. government that we otherwise would have received.

For example, in the first quarter of 2002, the TSA ordered 100 of our EDS units to be delivered at specific dates through the end of the second quarter of 2002, plus parts to build an additional 300 units. In March 2002, the TSA ordered an additional 300 EDS units to be built from the previously ordered parts, to be delivered at specific dates through the end of the third quarter of 2002, and ordered parts to build an additional 100 units. If we do not meet the deadlines for delivery of these EDS units, the TSA may not place additional orders with us.

Rapid increases in production levels could also result in higher costs for components and other increased manufacturing expenses. These higher costs could reduce our profitability. Furthermore, if production is increased inefficiently, manufacturing yields could decline, which may also lower our profitability.

We depend upon a limited number of suppliers for components of our EDS products, and if we are unable to obtain parts from these suppliers on a timely basis, then we may not be able to deliver our EDS products as required.

Key components used in our products have been designed by us to our specifications and are currently available only from one or a limited number of suppliers. We currently do not have long-term agreements with these suppliers. Our inability to develop alternative sources for single or sole source components, to find alternative third party manufacturers or subassemblers, or to obtain sufficient quantities of these components, could result in delays or interruptions in product shipments, which could cause potential customers to seek other suppliers of EDS products. In view of the high cost of many of these components, we do not maintain excess supplies. Our demands for large volumes of these key components may strain the abilities of our suppliers to provide these key components on a timely or expedited basis. In addition, we may compete with other EDS manufacturers to obtain parts for our EDS products. If our suppliers experience financial, operational, production or quality assurance difficulties, the supply of components to us would be reduced or interrupted. In the event that a supplier ceases operations, discontinues a product or withholds or interrupts supply for any reason, we may be unable to acquire the product from alternative sources within a reasonable period of time.

3

Future sales for our EDS products will depend on the ability of airports to integrate our EDS units into their baggage handling system, which they may not be able to do.

Future sales will depend, in part, on the ability of airports to easily install our EDS products into airport lobbies or integrate them into existing baggage handling systems. If an airport is not configured for these systems, deployment of our EDS products may require changes in the airport infrastructure, such as reinforced airport lobby floors and baggage platforms. If airports cannot easily install our EDS products in airport lobbies or integrate them into existing baggage handling systems, we may experience reduced sales of our EDS products or these sales may be delayed.

If our EDS products fail to detect explosives, we could be exposed to product liability and related claims, and we may not have adequate insurance coverage.

Our business exposes us to potential product liability risks, which are inherent in the manufacturing and sale of EDS products. Our machines are not designed to detect, and FAA certification does not require 100% detection of, any and all explosives contained in scanned baggage. For this reason, or if our products malfunction, it is possible that explosive material could pass undetected through our products, which would lead to product liability claims. There are also many other factors beyond our control that could lead to liability claims, such as the reliability and competence of the customer's operators, the training of the operators, and the maintenance of the products by the customers.

If a product liability claim is brought against us, the cost of defending the claim would be significant and any adverse determination may result in liabilities in excess of our insurance coverage. We currently have product liability and war and terrorism insurance in the amount of \$150 million. However, since September 11, 2001, insurance rates have increased dramatically, and we cannot be certain that our current insurance can be maintained, or additional insurance coverage could be obtained, on acceptable terms, if at all.

In addition, the failure of any EDS product to detect explosives, even if due to operator error and not to the mechanical failure of an EDS product, could result in public and customer perception that our products do not work effectively, which could have a material adverse effect on sales and may cause customers to cancel orders already placed, either of which would harm our business.

We are substantially dependent on orders from the U.S. government, and if the U.S. government fails to continue purchasing our products or cancels existing orders, our business will be harmed.

Through March 31, 2002, substantially all of our orders from United States customers have been funded by the FAA or TSA, which allocates our products to airports in the United States. EDS sales to the FAA and TSA accounted for 43.0% of our revenues in the first quarter of 2002 and 2001 and 26.9% of our revenues in the year ended December 31, 2001. The TSA has placed orders with us for 400 EDS units to be delivered at specified dates through the end of the third quarter of 2002, and has placed an order to acquire parts sufficient to build an additional 100 EDS units. The failure of the U.S. government to continue to purchase our EDS products or the cancellation of existing orders would harm our business.

