VITAL IMAGES INC
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Prospectus

734,597 Shares
VITAL IMAGES, INC.
Common Stock

This prospectus is part of a registration statement of Vital Images, Inc. filed with the Securities and Exchange Commission for the resale of shares of our common stock we issued to former shareholders of HInnovation, Inc. in our acquisition of HInnovation, Inc. completed in February 2004. As part of the acquisition, we agreed to register for resale by the selling shareholders the shares of common stock we issued or may issue in the acquisition. In addition, we are registering the resale of outstanding shares and shares subject to warrants that we issued in connection with our December 1999 private placement. This prospectus will be used by the selling shareholders to sell up to 734,597 shares of our common stock. This means:

The selling shareholders may sell their shares of common stock from time to time.

For information on the methods of sale of the common stock, you should refer to the section of this prospectus entitled "Plan of Distribution" on page 13.

Vital Images will not receive any of the proceeds from the sale of the shares by the selling shareholders.

You should read this prospectus and any prospectus supplement carefully in its entirety before you invest in shares of our common stock.

We have agreed with the former shareholders of HInnovation, Inc. that they will pay one-half and we will pay one-half of the fees and expenses up to and including $50,000 related to the registration and resale of the shares, and we will pay the fees and expenses in excess of $50,000.

Our common stock is currently traded on The NASDAQ National Market under the symbol "VTAL." On June 21, 2004, the last reported sale price for our common stock reported on The NASDAQ National Market was $10.95 per share.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 3 for certain risks you should consider before purchasing any shares.

Neither the Securities and Exchange Commission or any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is June 22, 2004.

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We have not authorized any dealer, salesperson or other person to give any information or represent anything not contained or incorporated by reference in this prospectus. Neither Vital Images nor the selling shareholders have authorized anyone to provide you with information that is different. This prospectus may be used only in states where it is legal to sell these securities. The information contained or incorporated by reference in this prospectus may be accurate only on the date of this prospectus.

SUMMARY

The following information is qualified in its entirety by the more detailed information and financial statements included or incorporated by reference in this prospectus. This prospectus contains forward-looking statements that involve risks and uncertainties and that are qualified in their entirety by the cautions and risk factors included or incorporated by reference in this prospectus. Purchasers of shares of common stock are cautioned that our actual results may differ significantly from the results discussed in the forward- looking statements. Factors that could cause or contribute to such differences include those factors discussed in the prospectus under "Risk Factors."

Vital Images, Inc.

We develop, market and support 3D medical imaging software for use primarily in clinical diagnosis, disease screening and therapy planning. Our software applies proprietary computer graphics and image processing technologies to a wide variety of data supplied by computed tomography ("CT") scanners and magnetic resonance ("MR") scanners. Vital Images' products allow clinicians to create 2D, 3D and 4D views of human anatomy and to non-invasively navigate within these images to better visualize and understand internal structures and pathologies. We believe that our high-speed visualization technology and customized protocols cost-effectively bring 3D visualization and analysis into the routine, day-to-day practice of medicine. Vital Images, which operates in a single business segment, markets its products to health care providers and to manufacturers of diagnostic imaging systems and picture archive and communication systems ("PACS") through a direct sales force in the United States and independent distributors in international markets.

Vitrea®, our advanced 3D medical imaging product for radiological and surgical applications, received clearance from the United States Food and Drug Administration ("FDA") in November 1996 and was released for sale in October 1997. Due to its speed and ease-of-use, we believe that *Vitrea* was the first 3D medical imaging product with the ability to appeal primarily to the clinical market. Historically, 3D medical imaging software was slow, difficult to use, and operated only on expensive workstations. Consequently, the functionality of such software was appealing only for research applications. Our *Vitrea* software combined speed with ease-of-use to enable a physician to access, manipulate and analyze 3D images, typically in less than five to ten minutes. We have released several updates to *Vitrea* each year, and in December 2003 we released *Vitrea 2 Version 3.4*, which has improved quality, reliability and usability features to meet the diagnostic and treatment planning needs of busy radiology departments. We offer *Vitrea 2* both as an integrated software and hardware system, consisting of *Vitrea 2* software installed on a computer workstation, and as a stand-alone software package. To date, we have licensed approximately 1,500 copies of *Vitrea* and *Vitrea 2* to hospitals, clinics, imaging centers and other sites.

In May 2004, we introduced ViTALConnect®, a medical diagnostic software tool that allows physicians to use PCs or notebook computers to access 2D, 3D and 4D advanced visualization from a Web-enabled thin-client server. With ViTALConnect, users can process, analyze, review and distribute multi-dimensional medical images securely over the Internet. ViTALConnect has received FDA marketing clearance and is our first Web-enabled offering. It has been adapted from a product developed by HInnovation, Inc., a company we acquired in February 2004.

We believe that growing acceptance of 3D medical imaging offers Vital Images numerous market expansion opportunities. Our research and development efforts are currently focused on using our base of visualization technology to expand to other imaging modalities, such as x-ray angiography, as well as expanding the features and functions in the current modalities. We are also developing and enhancing our 3D medical imaging software tools for less-invasive screening applications, such as CT colonography for colon cancer screening and CT cardiac for diagnosis of heart disease.

We have a marketing and distribution agreement with Toshiba Medical Systems Corporation ("Toshiba"), which names *Vitrea 2* as Toshiba's primary 3D software for use with its CT scanners in the United States and in more than 50 countries in North and South America, Europe, the Middle East, Africa, Australia and Asia, except Japan. The agreement runs through December 31, 2004. Our sales to Toshiba accounted for approximately 42%, 34% and 27% of our total revenue for the years ended December 31, 2003, 2002 and 2001.

