

**UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA**

HEART IMAGING TECHNOLOGIES, LLC,	)	
	)	
Plaintiff,	)	<b>Case No. 1:12-cv-1020</b>
	)	
v.	)	
	)	
MERGE HEALTHCARE INCORPORATED	)	<b>JURY TRIAL DEMANDED</b>
	)	
Defendant.	)	
	)	

**COMPLAINT**

Heart Imaging Technologies, LLC, ("Plaintiff" or "Heart IT"), for its Complaint against Defendant Merge Healthcare Incorporated ("Defendant" or "Merge"), alleges as follows:

**THE PARTIES**

1. Heart IT is a limited liability company organized under the laws of Delaware that maintains its principal place of business at 5003 Southpark Drive, Suites 130-140, Durham, North Carolina 27713.

2. Upon information and belief, Merge is a corporation organized under the laws of Delaware that maintains its principal place of business at 200 East Randolph Street, Suite 2435, Chicago, Illinois 60601.

**JURISDICTION AND VENUE**

3. This is an action for patent infringement arising under 35 U.S.C. § 101, *et seq.* This Court has subject matter jurisdiction over this action under 28 U.S.C. §§1331 and 1338(a).

4. This Court has personal jurisdiction over the Defendant. Merge maintains a regular and established place of business at 4000 Aerial Center Parkway, Morrisville, North Carolina (Wake County). Upon information and belief, Merge has substantial contacts within

the State of North Carolina as a result of pervasive business activities conducted within the State of North Carolina and within this District, including an extensive and long-term licensing and technology transfer relationship with Cato Research, Ltd., which is based in Durham County in this District. On information and belief, Merge also regularly solicits business in North Carolina and in this District, and derives substantial revenue from clients within North Carolina. Moreover, on information and belief, Merge has conducted acts of infringement within this District.

5. Venue in this District is proper pursuant to 28 U.S.C. §§1391(b) and (c) and 1400(b).

#### **PLAINTIFF'S INTELLECTUAL PROPERTY**

6. Heart IT has developed a unique and proprietary medical image conversion and management technology that enables medical images to be displayed and manipulated by an Internet browser.

7. On May 19, 2000 two university professors specializing in the field of medical imaging, Robert M. Judd, Ph.D. and Raymond J. Kim, MD, formed Heart IT. The company's mission is to develop innovative medical imaging tools for practicing physicians.. Before Heart IT was formed, doctors were forced to study medical images, such as x-rays, on expensive workstations located at the hospital or medical office. Drs. Judd and Kim believed that these workstations could be replaced by standard Internet web browsers on any computer or handheld device, if some creative techniques were used to convert the image data to a browser compatible format.

8. On December 20, 2000 Heart IT filed U.S. patent application number 09/742,575 describing a medical image management system that allows any conventional Internet web browser to function as a medical imaging workstation.

9. Since 2001, Heart IT has sold picture archiving and communication systems ("PACS") to research laboratories based on its unique and proprietary medical image conversion and management technology that enables medical images to be displayed and manipulated by an Internet browser.

10. On June 15, 2005 the U.S. Food and Drug Administration granted Heart IT 510(k) approval to market its PACS as a medical device. Heart IT's FDA-approved PACS, WebPAX<sup>®</sup>, makes medical images available for display on Internet browsers. Since 2005, Heart IT has sold WebPAX<sup>®</sup> systems across the United States.

11. Heart IT has several patents covering its proprietary medical image conversion and management technology. These patents include U.S. Patent No. 6,934,698 ("the '698 Patent," or the "Diagnostic Quality Image" patent, attached as Exhibit A), U.S. Patent No. 7,457,656 ("the '656 Patent," or the "Server Side Rendering" patent, attached as Exhibit B), and U.S. Patent No. 8,166,381 ("the '381 Patent," or the "Workstation on a Browser" patent, attached as Exhibit C). These patents are collectively referred to herein as "the Asserted Patents." Heart IT is the sole owner of the Asserted Patents.

12. The '698 Patent contains four claims covering systems for producing diagnostic quality medical images that are compatible with Internet browsers. The broadest claim covers a system that (1) receives images in a format that is not viewable on a browser and (2) extracts, converts, and posts the images in a browser compatible format without loss of diagnostic data.