As a result of the Transportation Security Act, the TSA has replaced the FAA as the primary purchasing agent for the U.S. government for our EDS products. We have developed relationships with current FAA personnel over the years regarding the purchase of our products. These FAA personnel may not transfer to the TSA and new individuals may assume authority for purchasing aviation security products at this new agency. Accordingly, our ability to receive future orders from the U.S. government may depend, in part, on our ability to establish new relationships within the TSA.

4

If the U.S. government purchases non-FAA certified equipment, or if the U.S. government lowers certification standards, to meet the mandate of 100% EDS screening of checked baggage by the end of 2002, we will encounter much stronger competition and lose market share.

The Transportation Security Act mandates that by the end of 2002, 100% of checked baggage must undergo EDS screening. The TSA has announced its intention to meet the 2002 deadline by purchasing a mix of FAA-certified EDS and non-FAA certified EDS products. In addition, political pressure to meet the deadline may cause the FAA to lower its requirements for certification, which would enable technologies and products that do not meet current FAA-certification standards to become certified. To the extent that these events occur, we would have to have to compete against suppliers of these lesser products, which are cheaper than our EDS products, and could decrease our average selling prices, decrease our market share and cause us to sell fewer of our EDS products than we otherwise would to meet the demand created by the Transportation Security Act.

We have granted a royalty-bearing license to the U.S. government to have our products produced by other manufacturers and if these manufacturers produce our products, we may lose expected revenue opportunities.

In connection with orders for 400 EDS units, the TSA required that we grant the TSA a royalty-bearing license to enable other manufacturers to build EDS products based on our technology for the TSA. With this license, the TSA may purchase EDS products from other manufacturers rather than us, even if we have the manufacturing capacity to build those EDS products. If this happens, the royalty we receive under the license may not fully compensate us for the lost business opportunity.

Further, since licensed manufacturers will be building substantially the same products as us, if we fail to timely deliver EDS products which the TSA has ordered from us, the TSA may not give us the opportunity to cure the failure to deliver, and it may transfer the order from us to a licensed manufacturer.

A substantial number of sales of our EDS products are large orders from a limited number of customers. As a result, order cancellations from any of our customers could have a significant negative impact on our business.

In any given fiscal quarter or year, our revenues are derived from orders of multiple units of our EDS products from a limited number of customers. For example, we recently received orders from the Transportation Security Administration for 400 EDS units, which exceeds the total number of units sold by us during the past two years. In the first quarter of 2002, six customers accounted for all of our EDS units sold during the quarter, and for fiscal year 2001, seven customers accounted for all of our EDS units sold during the year. The number of our customers does not vary widely from period to period, and we are dependent on multiple orders from a small number of customers for a substantial portion of our revenues. Therefore, a cancellation or delay of an order from a customer could have a significant negative impact on our operations in a given period.

The sales cycle for our EDS products is lengthy, and we may expend a significant amount of effort in obtaining sales orders and not receive them.

The sales cycle of our EDS products is often lengthy due to the protracted approval process that typically accompanies large capital expenditures and the time required to manufacture, install and assimilate our EDS products. Typically, six to twelve months may elapse between a new customer's initial evaluation of our systems and the execution of a contract. Another three months to a year may elapse prior to shipment of our EDS products as the customer site is prepared and our EDS products are manufactured. In addition, the creation of the TSA may result in

additional delays as it develops policies and procedures relating to aviation safety and obtains funding for its safety initiatives, including

5

the purchase of additional EDS products. During the sales cycle we expend substantial funds and management resources but recognize no associated revenue.

Our international sales subject us to risks that could have a material adverse effect on our business.

Sales to countries other than the United States accounted for 32.8% of our revenues in the first quarter of 2002 and 32.5% of our revenues for the year in 2001. A number of factors related to our international sales and operations could adversely affect our business, including:

unexpected changes in regulatory requirements;

political instability in the countries where we sell products;

possible foreign currency controls;

fluctuations in currency exchange rates;

our ability to protect and utilize our intellectual property in foreign jurisdictions;

tariffs, embargoes or other barriers;

difficulties in staffing and managing foreign operations;

difficulties in obtaining and managing distributors; and

potentially negative tax consequences.