The diagnostic medical imaging market continues to expand both its geographic boundaries and its definitive boundaries. Long defined as the market for CT, MR, ultrasound and other imaging modalities, the diagnostic imaging market has grown to include both PACS and 3D imaging systems, which have become integral technologies for many radiology practices around the world.

Today, only a minority of hospitals, clinics and imaging centers use 3D medical imaging products in diagnostic imaging. Technological advances over the last several years in both computer hardware and software development have dramatically improved the cost-to-performance ratio, bringing the prices for 3D medical imaging products into the reach of most health care providers. In addition, increasing clinical awareness, improving utility of applications and an exponential increase in CT slice volumes are driving demand for 3D medical imaging products.

Based on an increasing number of 3D procedures being performed as a result of the growing use of imaging technology, new 3D screening procedures and broader acceptance of 3D applications, we estimate that the potential worldwide market for 3D medical imaging and workstations, including the U.S. market, will grow to $2 billion in less than four years.

We were incorporated in Iowa in September 1988. In March 1997, we re-incorporated under the laws of the State of Minnesota. Our principal executive offices are located at 3300 Fernbrook Lane N., Suite 200, Plymouth, Minnesota 55447, our telephone number is (763) 852-4100, our facsimile number is (763) 852-4110, our company email is *info@vitalimages.com*, and our website address is www.vitalimages.com. Reference to our website is not intended to incorporate information found on the website into this prospectus.

This prospectus relates to the resale of 420,206 outstanding shares of common stock, up to an additional 300,000 shares that we may issue as described below, and 14,391 shares underlying common stock purchase warrants. All of the warrants and 43,944 of the outstanding shares were issued in connection with our private placement in December 1999. We issued the remaining 376,262 outstanding shares to former shareholders of HInnovation, Inc. in our acquisition of HInnovation, Inc. completed in February 2004. We must issue up to an additional 300,000 shares of common stock to these shareholders upon the achievement of a performance milestone as provided in our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004. The number of additional shares issued will depend on the market value of our common stock at the time of issuance, but the maximum number of shares we must issue is 300,000 shares.

RISK FACTORS

An investment in our common stock involves a high degree of risk. You should carefully consider the following risk factors, in addition to the other information set forth in this prospectus, before making your investment decision.

We may not be able to maintain profitable operations on an annual basis unless we have annual revenue currently estimated at $25,000,000.

For the years ended December 31, 2003 and 2002, we had operating income of $1,411,000 and $677,000. However, we had operating losses of $1,708,000 for the three months ended March 31, 2004 and $1,055,000 for the year ended December 31, 2001. With the exceptions of the fiscal years ended December 31, 2003 and 2002 and October 31, 1995, we have incurred operating losses each year since 1990. As of March 31, 2004, our accumulated deficit was $13,349,000. Our ability to maintain annual profitability will depend on, among other things, our ability to successfully market our products, make new product offerings, respond to competitive developments and attract and retain qualified sales, technical and management employees. We may not be able to continue to achieve profitable operations on an annual basis.

If our *Vitrea 2* software does not continue to gain market acceptance, our financial results would be adversely affected.

Our success depends on our ability to successfully market our *Vitrea 2* software for clinical use and on the ability and willingness of physicians to use 2D, 3D and 4D medical imaging software in disease screening, clinical diagnosis and therapy planning. The three-dimensional medical imaging software offered by *Vitrea 2* represents a newer alternative to the conventional methods traditionally used for viewing medical images in the clinical setting. The acceptance of *Vitrea 2* by physicians and other clinicians will depend on our ability to educate those users as to the speed, ease-of-use and other benefits offered by the *Vitrea 2* system, as well as on our timely introduction of new features and functions. There can be no assurance that users will prefer three-dimensional medical imaging software over less expensive two-dimensional medical imaging software or that we will succeed in our efforts to further develop, commercialize and achieve market acceptance for our *Vitrea 2* product or for any other product in the clinical setting.

Nearly all of our revenue is from sales of our *Vitrea 2* system. Sales of our *Vitrea 2* system represented 95% of total revenue for the three months ended March 31, 2004, 96% of total revenue for year ended December 31, 2003, 98% of total revenue for 2002, and 96% of total revenue for 2001. A decline in the sales of the system would have a material adverse effect on our results of operations and financial condition.

Revenue from sales of the *Vitrea 2* system constituted 95% of total revenue for the three months ended March 31, 2004, 96% of our total revenue for the year ended December 31, 2003, 98% of our total revenue for the year ended December 31, 2002, and 96% of our total revenue for the year ended December 31, 2001. We anticipate that revenue from the sale of *Vitrea 2* will continue to account for a substantial portion of our revenue for the foreseeable future. As such, the failure of physicians to accept *Vitrea 2* would have a material adverse impact on our results of operations and financial condition.

We depend upon growth in the market for 3D medical imaging. If that market does not grow as we expect, our business, results of operations and financial condition would be adversely affected.

The 3D medical imaging industry in which we market our products is still developing due to:

- the fairly recent availability of high performance computers at reduced prices;

the recent adoption of industry standards for the generation, transmission and storage of medical imaging data; and

changing medical practices.

Historically, there has been a perception that three-dimensional imaging was too slow or difficult for clinical use. This perception was due largely to the relatively slower processing speed of workstations available in the past. We believe that the recent advances in the affordability of high performance computers and in the development of industry standards for the generation, transmission and storage of imaging data will provide opportunities for growth in the 3D medical imaging industry. However, given the uncertainties associated with the developing stage of this industry, there can be no assurance that it will continue to develop in the manner we anticipate. Accordingly, there can be no assurance that the 3D medical imaging industry will provide growth opportunities for us and our software products or that our business strategies will be successful as the 3D medical imaging industry continues to evolve. Ultimately, if the 3D medical imaging industry fails to develop as we expect, our business, results of operations and financial condition will be materially and adversely affected.