13. The '656 Patent contains 23 claims covering methods for performing server side rendering of medical images so that they are viewable in a browser. The broadest claim covers a method that (1) receives a medical image in an incompatible format; (2) predetermines at least one image display setting (such as brightness or magnification); and (3) converts the image to a browser compatible format using the predetermined setting while retaining the resolution of the original image.

14. The '381 Patent contains 19 claims covering methods for simulating a medical image workstation in a webpage that is viewable on a browser. The broadest claim covers a method that (1) receives on a server multiple image series in a format that is not viewable on a browser from an imaging procedure; (2) provides a pointer associated with the imaging procedure on a user computer; (3) when the pointer is selected, provides an Internet web page that simulates a medical image workstation, including a grid of browser compatible thumbnails representing the multiple image series; (4) when a thumbnail is selected, provides browser compatible images from the series to the user; (5) thereby permitting diagnosis from the images without requiring software executing outside the browser on the user computer.

#### **DEFENDANT'S WILLFULLY INFRINGING CONDUCT**

15. In early 2006, Heart IT became aware of a picture archiving and communication system offered by Merge called Enterprise Web. Merge advertised this system as enabling the viewing of medical images through an Internet browser.

16. In May 2006, Heart IT sent a letter to Merge notifying it of the '698 Patent and explaining that based on publicly available information, Merge's Enterprise Web product appeared to be covered by certain claims of the '698 patent.

17. On August 30, 2006 Merge's attorneys replied with a letter to Plaintiffs' attorneys stating that the Enterprise Web product did not infringe the '698 Patent because the images were provided in the industry-standard DICOM format and the product displayed the images using an Active-X plugin. The letter therefore concluded that the product did not provide medical images in a browser compatible format. (Exhibit D) Based on Merge's representations, Heart IT did not pursue a claim of infringement of the Enterprise Web product.

18. The DICOM (Digital Imaging and Communication in Medicine) image format is incompatible (i.e., the image cannot be displayed) with Internet web browsers. In the case of Merge's Enterprise Web product, an Active-X plugin had to be downloaded to the user's computer to enable the display of the DICOM image files.

19. On October 14, 2008, Heart IT launched a free social media website, WebPAX.com (<https://www.webpax.com>), that allowed patients, doctors, and medical imaging professionals located anywhere in the world to upload, view, and share medical images using nothing but a standard Internet web browser. The launching of WebPAX.com was announced by sending an email to 86,969 members of a leading organization of radiologists and related professionals (Exhibit E). The email announcement was viewed by 30,351 radiologists and related professionals, and 5,071 of those professionals subsequently visited WebPAX.com (Exhibit F). WebPAX.com was clearly labeled as being based on the same underlying technology as Heart IT's commercially-available WebPAX<sup>®</sup> systems. WebPAX.com at all times prominently identified Heart IT's patents and explained the proprietary nature of its technology.

20. On information and belief, immediately following Heart IT's email announcement regarding its new WebPAX.com medical image sharing website, individuals using Merge computers began repeatedly visiting WebPAX.com and viewing medical images in

an Internet browser using Heart IT's patented technology. On information and belief, Merge employees systematically visited WebPAX.com throughout Merge's development of its Cedara WebAccess product ("WebAccess") (Exhibit G), and these visits stopped within days of the Merge's filing of a 510(k) premarket notification to the Food and Drug Administration ("FDA") (Exhibit H).