The sale of some of our products outside the United States is subject to compliance with the United States International Traffic in Arms Regulations and Export Administration Regulations. Our failure to obtain the requisite licenses, meet registration standards or comply with other government export regulations, may affect our ability to generate revenues from the sale of our products outside the United States, which could harm our business. In particular, our EDS products and our landmine detection equipment are deemed regulated military devices subject to export restrictions under the U.S. Department of State regulations. Consequently, these regulations may make these products more difficult to sell to a number of countries. Compliance with the government regulations may also subject us to additional fees and costs. The absence of comparable restrictions on competitors in other countries may adversely affect our competitive position.

Because of the increased demand for our EDS products by the U.S. government, we may lose other customers which could harm our business.

The Transportation Security Act mandates 100% EDS screening of checked baggage at U.S. commercial airports by the end of 2002. To meet this mandate the TSA has been authorized by the U.S. Department of Commerce to place a priority rating on EDS contracts, which would obligate us to timely fulfill the TSA's orders and delay any unrated or lower-rated orders. In addition, as part of any future orders, the TSA may request that we agree to timely fill its orders prior to fulfilling the needs of any other customers. Accordingly, we may not be able to fulfill orders for our EDS products from non-U.S. government customers during this period of increased demand from the U.S. government. This could cause our current and potential non-U.S. government customers to seek EDS products from other sources. We also may lose our goodwill and relationships with these customers, which could harm our ability to make sales in the future.

6

The U.S. government's right to use technology developed by us, but funded by the U.S. government, limits our intellectual property rights.

In accordance with certain Federal Acquisition Regulations included in our development contracts with the FAA, the U.S. government has rights to use our proprietary technologies developed after the award of the development contract and funded by the development contract. The U.S. government may use these rights to produce or have produced for the U.S. government competing products using our CT technology. In the event that the U.S. government were to exercise these rights, our competitive position in supplying the U.S. government with certified CT-based explosives detection systems would be harmed.

Our new EDS products may fail to attain certification by the FAA.

We plan to continue to develop new models for our family of EDS products, including through our current participation in the ARGUS program, an FAA-sponsored program designed to develop a smaller, low-cost EDS product to scan checked baggage in small airports and low-traffic stations within larger airports. However, we cannot be certain that any new product, including the ARGUS system, if completed, will be certified by the FAA. The failure to gain certification for a product would harm our ability to sell the product, which could lower our future revenues.

We may seek to grow by acquisition, which subjects us to substantial risks, including the failure to successfully integrate an acquired business.

As part of our growth strategy, we may expand our business by pursuing selected acquisitions of technologies and companies that offer complementary products, services, technologies or market access. Our ability to grow by acquisition is dependent upon the availability of acquisition candidates at reasonable prices and our ability to obtain acquisition financing on acceptable terms. Future acquisitions by us could result in potentially dilutive issuances of equity securities, the incurrence of debt and contingent liabilities, and amortization expenses related to intangible assets, any of which could harm our business. Acquisitions entail numerous risks, including:

difficulties in the assimilation of acquired operations, technologies and products;

diversion of management's attention from other business concerns;

risks of entering markets in which we have no or limited prior experience; and

potential loss of key employees of acquired organizations.

The process of integrating supply and distribution channels, computer and accounting systems and other aspects of operations, while managing a larger entity, would present a significant challenge to our management. We may not be able to successfully integrate any businesses, products, technologies or personnel that might be acquired in the future. In such case, the anticipated benefits of a business combination would not be fully realized, and the failure of such efforts would harm our business.

We depend on key management and personnel and may not be able to retain those employees or recruit additional qualified personnel.

We believe that our future success will be due, in part, to the continued services of our senior management team. We do not have long term employment agreements with any of our executive officers. Losing the services of one or more members of our management team could adversely affect our business and our expansion efforts. We do not maintain key person life insurance policies for members of our management. In addition, competition for some qualified employees, such as software engineers or other advanced engineering professionals, has intensified in recent years and may become even more intense in the future as the EDS industry expands. Our ability to meet substantial

anticipated increases in demand is dependent on our ability to hire and retain technically skilled workers. Our failure to recruit qualified employees in a timely manner and retain them could impair our ability to achieve our growth objectives.