We participate in a highly competitive industry. If we fail to compete effectively, our results of operations and financial condition would be adversely affected.

We face intense competition in the 3D medical imaging industry. We expect technology to continue to develop rapidly, and our success will depend to a large extent on our ability to maintain a competitive position with our products. Our competitors in the 3D medical imaging industry include large, established manufacturers of CT and MR imaging equipment. Companies such as GE Medical Systems, Siemens Medical Systems and Philips Medical Systems typically offer their own medical imaging software and workstations as part of their integrated imaging and scanner systems. Our ability to successfully market and sell our current 3D medical imaging products to prospective customers depends, in part, on our ability to persuade such customers to separate the purchase of CT or MR equipment from the selection and purchase of 3D medical imaging workstations. In addition to having significantly greater capital and staffing resources for research and development that are critical to success in the rapidly changing 3D medical imaging industry, such companies also have well-established marketing and distribution networks and have a competitive advantage in marketing 3D medical imaging tools as an integrated part of their imaging products. While price has been less significant than other factors, increasing competition may result in price reductions and reduced gross margins. Additionally, we face competition from other entities, such as other software suppliers and PACS vendors. We may not be able to compete effectively with such manufacturers or competing entities.

Our products may become obsolete or non-competitive, which would result in reduced revenue and profit margins.

The 3D medical imaging market is characterized by rapid innovation and technological change. We may be unable to compete effectively in the marketplace, and products developed by our competitors may render our products obsolete or non-competitive. Similarly, our competitors may succeed in developing or marketing products that are viewed as providing superior clinical performance or are less expensive than our current or future products.

Our sales to Toshiba accounted for 69% of our total revenue for the three months ended March 31, 2004, 42% of our total revenue for the year ended December 31, 2003, 34% of total revenue for 2002, and 21% of total revenue for 2001. A reduction in sales to Toshiba for any reason could have a material adverse effect on our operating results and financial condition.

One of our principal distribution channels is to sell our *Vitrea 2* medical imaging software for inclusion with the delivery of medical imaging equipment being sold by Toshiba. Our sales to Toshiba

accounted for approximately 69% of our total revenue for the three months ended March 31, 2004, 42% of our total revenue for the year ended December 31, 2003, 34% of total revenue for the year ended December 31, 2002, and 27% of total revenue for the year ended December 31, 2001. Toshiba's account receivable represented 51% of our accounts receivable at March 31, 2004, 7% at December 31, 2003 and 21% at December 31, 2002. We believe a limited number of large customers may continue to account for a significant portion of our revenue during any given period for the foreseeable future. Except for our marketing and distribution agreements with Toshiba, Surgical Navigation Technologies, Inc., a division of Medtronic, Inc., and McKesson Information Solutions LLC, we currently have no long-term purchase or other agreements with any of our customers. We generally make sales pursuant to purchase orders. A reduction, delay or cancellation of orders from one or more of our significant customers, or our inability to collect accounts receivable from these customers, likely would have a material adverse effect on our operating results.

We are obligated to purchase a minimum amount of product, and our revenue from the sale of the product could be less than the price we paid for the product.

In November 2002, we entered into an agreement with R2 Technology, Inc. ("R2") to distribute R2's lung nodule CAD software product in conjunction with our products. During the three-year period beginning with the later of either the date R2 is able to meet Conformitee Europeene (CE) certification requirements and produce a "Declaration of Conformance" for the lung CAD product or the completion of milestones in the development plan for the lung CAD product that will be distributed in Europe, we are required to begin purchasing the lung CAD product from R2. R2 met the CE certification requirements and produced a Declaration of Conformance for the lung CAD product in 2003, and we completed the milestones in the development plan in January 2004 for the lung CAD product that will be distributed in Europe. Accordingly, we will be required to begin purchasing the lung CAD product in the first half of 2004. The total purchase commitment will be a maximum of $5.6 million of product over the three-year commitment period. The purchase commitment price we will have to pay will be reduced if the selling price of the lung CAD product when sold to end-users by R2 falls below a specified price. The number of units we are required to purchase will be reduced if R2 and its other distributors of the lung CAD product are unable to sell as many units as we are required to purchase. However, we must purchase the minimum amount under the agreement with R2 regardless of how much of the lung CAD product we sell. If the cost of the lung CAD product we buy is greater than the price of the lung CAD product we sell, or if we are unable to sell some or all of the lung CAD product we buy, our business could be adversely affected.

We may experience fluctuations in operating results, which may result in volatility in the price of our common stock.

We may experience significant fluctuations in future annual and quarterly operating results. If these fluctuations occur, they may result in volatility in the price of our common stock. Quarterly revenue and operating results may fluctuate as a result of a variety of factors that are outside of our control including, but not limited to:

- the timing of significant orders,
- the timing of our product enhancements and new product introductions and those of our competitors and customers;
- the pricing of our products;
- changes in customers' budgets; and
- competitive conditions.

We are subject to government regulation, which can result in additional costs or restrict our ability to market our products.

Our products are subject to regulation by the FDA and by comparable agencies in foreign countries. In the United States, the FDA regulates the development, introduction, manufacturing, labeling and record keeping procedures for medical devices, including 3D medical imaging software and systems. The process of obtaining marketing clearance from the FDA for new products and new applications for existing products can be time-consuming and expensive. We have received marketing clearance from the FDA pursuant to 510(k) pre-market notifications for all of our current products. *Vitrea 2* and our add-on options have been cleared to be marketed for use with CT and MR scanners. The FDA may not grant clearance with respect to our future products or enhancements, or future FDA reviews may involve delays that could adversely affect our ability to market such future products or enhancements. In addition, our future products or enhancements may be subject to the more lengthy and expensive pre-market approval process with the FDA.