21. On September 22, 2009, Merge submitted a 510(k) premarket notification for WebAccess to the FDA (Exhibit H). Merge's 510(k) application described WebAccess as offering "diagnostic quality images" through "a standard internet browser." It also identified Heart IT's WebPAX as a predicate device, stating that the "technological characteristics of the Cedara WebAccess 2.4 software are substantially equivalent, in the opinion of Merge OEM, to those of the predicate devices." Merge also submitted a detailed table to the FDA comparing WebAccess capabilities and functionality with those of WebPAX. The Merge 510(k) comparison table included the following information:

<b>Category</b>	<b>Cedara WebAccess</b>	<b>WebPax (predicate device)</b>
User Installation	Thin Client	Thin Client
Requirements	No installation required on users machine – runs within browser	No installation required on users machine – runs within browser
Data Types Supported	DICOM, Non-DICOM	DICOM, Non-DICOM

Image View/Manipulation	Zoom, Pan, Window Level, Auto Window Level, Reset, Scout Lines, Image Rotate, Image Flip, Magnify, Image Invert Image, Mirror, Cine, MPR, MRA, Tag Images.	Zoom, Pan, Image Invert, Window Level, Cine, Add/Edit Annotations.
Data Security	Stored on server	Stored on server
Transmission Modes	Via the web with Internet browsers	Via the web with Internet browsers
File Types Used	JPEG for Lossy Data, PNG for Lossless Data	GIF ( <i>WebPax potentially utilizes other file types</i> )

22. On January 3, 2011, Heart IT sent a letter to Merge regarding its WebAccess system, which Merge had advertised as a "zero-download application that runs entirely within a browser." (Exhibit I) The letter stated that various aspects of the WebAccess system were covered by the '698 and '656 Patents and suggested that the parties discuss an amicable resolution of this matter. (Exhibit J) Heart IT never received a response from Merge.

23. In 2011, Merge renamed WebAccess to "iConnect Access." (Exhibit K)

24. In 2011, Merge published its DICOM Conformance Statement for iConnect Access version 2.6 ("the Statement"). The Statement described iConnect Access as "a zero-client web application" (Exhibit L, p. 3) and "a web application that federates data from multiple data sources (including DICOM data sources) and presents the data to the user." (Exhibit L, p. 13) The Statement also stated that "[t]he application is capable of presenting and allowing the basic manipulation of images from the web browser with only basic web browser requirements (i.e., Javascript support enabled) and no software download/install." (Exhibit L, p. 13)

25. On or about January 8, 2012, Merge demonstrated how iConnect Access could be used to view medical images on an Apple iPad. During the demonstration (available at <http://www.youtube.com/watch?v=OMSdvueRgJ8>), the Merge representative stated that "everything takes place on the server and then we render either a JPEG or a PNG file, either in lossy or lossless, depending on the user's preference, back out to the user. So the other benefit with this is that it works really well on the low bandwidth situations since we're not transferring DICOM across the internet, we're really working with just small image files, but it still is FDA approved. It has a 510K approval as a diagnostic-quality image." (Exhibit M, p. 4, lines 4-13)

26. On or about May 1, 2012, Merge expanded its use of this technology as part of its cloud-based medical images service called "Merge Honeycomb." (Exhibit N) A sample screen from Merge Honeycomb is attached as Exhibit O.

27. WebAccess, iConnect Access and Merge Honeycomb are referred to hereinafter as the "Accused Products."

## **COUNT I**

### **INFRINGEMENT OF THE '698 PATENT**

28. Heart IT realleges and incorporates herein Paragraphs 1 through 27 of this Complaint.

29. Heart IT owns all right, title and interest in the '698 Patent and has not licensed or otherwise granted any right under the '698 Patent to Defendant.

30. The Accused Products receive medical image data from various image data sources, such as MRI or CT scan machines, and convert the data to a browser compatible format so that they can be viewed on a user's computer without installing any software. This "zero download" or "zero client" capability is an important selling feature of the Accused Products. (Exhibits H, I, K, L, M, and N)



31. In order to create browser compatible images, the Accused Products extract image pixel data from the original medical image data, which is typically in DICOM (Digital Imaging and Communications in Medicine) format. (Exhibits H, I, K, L, M and N)

32. The Accused Products reduce the size of the image pixel data without loss of diagnostic data. (Exhibits H and M)

33. The Accused Products convert image pixel data to a browser compatible format without loss of diagnostic data. (Exhibits H and M)

34. On information and belief, the Accused Products post browser compatible images to a database connected to receive converted image data. (Exhibit O)

35. Merge has directly infringed and continues to directly infringe the '698 Patent by making, using, selling, licensing, offering for sale or license, and/or importing into the United States medical image conversion and management systems, including WebAccess, iConnect Access, and Merge Honeycomb, that embody one or more of the inventions claimed in the '698 Patent in violation of 35 U.S.C. §271(a). In addition, Merge has indirectly infringed and continues to indirectly infringe the '698 Patent by knowingly and intentionally inducing its customers to use these systems in violation of 35 U.S.C. §271(b) and by contributing to such use under 35 U.S.C. §271(c).