Natural disasters, including earthquakes, may damage our facilities.

Our corporate and manufacturing facilities in California are located near major earthquake faults which have experienced earthquakes in the past. In the event of a major earthquake or other natural disaster, our facilities may sustain significant damage and our operations could be harmed.

The EDS industry is highly competitive. Given the anticipated large increase in demand for airport security products, competition may increase.

The EDS industry is intensely competitive and we may not compete successfully with our competitors. As a result of increased demand for security systems, additional companies may enter the EDS industry. Some of our competitors, including L-3 Communications Holdings, Inc. and many of the potential new entrants into the EDS industry, have financial, technical, production and other resources substantially greater than ours. For example, L-3 Communications has recently purchased the Detection Systems Group of PerkinElmer, Inc.

Governmental agencies, the primary customers for our EDS and other products, are subject to budget processes, which could limit the demand for these products.

Substantially all of the customers for our EDS products and our other products under development to date have been public agencies or quasi-public agencies, such as the FAA and airport authorities. Public agencies are subject to budgetary processes and expenditure constraints. In the past, many domestic and foreign government agencies have experienced budget deficits that have led to decreased capital expenditures in certain areas. The funding of government programs is subject to legislative appropriation. Budgetary allocations for explosives detection systems are dependent, in part, upon governmental policies which fluctuate from time to time in response to political and other factors, including the public's perception of the threat of commercial airline bombings. For example, the terrorist attacks of September 11, 2001, have resulted in passage of the Transportation Security Act that mandates a small surcharge on each airline ticket purchase to fund airline security, which we expect will increase funding for explosives detection products and technologies. We cannot assure you that these funds will be used to purchase our EDS products, or that other funds will continue to be appropriated by Congress or allocated by the TSA or other agencies for the purchase of EDS products.

Although multi-year contracts may be authorized in connection with major procurements, governments generally appropriate funds on a fiscal year basis even though a program may continue for several years. Consequently, programs are often only partially funded and additional funds are committed only upon further appropriations.

Under the terms of our contracts with the U.S. government, the government may cancel orders and need only reimburse us for our costs incurred to the date of cancellation of our orders. Consequently, our backlog is not necessarily indicative of future sales. The government's termination of, or failure to fully fund, one or more of the contracts for our EDS products or our other products under development would harm our business.

Governmental agencies have special contracting requirements, which create additional risks.

In contracting with public agencies, we are subject to public agency contract requirements that vary from jurisdiction to jurisdiction. Future sales to public agencies will depend, in part, on our ability to meet public agency contract requirements, certain of which may be onerous or even impossible for us to satisfy.

8

Government contracts typically contain termination provisions unfavorable to us and are subject to audit and modification by the government at its sole discretion, which subject us to additional risks. These risks include the ability of the U.S. government to unilaterally:

suspend or prevent us for a set period of time from receiving new contracts or extending existing contracts based on violations or suspected violations of laws or regulations;

terminate our existing contracts;

reduce the scope and value of our existing contracts;

audit and object to our contract-related costs and fees, including allocated indirect costs;

control and potentially prohibit the export of our products; and

change certain terms and conditions in our contracts.

The U.S. government can terminate any of its contracts with us either for its convenience or if we default by failing to perform in accordance with the contract schedule and terms. Termination for convenience provisions generally enable us to recover only our costs incurred or committed, and settlement expenses and profit on the work completed prior to termination. Termination for default provisions do not permit these recoveries and make us liable for excess costs incurred by the U.S. government in procuring undelivered items from another source. Our contracts with foreign governments may contain similar provisions.

As a government contractor, we are subject to periodic audits and reviews. Based on the results of its audits, the U.S. government may adjust our contract-related costs and fees, including allocated indirect costs. Although adjustments arising from government audits and reviews have not seriously harmed our business, future audits and reviews could cause adverse effects. In addition, under U.S. government purchasing regulations, some of our costs, including most financing costs, amortization of intangible assets, portions of our research and development costs, and some marketing expenses may not be reimbursable or allowed in our negotiation of fixed-price contracts. Further, as a U.S. government contractor, we are subject to an increased risk of investigations, criminal prosecution, civil fraud, whistleblower lawsuits and other legal actions and liabilities to which purely private sector companies are not.