Even if we obtain regulatory clearances and approvals from the FDA to market a product, these clearances and approvals may entail limitations on the indicated uses of the product. The FDA can also withdraw product clearances and approvals due to failure to comply with regulatory standards or the occurrence of unforeseen problems following initial approval. The FDA could also limit or prevent the distribution of our products and has the power to require the recall of such products. FDA regulations depend heavily on administrative interpretation, and future interpretations made by the FDA or other regulatory bodies may adversely affect us. The FDA may inspect Vital Images and our facilities from time to time to determine whether we are in compliance with various regulations relating to specification, development, documentation, validation, testing, quality control and product labeling. If the FDA determines that we are in violation of such regulations, it could impose civil penalties, including fines, recall or seize products and, in extreme cases, impose criminal sanctions.

We market our products both domestically and internationally. International regulatory bodies have established varying regulations governing product standards, packaging requirements, labeling requirements, import restrictions, tariff regulations, duties and tax requirements. Our inability or failure to comply with the varying regulations, or the imposition of new regulations, could restrict our ability to sell our products internationally and could adversely affect our business.

The imposition of requirements under the Health Insurance Portability and Accountability Act of 1996 ("HIPAA") could adversely affect our business.

The HIPAA regulations are causing our customers to request that we sign "business associate" agreements with them. A "business associate" is a person or entity that performs certain functions or activities that involve the use or disclosure of protected health information on behalf of, or that provides services to, a covered entity. By law, the HIPAA Privacy Rule applies only to covered entities health plans, health care clearinghouses, and certain health care providers. However, most health care providers do not carry out all of their health care activities and functions by themselves. Instead, they often use the services of a variety of other persons or businesses. The Privacy Rule allows covered providers and health plans to disclose protected health information to these "business associates" if the providers or plans obtain satisfactory assurances that the business associate will use the information only for the purposes for which it was engaged by the covered entity, will safeguard the information from misuse, and will help the covered entity comply with some of the covered entity's duties under the Privacy Rule. Covered entities may disclose protected health information to an entity in its role as a business associate only to help the covered entity carry out its health care functions not for the business associate's independent use or purposes, except as needed for the proper management and administration of the business associate. If we are not willing or if we are unable to enter into a business associate agreement with current and potential customers, such customers may not

purchase products or services from us, which would have a material adverse effect on our results of operations and financial condition.

The protection of our intellectual property may be uncertain, and we may face possible claims of others.

Although we have filed patent applications with respect to certain aspects of our technology, we generally do not rely on patent protection with respect to our products and technologies. Instead, we rely primarily on a combination of trade secret and copyright law, employee and third-party nondisclosure agreements and other protective measures to protect intellectual property rights pertaining to our products and technologies. Such measures may not provide meaningful protection of our trade secrets, know-how or other intellectual property in the event of any unauthorized use, misappropriation or disclosure. Others may independently develop similar technologies or duplicate any technology developed by us. In addition, to the extent that we apply for any patents, such applications may not result in issued patents or, if issued, such patents may not be valid or of value. We do not believe that our products and technologies infringe any existing patents or intellectual property rights of third parties. However, our products and technologies may infringe existing patents or intellectual property rights of third parties. The costs of prosecuting or defending an intellectual property claim could be substantial and could adversely affect our business, even if we were ultimately successful in prosecuting or defending any such claims. If our products or technologies were found to infringe the rights of a third party, we could be required to pay significant damages or license fees or cease production, any of which could have a material adverse effect on our business.

We have product liability insurance ($11,000,000 per occurrence and $12,000,000 in total) and errors and omissions coverage ($11,000,000 per occurrence and in total). Our insurance coverage may not be adequate to pay products liability claims, which could have a material adverse effect on our financial condition.

The manufacture and sale of products used in the practice of medicine entail significant risk of product liability claims. We currently maintain product liability insurance in the amount of $11,000,000 per occurrence and $12,000,000 in total and errors and omissions coverage in the amount of $11,000,000 per occurrence and in total. However, our coverage limits may not be adequate to protect us from any liabilities we might incur in connection with the sale of our products. Further, we may not be able to maintain this level of coverage in the future. We may also need increased product liability coverage as we release additional products and updates. Product liability insurance is expensive and may not be available to us in the future on acceptable terms, if at all. A successful product liability claim or series of such claims against us in excess of our insurance coverage could have a material adverse effect on our business.

If we fail to attract and retain qualified personnel, our business would be harmed.

Our ability to enhance and develop markets for our current products and to introduce new products to the marketplace depends on our ability to attract and retain qualified scientific and management personnel. We compete for such personnel with other companies, academic institutions, government entities and organizations, many of which have substantially greater capital resources, name recognition, and research and development capabilities than us. We may not be successful in recruiting or retaining such personnel, which would have a material adverse effect on our business.

If we do not effectively manage changes in our business, these changes could place a significant strain on our management and operations and, as a result, our business might not succeed.

Our ability to grow successfully requires an effective planning and management process. The expansion and growth of our business could place a significant strain on our management systems,

infrastructure and other resources. To manage our growth successfully, we must continue to improve and expand our systems and infrastructure in a timely and efficient manner. In addition, the success of any acquisition will depend on our ability to successfully integrate the acquired business with our business. Our controls, systems, procedures and resources may not be adequate to support a changing and growing company. If our management fails to respond effectively to changes and growth in our business, including acquisitions, such failure could have a material adverse effect on our business.

We depend on third-party reimbursement. A reduction or other change in reimbursement from third parties could negatively affect our business.