36. Merge has been aware of the '698 Patent since before it began its infringement, and has been on actual notice that these systems infringe the '698 Patent since at least January 3, 2011. In fact, Merge used Heart IT's WebPAX® embodiment of the '698 Patent as a model to design WebAccess and to obtain approval to sell WebAccess. Accordingly, Merge's infringement of the '698 Patent is willful, and its conduct makes this an exceptional case pursuant to 35 U.S.C. §285.

37. As a result of Defendant's aforementioned conduct, Heart IT has suffered and continues to suffer substantial damage and irreparable harm constituting an injury for which Heart IT has no adequate remedy at law. Accordingly, only a permanent injunction from this Court can prevent Heart IT's further irreparable harm at the hands of Defendant.

## **COUNT II**

### **INFRINGEMENT OF THE '656 PATENT**

38. Heart IT realleges and incorporates herein Paragraphs 1 through 38 of this Complaint.

39. Heart IT owns all right, title and interest in the '656 Patent and has not licensed or otherwise granted any right under the '656 Patent to Defendant.

40. The Accused Products receive digital medical images in a format that is not compatible with viewing in an Internet web browser. As an example, the Accused Products are configured to receive DICOM images from various medical imaging devices. (Exhibits H, I, K, L, M, and N)

41. The Accused Products predetermine at least one image display setting without user input. As an example, the Accused Products are configured to set Window Level or Cine play speed automatically without user input. (Exhibits H, I, and M)

42. The Accused Products convert the digital medical images to a format that can be viewed in an Internet browser. (Exhibits H, I, K, L, M, and N)

43. The Accused Products convert the digital medical images without loss of resolution. (Exhibits H and M)

44. On information and belief, the Accused Products predetermine the brightness and/or contrast setting of the converted image without user input. (Exhibit M)

45. The Accused Products display the adjusted images side by side in an Internet web browser. (Exhibits I, K, L, and M)

46. On information and belief, the Accused Products predetermine the Cine setting by grouping converted images together to form a movie without user input. (Exhibit M)

47. The Accused Products can receive and convert digital medical images from multiple medical devices manufactured by different manufacturers. (Exhibits H, I, K, L, M, N, and O)

48. The Accused Products post the converted digital medical images for viewing in an Internet web browser. (Exhibits H, I, K, L, M, N, and O)

49. The Accused Products display the converted digital medical images in the Internet web browser on a remote computer in response to a request from the user for the images. (Exhibits H, I, K, L, M, N, and O)

50. Merge has directly infringed and continues to directly infringe the '656 Patent by making, using, selling, licensing, offering for sale or license, and/or importing into the United States medical image conversion and management systems, including WebAccess, iConnect Access, and Merge Honeycomb, that embody one or more of the inventions claimed in the '656 Patent in violation of 35 U.S.C. §271(a). In addition, Merge has indirectly infringed and continues to indirectly infringe the '656 Patent by knowingly and intentionally inducing its customers to use these systems in violation of 35 U.S.C. §271(b) and by contributing to such use under 35 U.S.C. §271(c).

51. Merge has been on actual notice that its WebAccess system infringes the '656 Patent since at least January 3, 2011. In fact, Merge used Heart IT's WebPAX embodiment of the '656 Patent as a model to design WebAccess and to obtain approval to sell WebAccess. Accordingly, Merge's infringement of the '656 Patent is willful, and its conduct makes this an exceptional case pursuant to 35 U.S.C. §285.

52. As a result of Defendant's aforementioned conduct, Heart IT has suffered and continues to suffer substantial damage and irreparable harm constituting an injury for which Heart IT has no adequate remedy at law. Accordingly, only a permanent injunction from this Court can prevent Heart IT's further irreparable harm at the hands of Defendant.