In addition, public agency contracts are frequently awarded only after formal competitive bidding processes, which are often protracted and typically contain provisions that permit cancellation in the event that funds are unavailable to the public agency. We may not be awarded any of the contracts for which our products are bid. Even if we are awarded contracts, substantial delays or cancellations of purchases could result from protests initiated by losing bidders.

Our business could be harmed if we fail to properly protect our intellectual property.

Our success depends in part on our ability to protect our intellectual property. Although we attempt to protect our intellectual property in the United States and other countries, there can be no assurance that we will successfully protect our technology or that competitors will not be able to develop similar technology independently. We cannot assure you that the claims allowed under any patents held by us will be sufficiently broad to protect our technology against competition from third parties with similar technologies or products. In addition, we cannot assure you that any patents issued to us will not be challenged, invalidated or circumvented or that the rights granted under these patents will provide competitive advantages to us. Moreover, the laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the United States, and we could experience various obstacles and high costs in protecting our intellectual property rights in foreign countries. If we are unable to obtain or maintain these protections, we may not be able to prevent third parties from using our intellectual property.

9

We also rely on trade secrets, proprietary know-how and continuing technological innovation to remain competitive. We have taken measures to protect our trade secrets and know-how, including the use of confidentiality agreements with our employees. It is possible that these agreements may be breached and that the available remedies for any breach will not be sufficient to compensate us for damages incurred.

Litigation may be necessary to enforce or defend against claims of intellectual property infringement, which could be expensive and, if we lose, could prevent us from selling our products.

Litigation may be necessary in the future to enforce our patents and other intellectual property rights, to protect our trade secrets or to determine the validity and scope of the proprietary rights of others. Any litigation, regardless of the outcome, could be costly and require significant time and attention of key members of our management and technical personnel.

Our domestic and international competitors, many of which have substantially greater resources and have made substantial investments in competing technologies, may have patents that will prevent, limit or interfere with our ability to manufacture and sell our products. We have not conducted an independent review of patents issued to third parties. Because of the perceived market opportunity we face, companies possessing technology rights that they believe we might be infringing will now be much more motivated to assert infringement of their rights. These third parties may assert infringement or invalidity claims against us and litigation may be necessary to defend against these claims. An adverse outcome in the defense of a patent suit could subject us to significant liabilities to third parties, require disputed rights to be licensed from third parties or require us to cease selling our products. Even successful defenses of patent suits can be costly and time-consuming.

Our inability to adapt to rapid technological change could impair our ability to remain competitive.

The EDS industry may undergo significant technological development in response to anticipated increased demand for aviation security products. A fundamental shift in technology in our product markets could harm us, because we derive substantially all of our revenues from sales of EDS products.

We anticipate that we will incur significant expenses in the design and initial manufacturing and marketing of new products and services. Our competitors may implement new technologies before we are able to, allowing them to provide more effective products at more competitive prices. Future technological developments could:

adversely impact our competitive position;

require write-downs of obsolete technology;

require us to discontinue production of obsolete products before we can recover any or all of our related research, development and commercialization expenses; or

require significant capital expenditures beyond those currently contemplated.

We cannot assure you that we will be able to achieve the technological advances to remain competitive and profitable, that new products and services will be developed and manufactured on schedule or on a cost-effective basis, that anticipated markets will exist or develop for new products or services, or that our existing products and services will not become technologically obsolete.

10

We have received significant amounts of funding from government grants and contracts. We cannot assure you that we will continue to receive this level of funding for future product development.