Our products are purchased by hospitals, clinics, imaging centers and other users, which bill various third party payers, such as government health programs, private health insurance plans, managed care organizations and other similar programs, for the health care goods and services provided to their patients. There are currently Current Procedural Terminology (CPT) reimbursement codes for most of the diagnostic procedures that use our products. However, the amount of such reimbursement varies by location and is subject to change. Payers may deny reimbursement if they determine that a product used in a procedure was not used in accordance with established payer protocol regarding cost-effective treatment methods or was used for an unapproved indication. Third party payers are increasingly challenging the prices charged for medical services and, in some instances, have put pressure on service providers to lower their prices or reduce their services. We are unable to predict what changes will be made in the reimbursement methods used by third party health care payers. The procedures in which our products are used may not be considered cost effective by third party payers. Reimbursement for such procedures may not be available or, if available, payers' low reimbursement levels may adversely affect our ability to sell our products on a profitable basis. In addition, there have been and may continue to be proposals by legislators, regulators and third party payers to curb further these costs in the future. A failure by hospitals and other users of our products to obtain reimbursement from third party payers, changes in third party payers' policies toward reimbursement for procedures using our products or legislative action could have a material adverse effect on our business.

Health care reform may negatively impact our business.

The levels of revenue and profitability of medical technology companies may be affected by the efforts of government and third party payers to contain or reduce the costs of health care through various means. In the United States, there have been, and we expect that there will continue to be, a number of federal, state and private proposals to control health care costs. These proposals may contain measures intended to control public and private spending on health care as well as to provide universal public access to the health care system. If enacted, these proposals may result in a substantial restructuring of the health care delivery system. Significant changes in the nation's health care system could have a substantial impact on the manner in which we conduct our business and could have a material adverse effect on our business, financial condition and results of operations.

We may issue shares of preferred stock without the consent of our holders of common stock, which could adversely affect the rights of the holders of our common stock.

Our Articles of Incorporation authorize our Board of Directors, without any action by our shareholders, to establish the rights and preferences of up to 5,000,000 shares of currently undesignated preferred stock. These shares of preferred stock could possess voting and conversion rights that could adversely affect the voting power of the holders of the common stock and may have the effect of delaying, deferring or preventing a change in control of our company. No shares of preferred stock or other senior equity securities are currently designated, and currently we have no plan to designate or issue any such securities.

We are subject to certain laws and plans which may discourage takeover attempts that could be beneficial for shareholders.

We are subject to anti-takeover provisions of the Minnesota Business Corporation Act. In addition, we have adopted a Shareholder Rights Plan (the "Rights Agreement") designed to protect us and our shareholders from unsolicited attempts to acquire our company. These measures may deter or discourage takeover attempts and other changes in control of our company that are not approved by our Board of Directors, and they may have a depressive effect on any market for our stock. As a result, our shareholders may lose opportunities to dispose of their shares at the higher prices typically available in takeover attempts or that may be available under a merger proposal. In addition, these measures may have the effect of permitting our current directors to retain their positions and place them in a better position to resist changes that our shareholders may wish to make if they are dissatisfied with the conduct of our business.

We have never paid any cash dividends and, therefore, our stockholders' only opportunity to achieve a return on their investment in Vital Images is if the price of our common stock appreciates.

We have not paid cash dividends on our common stock in the past, and we do not intend to do so in the foreseeable future. Consequently, our stockholders' only opportunity to achieve a return on their investment in our company will be if the market price of our common stock appreciates and they sell their shares at a profit. There is no guaranty that the price of our common stock that will prevail in the market after any sales by the selling shareholders under this prospectus will ever exceed the price that a buyer of the shares will pay.

Our directors may not be held personally liable for certain actions, which could discourage shareholder suits against them.

As permitted by Minnesota law, our Articles of Incorporation provide that our directors shall not be personally liable to our company or our shareholders for monetary damages for breach of fiduciary duty as a director, with certain exceptions. These provisions may discourage shareholders from bringing suit against a director for breach of fiduciary duty and may reduce the likelihood of derivative litigation brought by shareholders on behalf of our company against a director. In addition, our Bylaws provide for mandatory indemnification of directors and officers to the fullest extent permitted by Minnesota law.

The exercise of outstanding warrants and options may adversely affect our stock price.

Warrants and options to purchase 2,650,538 shares of our common stock were outstanding as of April 30, 2004. All of the warrants and 1,487,762 of the options are currently exercisable. These warrants and options are likely to be exercised at a time when the market price for our common stock is higher than the exercise prices of the warrants and options. If holders of these outstanding warrants and options sell the common stock received upon exercise, it may have a negative effect on the market price of our common stock.

USE OF PROCEEDS

The selling shareholders will sell all of the common stock covered by this prospectus and receive the proceeds from sale of the shares. We will not receive any of the proceeds from such sales.

SELLING SHAREHOLDERS

This prospectus covers offers and sales of shares of our common stock by the selling shareholders identified below. Of the shares identified in the table as to be sold, 21,972 shares were originally purchased by the selling shareholders in our December 1999 private placement for $3.25 per unit, each unit consisting of one share and one warrant to purchase one share at an exercise price of $3.75 per share. An additional 21,972 shares to be sold were acquired upon exercise of the warrants. In addition, outstanding warrants to purchase 14,391 shares at an exercise price of $3.25 per share identified in the table were issued as compensation to registered representatives and employees of the broker who acted as agent for the private placement. We issued the remaining 376,262 shares in our acquisition of HInnovation, Inc. completed in February 2004. The shares issued in the acquisition transaction were valued at $15.946 per share. We must issue to the former shareholders of HInnovation, Inc. up to an additional 300,000 shares upon the achievement of a performance milestone as provided in our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004. Each selling shareholder purchased or will acquire the shares in the ordinary course of the shareholder's business and for the shareholder's own account for investment only, has no arrangement or understanding with any other persons regarding the distribution of the shares, and has no present intent of distributing the shares.