### **COUNT III**

#### **INFRINGEMENT OF THE '381 PATENT**

53. Heart IT realleges and incorporates herein Paragraphs 1 through 52 of this Complaint.

54. Heart IT owns all right, title and interest in the '381 Patent and has not licensed or otherwise granted any right under the '381 Patent to either of the Defendant.

55. The Accused Products receive multiple digital medical images from a patient medical imaging procedure in a format that is incompatible with displaying on an Internet web browser. As an example, the Accused Products receive image series from imaging procedures in DICOM format. (Exhibits H, I, K, L, M, and N)

56. The Accused Products provide a pointer associated with the patient medical imaging procedure. As an example, the Accused Products provide web browser hyperlinks corresponding to a procedure. (Exhibits M and O)

57. The Accused Products display a web page with the user interface of a medical image workstation in response to the selection of a pointer. (Exhibit I, M, and O)

58. The Accused Products' user interface includes a grid of navigational images corresponding to different image series from the imaging procedure. As an example, the Accused Products display thumbnails of each image series from the medical imaging procedure in a rectangular grid. (Exhibits I and M)

59. The Accused Products' navigational images are converted to a browser compatible format before being sent to the user's computer. (Exhibits I and M)

60. The Accused Products display the series of converted medical images on the user's computer in response to user selection of the navigational image without requiring software executing outside the user's Internet web browser. (Exhibits H, I, K, M, and N)

61. The Accused Products provide a pointer as part of an Internet web page. (Exhibits M and O)

62. The Accused Products' pointer comprises an Internet URL. (Exhibits M and O)

63. Merge has directly infringed and continues to directly infringe the '381 Patent by making, using, selling, licensing, offering for sale or license, and/or importing into the United States medical image conversion and management systems, including WebAccess, iConnect Access, and Merge Honeycomb, that embody one or more of the inventions claimed in the '381 Patent in violation of 35 U.S.C. §271(a). In addition, Merge has indirectly infringed and continues to indirectly infringe the '381 Patent by knowingly and intentionally inducing its customers to use these systems in violation of 35 U.S.C. §271(b) and by contributing to such use under 35 U.S.C. §271(c).

64. As a result of Defendant's aforementioned conduct, Heart IT has suffered and continues to suffer substantial damage and irreparable harm constituting an injury for which Heart IT has no adequate remedy at law. Accordingly, only a permanent injunction from this Court can prevent Heart IT's further irreparable harm at the hands of Defendant.

### **PRAYER FOR RELIEF**

WHEREFORE, as to the Counts set forth above, Heart IT requests that this Court enter a judgment in favor of Heart IT as follows:

- A. Finding that the Asserted Patents have been infringed by the Defendant directly and/or by contributory or induced infringement;
- B. Preliminarily and permanently enjoining and restraining Defendant, and its parents, subsidiaries, holding companies, licensees, owners, directors, officers, partners, assigns, related entities, affiliates, predecessors, successors, employees, representatives, trustees, receivers, agents and any other persons or entities acting on its behalf or with its authority, from making, using, selling, licensing, offering for sale or license, and/or importing into the United States medical image conversion and management systems, including WebAccess, iConnect Access, and Merge Honeycomb, that infringe one or more of the Asserted Patents;
- C. Awarding Heart IT damages adequate to compensate it for Defendant's infringement, but in no event less than a reasonable royalty for Defendant's use of the inventions claimed in the Asserted Patents, together with interest and costs;
- D. Finding that this is an exceptional case under 35 U.S.C. §285 and awarding Heart IT its reasonable attorney's fees and costs; and
- E. Awarding such other and further relief as this Court may deem equitable under the circumstances.

Respectfully Submitted,

/s/ James L. Lester

James L. Lester (N.C. Bar No. 15715)

MACCORD MASON PLLC

1600 Wells Fargo Tower

300 N. Greene Street

Greensboro, N.C. 27401

(336) 273-4422

(336) 271-2830 (fax)

[jlester@maccordmason.com](mailto:jlester@maccordmason.com)

Counsel for HEART IMAGING TECHNOLOGIES LLC