The U.S. government currently plays an important role in funding the development of EDS technology and sponsoring its deployment in U.S. airports. For the three months ended March 31, 2002, we performed reimbursable research and development for EDS products totaling \$713,000 from FAA grants and contracts and for the year ended December 31, 2001, we performed reimbursable research and development for EDS products totaling \$8.3 million from FAA grants and contracts. We are also aware that other competitors in the EDS market have received FAA development grants. The U.S. government also currently funds almost all of the development of Quantum products, including quadrupole resonance and passive magnetic sensing. For the three months ended March 31, 2002, we had contract revenues of \$3.6 million from the U.S. government for the development of Quantum products and for the year ended December 31, 2001, we had contract revenues of \$16.6 million from the U.S. government for development of Quantum products. We cannot assure you that additional research and development funds from the government will become available in the future or that we will receive any of these additional funds. If the government fails to continue to sponsor our technology, we would have to expend more resources on product development, which could adversely affect our business. In addition, any future grants to our competitors may improve their ability to develop and market advanced detection products and cause our customers to delay any purchase decisions, which could harm our ability to market our products.

Risks Related to Ownership of Our Common Stock

The price of our common stock may fluctuate significantly.

A number of factors could cause the market price of our common stock to fluctuate significantly, including:

terrorist attacks or acts of war;

legislative and regulatory developments related to anti-terrorism efforts;

our quarterly operating results or those of other explosives detection companies;

the public's reaction to our press releases, announcements and our filings with the Securities and Exchange Commission;

changes in earnings estimates or recommendations by research analysts;

changes in our relationships with customers; and

developments affecting our competitors.

For example, immediately prior to the terrorist attacks of September 11, 2001, our common stock closed at \$3.11 per share. Since that date, our closing stock price has risen to a high of \$48.29 per share through July 16, 2002 which we believe is based on expectations as to increased governmental and other orders for our EDS products. If these expectations are not met, then our stock price could drop dramatically. In addition, the stock market has periodically experienced significant price and volume fluctuations that have particularly affected the market prices of common stock of technology companies. These changes have often been unrelated to the operating performance of particular companies. These broad market fluctuations may also adversely affect the market price of our common stock.

11

Delaware law and our charter documents may impede or discourage a takeover, which could cause the market price of our shares to decline.

We are a Delaware corporation and the anti-takeover provisions of Delaware law impose various impediments on the ability of a third party to acquire control of us, even if a change in control would be beneficial to our existing stockholders. Our certificate of incorporation and by-laws provide for 5,000,000 shares of preferred stock which our Board of Directors may issue with terms determined by them without stockholder approval, a classified Board of Directors serving staggered three-year terms, restrictions on who may call a special meeting of stockholders and a prohibition on stockholder action by written consent. These provisions of Delaware law and in our charter documents could impede a merger, takeover or other business combination involving us or discourage a potential acquirer from making a tender offer for our common stock, which, under certain circumstances, could reduce the market value of our common stock.

We do not anticipate paying cash dividends.

We have never declared or paid any cash dividends on our capital stock and do not anticipate paying cash dividends in the foreseeable future. We have also agreed not to pay cash dividends under our current bank line of credit. Instead, we intend to apply any earnings to the expansion and development of our business.

FORWARD-LOOKING STATEMENTS

This prospectus includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, and Section 21E of the Securities Exchange Act of 1934. We intend these forward-looking statements to be covered by the safe harbor provisions for

forward-looking statements contained in the Private Securities Litigation Reform Act of 1995, and we are including this statement for purposes of complying with these safe harbor provisions. We have based these forward-looking statements on our current expectations and projections about future events. These forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties and assumptions, including those in the section entitled "Risk Factors." Actual results may vary materially from these forward-looking statements as a result of these and other risks.

Words such as "expect," "anticipate," "intend," "plan," "believe," "estimate" and variations of these words and similar expressions are intended to identify forward-looking statements. We undertake no obligations to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, unless we are required to do so by law. In light of these risks, uncertainties and assumptions, the forward-looking events discussed in this prospectus might not occur.

USE OF PROCEEDS

We will not receive any proceeds from the sale of common stock by the selling stockholder.

13

SELLING STOCKHOLDER

The following table presents information regarding the beneficial ownership of our common stock as of June 26, 2002 by THCG, Inc., the selling stockholder. The shares to be sold by the selling stockholder will be issued pursuant to the exercise of a warrant held by the selling stockholder. Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission and includes sole or shared voting or investment power with respect to shares shown as beneficially owned. Percentage of ownership is based on the number of shares of common stock outstanding on June 26, 2002. The number of shares beneficially owned subsequent to this offering set forth in the table below assumes all shares offered by this prospectus are sold by the selling stockholder; however, the selling stockholder may offer all, some or none of the shares of our common stock beneficially owned by it and covered by this prospectus.