The table below identifies the selling shareholders and shows the numbers of shares of common stock beneficially owned by each of the selling shareholders as of April 30, 2004 and the number of shares offered for resale by each of the selling shareholders. Our registration of these shares does not necessarily mean that any selling shareholder will sell all or any of their shares of common stock. However, the "Shares Beneficially Owned After Offering" columns in the table assume that all shares covered by this prospectus will be sold by the selling shareholders and that no additional shares of common stock will be bought or sold by any selling shareholder. Except as indicated in the table, no selling shareholder has had, within the past three years, any position, office or other material relationships with us other than as a result of ownership of shares or other securities. No estimate can be given as to the number of shares that will be held by the selling shareholders after completion of this offering because the selling shareholders may offer some or all of the shares and, to our knowledge, because there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares.

The information provided in the table below is from the selling shareholders, reports furnished to us under rules of the United States Securities and Exchange Commission, and our stock ownership records.

	Shares Beneficially Owned Before Offering(1)					Shares Beneficially Owned After Offering(1)	
Beneficial Owner	**Number(2)**	**Shares Underlying Warrants**	**Total Number of Shares**	**Percent(3)**	**Shares to be Sold**	**Number**	**Percent(3)**
William Bradley, Jr.(4)(5)	4,376	0	4,376	*	4,376	0	
Larry Christenson(6)	0	525	525	*	525	0	
TongZhe Cui(4)(7)	72,585	0	72,585	*	72,585	0	
David F. Dalvey(6)	0	5,338	5,338	*	5,338	0	
MingLei Duan(4)(8)	1,822	0	1,822	*	1,822	0	
W. Dennis Foley(4)(9)	2,552	0	2,552	*	2,552	0	
Gregory S. and Colette I. Furness(10)	216,080	0	216,080	1.83%	2,000	214,080	1.80%
Mark Golub(4)(11)	1,458	0	1,458	*	1,458	0	
Kong Her(6)	0	1,600	1,600	*	1,600	0	
Brian Hessing(6)	0	310	310	*	310	0	
James B. Hickey, Jr.(12)	45,500	0	45,500	*	10,000	35,500	*
Richard A. Hoel(13)	10,000	0	10,000	*	10,000	0	*
Hui Hu(4)(14)	346,657	0	346,657	3.00%	346,657	0	
JMS Co., Ltd.(4)(15)	145,899	0	145,899	1.26%	145,899	0	*
JMS North America Corporation(4)(16)	29,179	0	29,179	*	29,179	0	*
Zhang Jun(4)(17)	7,294	0	7,294	*	7,294	0	*
William Kelly(4)(18)	19,330	0	19,330	*	19,330	0	
Jay D. Miller(19)	299,000	0	299,000	2.50%	2,000	297,000	2.49%
Perkins Capital Management, Inc., Profit Sharing Plan & Trust(20)	10,000	0	10,000	*	10,000	0	*
Douglas M. Pihl(21)	111,569	0	111,569	*	944	110,625	
John V. Ryden(6)	0	2,265	2,265	*	2,265	0	
Wendy Sanders(6)	0	1,800	1,800	*	1,800	0	
Larry Schroeder(4)(22)	3,647	0	3,647	*	3,647	0	
Barbara Steinkamp(6)	0	457	457	*	457	0	
Donald Steinkamp(6)	0	2,096	2,096	*	2,096	0	
Yi Sun(4)(23)	34,169	0	34,169	*	34,169	0	
Yasushi Takigawa(4)(24)	7,294	0	7,294	*	7,294	0	
Michael W. and Ellen I. Vannier(25)	45,000	0	45,000	*	6,000	39,000	*
Sven A. Wehrwein(26)	39,500	0	39,500	*	3,000	36,500	*
Totals	1,452,911	14,391	1,467,302		734,597	732,705	

* Less than one percent.

(1) Each person has sole voting and sole dispositive power with respect to all outstanding shares, except as noted.

(2) Excludes shares underlying warrants.

(3) Based on 11,652,585 shares outstanding at April 30, 2004, which does not include up to 300,000 shares we must issue to the former HInnovation, Inc. shareholders upon the achievement of a performance milestone as described in our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004. Each figure showing the percentage of outstanding shares owned beneficially has been calculated by treating as outstanding and owned the shares which could be purchased by the indicated person within 60 days upon the exercise of stock options and warrants.

(4) These individuals and entities, who are former shareholders of HInnovation, Inc., received their shares in our acquisition of HInnovation, Inc. completed in February 2004.

(5) Includes up to 1,941 shares that we must issue to William Bradley, Jr. upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(6) With the exception of Ms. Wendy Sanders, these individuals were registered representatives or employees of the broker who acted as agent for our December 1999 private placement, and they received warrants to purchase shares of our common stock as compensation for acting in that capacity. Ms. Sanders is the surviving spouse of Mr. Gordon J. Sanders, who received the warrants from one of these registered representatives or employees.

(7) Includes up to 32,200 shares that we must issue to TongZhe Cui upon the achievement of a performance milestone under or Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(8) Includes up to 808 shares that we must issue to MingLei Duan upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(9) Includes up to 1,132 shares that we must issue to W. Dennis Foley upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(10) Mr. Furness is our Chief Financial Officer and Vice President Finance. Includes 186,580 shares that Mr. Furness has the right to acquire within 60 days upon exercise of stock options.

(11) Includes up to 647 shares that we must issue to Mark Golub upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(12) Mr. Hickey is a director of our company. Includes 35,500 shares that Mr. Hickey has the right to acquire within 60 days upon exercise of stock options.

(13) Mr. Hoel is a shareholder of Winthrop & Weinstine, P.A., a law firm which provides us with legal services.

(14) Includes up to 153,782 shares that we must issue to Hui Hu upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(15) Includes up to 64,723 shares that we must issue to JMS Co., Ltd upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004. The shares of JMS Co., Ltd. are listed on the Tokyo Stock Exchange.