In late September 2001, we entered into an agreement with Donald & Co. Securities, Inc., a subsidiary of THCG, for investment advisory services related to a potential acquisition and fundraising activities. We considered other alternatives and chose Donald & Co. to provide these services because time was of the essence and it was able to react quickly to meet our business requirements based on its familiarity with our business. Stephen Blum, president of Donald & Co. and a director and officer of THCG, is a member of our Board of Directors. The Board approved this agreement with Mr. Blum abstaining. Under this agreement, Donald & Co. received a \$50,000 cash retainer and a fully-vested warrant to purchase 100,000 shares of our common stock at a price of \$9.95 per share, the closing price of our common stock on the day prior to the date of issuance. The Board considered this fee to be comparable to other alternatives given the circumstances of the engagement. The warrant expires five years from date of issuance. The fair value of the warrant was \$650,000, which was estimated on the date of grant using the Black-Scholes option pricing model with the following assumptions: no dividends, risk-free interest rate of 3.94%, volatility of 78%, and a contractual life of five years. On February 6, 2002, Donald & Co. transferred the warrant to THCG. As of June 26, 2002, no shares of common stock had been purchased under the warrant. The shares being offered by THCG are the 100,000 shares of our common stock issuable upon exercise of the warrant referred to above.

	Shares Beneficially Owned Prior to the Offering		Shares Offered	Shares Beneficially Owned Subsequent to the Offering	
Name of Selling Shareholder	Shares	Percent	by this Prospectus	Shares	Percent
THCG, Inc.	100,000	*	100,000		*
Total	100,000	*	100,000		*

^{*} Represents less than one percent.

14

PLAN OF DISTRIBUTION

The shares of common stock offered by the selling stockholder may be sold from time to time to purchasers directly by the selling stockholder acting as principal for its own account in one or more transactions at a fixed price, which may be changed, or at varying prices determined at the time of sale or at negotiated prices. Alternatively, the selling stockholder may from time to time offer the common stock through underwriters, dealers or agents who may receive compensation in the form of underwriting discounts, commissions or concessions from the selling stockholder and/or the purchasers of shares for whom they may act as agent. Sales may be made on the Nasdaq National Market or in private transactions. The selling stockholder may also offer the common stock through its wholly owned subsidiary Donald & Co. Securities, Inc. who may receive compensation in the form of underwriting discounts, commissions or concessions from the selling stockholder and/or the purchasers of shares for whom they may act as agent. Stephen Blum, a director of InVision, is the president of Donald & Co, as well as a director and officer of THCG. Donald & Co. is a registered broker/dealer under the Securities Act of 1934. In addition to sales of common stock pursuant to the registration statement of which this prospectus is a part, the selling stockholder may sell the common stock in compliance with Rule 144 promulgated under the Securities Act of 1933.

We are registering the shares of common stock on behalf of the selling stockholder. From time to time the selling stockholder may transfer, pledge, donate or assign the selling stockholder's shares of common stock to lenders or others and each of such persons will be deemed to be a "selling stockholder" for purposes of this prospectus. The selling stockholder may also transfer shares owned by it by gift, and upon any such transfer the donee would have the same right of sale as the selling stockholder. The number of shares of common stock beneficially owned by the selling stockholder upon the transfer, pledge, donation or assignment of shares of common stock will decrease as and when they take such actions. The plan of distribution for selling stockholder's shares of common stock sold hereunder will otherwise remain unchanged, except that the transferees, pledgees, donees or other successors will be selling stockholders under this prospectus.

To comply with the securities laws of certain jurisdictions, the common stock must be offered or sold only through registered or licensed brokers or dealers. In addition, in certain jurisdictions, the shares of common stock may not be offered or sold unless they have been registered or qualified for sale or an exemption is available and complied with.