(16) Includes up to 12,944 shares that we must issue to JMS North America Corporation upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004. JMS North America Corporation is a wholly-owned subsidiary of JMS Co., Ltd., the shares of which are listed on the Tokyo Stock Exchange.

(17) Includes up to 3,236 shares that we must issue to Zhang Jun upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(18) Includes up to 8,575 shares that we must issue to William Kelly upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(19) Mr. Miller is our President and Chief Executive Officer. Includes 296,500 shares that Mr. Miller has the right to acquire within 60 days upon exercise of stock options.

(20) Does not include shares beneficially owned by Mr. Richard W. Perkins, one of our directors and the controlling shareholder of Perkins Capital Management, Inc. ("PCM"), a registered investment advisor. Specifically, the ownership does not include 5,000 shares held by the Perkins Foundation, 63,500 shares held by various other trusts of which Mr. Perkins is the sole trustee, and 39,000 shares Mr. Perkins has the right to purchase within 60 days upon the exercise of stock options. Does not include 746,617 shares held for the account of clients of PCM, for which beneficial ownership is disclaimed by PCM. PCM has sole dispositive power with regard to all such shares and sole voting power over 105,167 of such shares. Also excludes 10,000 shares that a client of PCM has the right to acquire upon exercise of stock options.

(21) Mr. Pihl is a director and our Chairman of the Board. Includes 39,000 shares that Mr. Pihl has the right to acquire within 60 days upon the exercise of stock options. Does not include 27,994 shares held by Mr. Pihl's spouse.

(22) Includes up to 1,618 shares that we must issue to Larry Schroeder upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(23) Includes up to 15,158 shares that we must issue to Yi Sun upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(24) Includes up to3,236 shares that we must issue to Yasushi Takigawa upon the achievement of a performance milestone under our Acquisition Agreement and Plan of Reorganization with HInnovation, Inc. dated January 8, 2004.

(25) Dr. Vannier is a director of our company. Includes 39,000 shares that Dr. Vannier has the right to acquire within 60 days upon the exercise of stock options.

(26) Mr. Wehrwein is a director of our company. Includes 36,500 shares that Mr. Wehrwein has the right to acquire within 60 days upon the exercise of stock options.

PLAN OF DISTRIBUTION

We are registering the common stock covered by this prospectus for the selling shareholders pursuant to registration rights granted to the selling shareholders. The selling shareholders have indicated that they are acting independently from us in determining the manner and extent of sales of the shares of our common stock after the date of this prospectus. As used in this prospectus, the term "selling shareholders" includes the selling shareholders named in the table above and their donees, pledgees and transferees and other successors-in-interest selling shares received from a named selling shareholder as a gift, partnership distribution or other non-sale related transfer after the date of this prospectus. After the date of this prospectus, such sales may be made in one or more types of transactions (which may include block transactions) on The NASDAQ National Market, in negotiated transactions, through put or call options transactions relating to the shares, through short sales of shares, hedging transactions, or a combination of such methods of sale, at market prices prevailing at the time of sale, or at negotiated prices. Such transactions may or may not involve brokers or dealers. After the date of this prospectus, sales of shares in The NASDAQ National Market involving brokers or dealers may be by means of one or more of the following transactions:

in a block trade in which a broker or dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;

in transactions in which brokers, dealers or underwriters purchase the shares as principal and resell the shares for their own accounts under this prospectus;

in ordinary brokers' transactions and transactions in which the broker solicits purchasers;

in connection with the loan or pledge of the shares of common stock registered to a broker or dealer, and the sale of the common stock so loaned or the sale of the shares so pledged upon a default;

in connection with the writing of non-traded and exchange-traded call options, in hedge transactions and in settlement of other transactions and standardized or over-the-counter options; or

in a combination of any of the above methods.

The selling shareholders have advised us that they have made no arrangements or agreements with any underwriters, brokers or dealers regarding the resale of the common stock prior to the effective date of this prospectus. The selling shareholders may pay compensation to brokers, dealers or agents in the form of commissions, discounts or concessions, which compensation may be less than or in excess of the customary rates of such brokers or dealers for similar transactions.

We have agreed with the former shareholders of HInnovation, Inc. that they will pay one-half and we will pay one-half of the fees and expenses of registering the shares of common stock, up to and including $50,000, including the reasonable fees and disbursements of persons retained by us. We have agreed to pay all fees and expenses in excess of $50,000. We estimate the total fees and expenses to be $39,000. These expenses include legal and accounting fees incurred in preparing the registration statement of which this prospectus is a part, legal and other fees in connection with the qualification of the sale of the shares under the laws of states, registration and filing fees and other expenses. The selling shareholders will pay all other expenses incident to the offering and sale of the shares to the public, including any commissions, discounts or concessions of underwriters, brokers, dealers or agents.

The selling shareholders also may sell these shares in accordance with Rule 144 under the Securities Act of 1933, if Rule 144 is then available.

The participating selling shareholders and any underwriters, brokers or dealers engaged by them may be deemed to be statutory underwriters under the Securities Act of 1933. In addition, to the extent

that selling shareholders who are affiliates of broker-dealers did not acquire their shares of Vital Images in the ordinary course of business or had an agreement or understanding to dispose of the shares, such affiliates would be designated as "underwriters" under the Securities Act of 1933. Any profits on sales of the common stock by them and any discounts, commissions or concessions received by any selling stockholder or underwriter, broker or dealer may be deemed to be underwriting discounts or commissions under the Securities Act of 1933.

If a selling shareholder notifies us that a material arrangement has been entered into with an underwriter, broker or dealer for the sale of the common stock through a secondary distribution or a purchase by an underwriter, broker or dealer, we will file a supplement to this prospectus, if required, disclosing such of the following information as we believe is appropriate:

the name of each such selling shareholder and of the participating underwriter, broker or dealer;

the number of shares of common stock involved;

the price at which such common stock was sold;

the commissions paid or discounts or concessions allowed to such underwriter, broker or dealer; and

other facts material to the transaction.

We have agreed to indemnify the selling shareholders against certain liabilities relating to resale of the common stock under the Securities Act of 1933. Each of the selling shareholders has agreed to indemnify us (and our officers who sign the Registration Statement of which this prospectus is a part, our directors and any person that controls us) against such liabilities to the extent resulting from untrue statements or omissions in the prospectus or registration statement based on written information furnished by the selling shareholder specifically for use in preparing this prospectus or the registration statement. The selling shareholders may agree to indemnify any agent, dealer or broker-dealer that participates in transactions involving sales of the shares against certain liabilities, including liabilities arising under the Securities Act of 1933. Insofar as indemnification for liabilities under the Securities Act of 1933 may be permitted to our directors or officers, or persons that control us, we have been informed that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is therefore unenforceable.

Although all of the shares are being registered for public sale, the sale of any or all of such shares by the selling shareholders may depend on the sale price of such shares and market conditions generally prevailing at the time. We are unable to predict the effect that sales of the common stock offered and sold under this prospectus may have upon our ability to raise further capital.

Because selling shareholders may be deemed to be "underwriters" within the meaning of the Securities Act of 1933, the selling shareholders will be subject to the prospectus delivery requirements of the Securities Act of 1933 and the rules promulgated thereunder. We have informed the selling shareholders that the anti-manipulative provisions of Regulation M under the Securities Exchange Act of 1934 may apply to their sales of our shares in the market.

In order to comply with some states' securities laws, the common stock will be sold in these states only through registered or licensed brokers or dealers. In addition, in some states, the shares of common stock may not be sold unless they have been registered or qualified for sale in such states or an exemption from registration or qualification is available and complied with.

LEGAL MATTERS

Winthrop & Weinstine, P.A., Minneapolis, Minnesota, is giving an opinion on validity of the shares of common stock being offered by this prospectus. Mr. Richard A. Hoel is a shareholder of Winthrop & Weinstine, P.A. and is also a shareholder of the Company.

EXPERTS

The financial statements incorporated in this prospectus by reference to the Annual Report on Form 10-K of Vital Images, Inc. for the year ended December 31, 2003 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and we file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission (the "Commission"). You may read and copy the reports, proxy statements and other information that we file at the Commission's public reference facilities at 450 Fifth Street, N.W., Judiciary Plaza, Washington, D.C. 20549 at prescribed rates. Our filings are also available free of charge at the Commission's website at http://www.sec.gov. You may also obtain copies of such materials by calling the Commission at 1-800-SEC-0330, or by mail from the Public Reference Room at 450 Fifth Street, N.W., Judiciary Plaza, Washington, D.C. 20549.

This prospectus is part of a Registration Statement on Form S-3 (the "Registration Statement") we filed with the Commission under the Securities Act of 1933. This prospectus does not contain all of the information set forth in the Registration Statement. For more information about us and our common stock, you should read the Registration Statement and its exhibits and schedules. Copies of the Registration Statement, including its exhibits, may be inspected without charge at the offices of the Commission or obtained at prescribed rates from the Public Reference Section of the Commission at 450 Fifth Street, N.W., Judiciary Plaza, Washington, D.C. 20549. Copies of the Registration Statement may be obtained without charge via the SEC's website (http://www.sec.gov).

INFORMATION WE HAVE INCORPORATED BY REFERENCE

The Commission allows us to "incorporate by reference" the information we file with the Commission, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file with the Commission after the date of this prospectus will automatically update and may supersede this information. We are incorporating by reference into this prospectus the documents listed below:

our Annual Report on Form 10-K for the fiscal year ended December 31, 2003;

our Amendment No. 2 to Current Report on Form 8-K/A filed on June 9, 2004;

our Quarterly Report on Form 10-Q for the quarter ended March 31, 2004; and

the description of our common stock contained in our Registration Statement on Form 10, as amended.

All documents we file under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and before the termination of the offering are also incorporated by reference and are an important part of this prospectus. Any statement contained in a document incorporated by reference in this prospectus shall be modified or superseded for purposes of this prospectus to the extent that a

statement contained in this prospectus or in any other subsequently filed document which is incorporated by reference modifies or supersedes such statement.

We will provide without charge to each person to whom this prospectus is delivered, upon written or oral request, a copy of any or all documents that have been or may be incorporated by reference in the prospectus (other than exhibits to such documents that are not specifically incorporated by reference into such documents). Your requests should be directed to our Chief Financial Officer at our principal executive offices at:

3300 Fernbrook Lane N., Suite 200
Plymouth, Minnesota 55447
Telephone number: (763) 852-4100

FORWARD-LOOKING STATEMENTS

All statements contained in this prospectus and the documents we incorporate by reference that are not statements of historical fact are "forward-looking statements." Sometimes these statements contain words like "believe," "belief," "plan," "anticipate," "expect," "estimate," "may," "will," or similar terms, which are intended to identify forward-looking statements. Forward-looking statements involve known or unknown uncertainties and other factors that could cause actual results to be materially different from historical results or from any future results expressed or implied by the forward-looking statements. The "Risk Factors" section of this prospectus, beginning on page 3, summarizes the material risks and uncertainties that could cause our actual results, performance or achievements to differ materially from what we have said in this prospectus and the documents we incorporate by reference. The Risk Factors apply to all of our forward-looking statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements, which speak only as of the date of this prospectus. We will not revise these forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

734,597 Shares

VITAL IMAGES, INC.

Common Stock

PROSPECTUS

June 22, 2004

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