The selling stockholder and any agents, broker-dealers or underwriters that participate in the distribution of the common stock offered hereby may be deemed to be underwriters within the meaning of the Securities Act of 1933, and any discounts, commissions or concessions received by them and any profit on the resale of the common stock purchased by them might be deemed to be underwriting discounts and commissions under the Securities Act of 1933.

Under the Securities Exchange Act of 1934, any person engaged in a distribution of the common stock may not simultaneously engage in market-making activities with respect to the common stock for five business days prior to the start of the distribution. In addition, the selling stockholder and any other person participating in a distribution will be subject to the Securities Exchange Act of 1934, which may limit the timing of purchases and sales of common stock by the selling stockholder or any such other person. These factors may affect the marketability of the common stock and the ability of brokers or dealers to engage in market-making activities.

We will pay substantially all of the expenses incident to the offering and sale of the common stock to the public, other than commissions, concessions and discounts of underwriters, dealers or agents. Such expenses, excluding such commissions and discounts, are estimated to be \$37,000.

15

LEGAL MATTERS

The validity of the issuance of the common stock offered hereby will be passed upon for us by Cooley Godward LLP, Palo Alto, California.

EXPERTS

The consolidated financial statements as of December 31, 2001 and 2000, and for the years then ended, incorporated by reference in this prospectus and the related consolidated financial statement schedule incorporated by reference to the Annual Report on Form 10-K, as amended, for the year ended December 31, 2001, have been audited by Deloitte & Touche LLP, independent auditors, as stated in their report incorporated by reference in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

The consolidated statements of operations, of cash flows and of stockholders' equity for the year ended December 31, 1999, incorporated by reference in this prospectus and the related consolidated financial statement schedule incorporated by reference to the Annual Report on Form 10-K, as amended, for the year ended December 31, 2001, have been so incorporated by reference in reliance on the report of PricewaterhouseCoopers LLP, independent accountants, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission, or the SEC. You may read and copy such materials at the public reference facilities maintained by the SEC at 450 Fifth Street, N.W., Washington, D.C. 20549. You may also obtain copies of such material from the SEC at prescribed rates for the cost of copying by writing to the Public Reference Section of the SEC at the same address. You may call the SEC at 1-800-SEC-0330 for more information on the public reference rooms. You can also find our SEC filings at the SEC's web site at www.sec.gov.

16

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information that we file with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we previously filed with the SEC and information that we file later with the SEC will automatically update and supersede this information.

We incorporate by reference the documents listed below and any future filings we will make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended:

our Annual Report on Form 10-K, as filed with the SEC on March 7, 2002 (Commission File No. 0-28236);

our Annual Report on Form 10-K/A, as filed with the SEC on March 25, 2002 (Commission File No. 0-28236);

our Annual Report on Form 10-K/A, as filed with the SEC on March 27, 2002 (Commission File No. 0-28236);

our Annual Report on Form 10-K/A, as filed with the SEC on May 8, 2002 (Commission File No. 0-28236);

our Quarterly Report on Form 10-Q, as filed with the SEC on May 15, 2002 (Commission File No. 0-28236);

our Current Report on Form 8-K, as filed with the SEC on March 7, 2002 (Commission File No. 0-28236);

our Current Report on Form 8-K, as filed with the SEC on March 15, 2002 (Commission File No. 0-28236);

our Current Report on Form 8-K, as filed with the SEC on April 2, 2002 (Commission File No. 0-28236); and

the description of our common stock contained in our Current Report on Form 8-K, as filed with the SEC on March 7, 2002 (Commission File No. 0-28236).

You may request a copy of the filings noted above at no cost, by writing or telephoning us at the following address:

InVision Technologies, Inc. 7151 Gateway Boulevard Newark, California 94560 (510) 739-2400

17

100,000 Shares

Common Stock

PROSPECTUS

July 17, 2002

QuickLinks

TABLE OF CONTENTS PROSPECTUS SUMMARY InVision Technologies, Inc. RISK FACTORS Risks Related To Our Business Risks Related to Ownership of Our Common Stock FORWARD-LOOKING STATEMENTS USE OF PROCEEDS SELLING STOCKHOLDER PLAN OF DISTRIBUTION LEGAL MATTERS EXPERTS WHERE YOU CAN FIND MORE INFORMATION INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE