

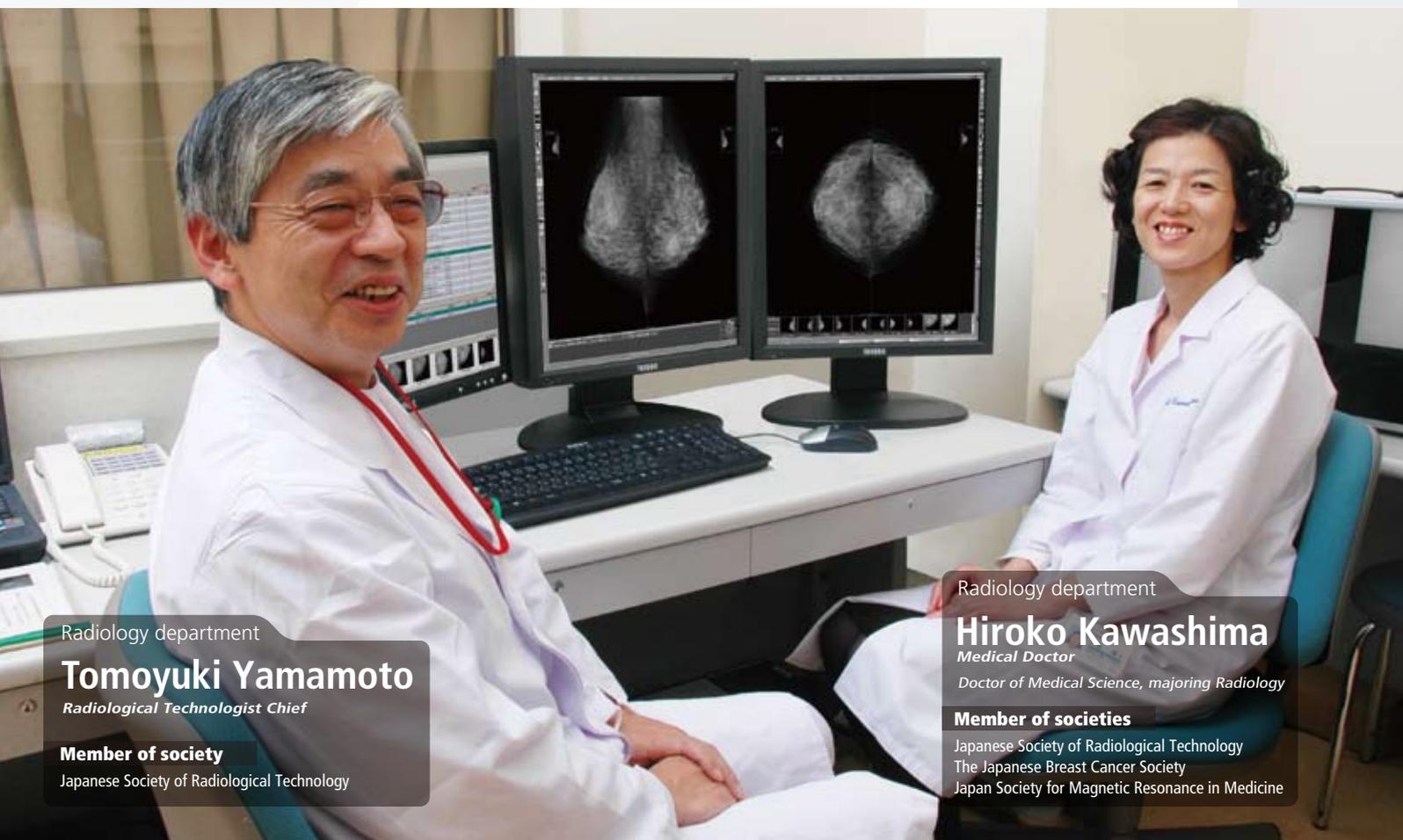
TOTOKU

Case study

Kanazawa University Hospital



Softcopy diagnostic with 15MsP super-high resolution displays



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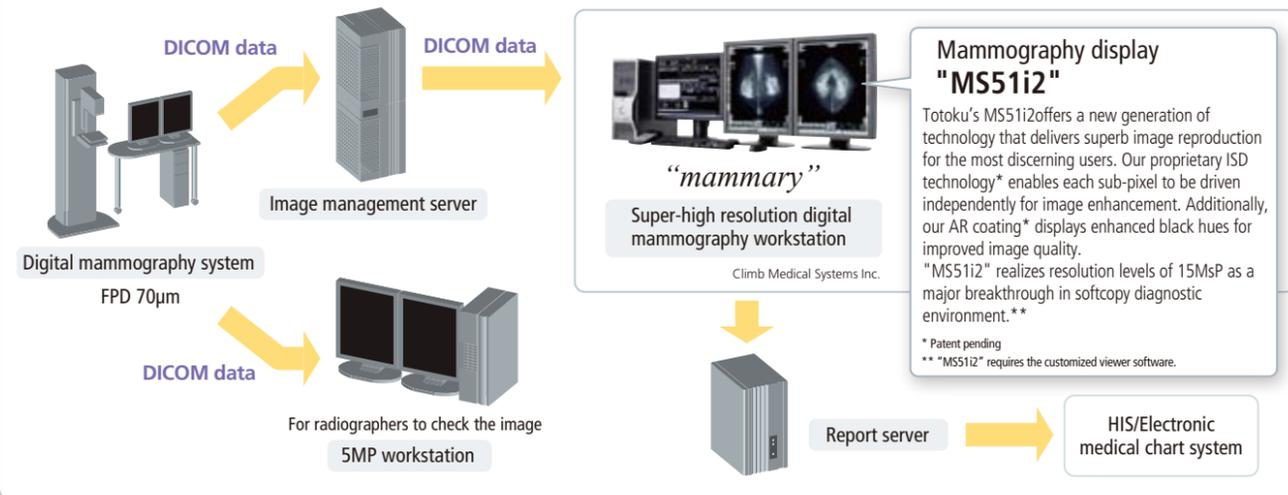
The Japanese Breast Cancer Society

Japan Society for Magnetic Resonance in Medicine

Since Kanazawa University Hospital introduced softcopy diagnostic environment in 2005, the filmless diagnosis has reliably reduced workload. Additionally, in July 2008, Kanazawa University Hospital installed 15MsP super-high resolution workstations for mammography equipped with the ISD technology.

Mr. Yamamoto (RT) and Dr. Kawashima (MED) answered our questions on the devices.

Kanazawa University Hospital, Super-high resolution digital mammography imaging system



Background

Development of medical treatment is a key role of university hospitals.

Please tell us about the current FPD mammography system.

Dr. Kawashima (MED)

With early FPD digital images, contrast of the mammary gland was painfully low and lesions were not enhanced adequately enough for them to be viewed clearly. The monitor manufacturer made numerous improvements, and now, we are satisfied with the image quality.

Please tell us how you have decided to deploy the super-high resolution digital mammography workstation into your facility.

Mr. Yamamoto (RT)

The development and improvement such as new treatment methods and new medical devices are important roles for university hospitals. The budget is limited, but as Dr. Kawashima said, working closely with the manufacturer is very important for further improvement.

I am very familiar with the 15MsP mammography imaging system developed by Dr. Ichikawa in our university and I am also familiar with the manufacturer, TOTOKU. I also knew its mechanism and its image improvement effects through the academic thesis and the exhibition. Subsequently we introduced it to our University Hospital for the purpose of image quality improvement.

Was there any concern in introducing the ISD technology since it was the world's first technology of its kind?

Mr. Yamamoto

Not really. As Dr. Kawashima already evaluated the image quality of the 15MsP system and I wanted to install the system to improve image quality for our Radiologists.

Change from 5MP to 15MsP

"Cooperation between the manufacturers was integral for our success."

You have installed the 15MsP super-high resolution mammography workstation from Climb Medical Systems Inc., and it was integrated with your current image

management system from a different manufacturer. Please tell us about the current conditions.

Mr. Yamamoto

We completed the digitalization of our department after the construction of our new central building. Subsequently, we deployed a filmless environment quickly and efficiently with help from other departments. Overall, it was a positive change that we executed fairly flawlessly. Softcopy diagnostics has introduced substantial improvements to our hospital as we predicted. Most of the old devices for film diagnosis environment have been removed, and now, we have enough space to work comfortably. We really don't want to go back to the old environment.

Was there any concern with deploying the super-high resolution mammography workstation?

Dr. Kawashima

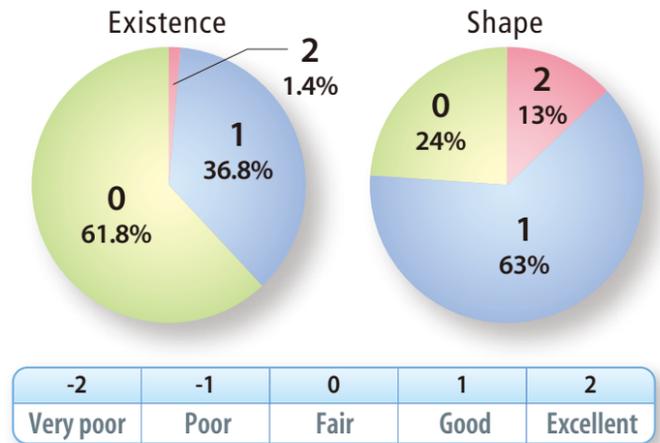
Initially, we were using 5MP workstations that were manufactured by the same OEM as our Picture Archiving and Communications Systems (PACS). We were concerned that by installing the new Totoku Display System, we would have compatibility

Result of clinical image comparison between 15MsP & 5MP monitors

15MsP 15Mega sub-pixel 5MP 5Mega pixel

The following 5-point scale was used to determine effectiveness of the two LCDs (15MsP and 5MP) when physicians analyzed the existence and shape of micro-calcifications.

The 15MsP LCD received higher marks in approximately 38% of the cases in the "existence" evaluation, and 76% in the "shape" evaluation. It was indicated that the 15MsP LCD would be highly advantageous in softcopy diagnostic environment.



Target images : A total of 100 MLO (medio-lateral oblique) view images of 50 cases containing micro calcifications
Evaluator : 5 doctors and 5 radiologists who are grade-A qualified by The Central Committee on Quality Control of Mammographic Screening

All the information and data provided here were extracted from the findings of the study presented at The 17th Meeting of the Japanese Association of Breast Cancer Screening by Dr. Hiroko Kawashima and other doctors of Radiological department, Kanazawa University Hospital, and Dr. Katsuhiko Ichikawa of Division of Health Sciences, Kanazawa University Graduate School of Medical Science.

issues between the new displays and our existing PACS. That wasn't the case at all. The new 15MsP display system perfectly integrated with our existing PACS.

Mr. Yamamoto

As Dr. Kawashima said, we have introduced Climb Medicals' workstation only for mammography, and was attached to our current system which was manufactured by a different OEM. The DICOM standard made integration easy. However, when you have multiple vendors involved it has the potential to be difficult, and it wasn't.

Dr. Kawashima

As a result, the change was made successfully without any major setbacks and the system continues to operate properly.

Please tell us about your current mammography system using the 15MsP display. (Refer to the figure in the previous page)

Mr. Yamamoto

The image taken by the digital mammography system is transferred to the image server to be stored. To interpret the stored image, the image is called up on the 15MsP diagnostic workstation. Then the diagnostic report is

transferred to our information server through the report server. Also, radiographers use the old 5MP workstation to check the image. Both the workstation and the image management station receive the same image.

Advantages of super high-resolution display

"We fully expected the image quality would be improved with the 15MsP."

This 15MsP display equipped with the ISD technology achieves three-times the resolution of today's most powerful display. Please share with us what you saw and experienced with the 15MsP

Dr. Kawashima

Although I didn't see significant difference between the 15MsP and the conventional 5M displays as the resolution difference between respective displays represents, the image quality was dramatically improved with the 15MsP. I believe the 15MsP display will make it easier to find micro-calcifications without panning and zooming. This is a

value to me since it saves time. It is my professional opinion that there is still a significant difference between the 15MsP and 5M displays because the 15MsP display has the advantage of fully utilizing information included in the digital image that the 5MP display does not.

Advantages of super high-resolution display

"In addition to the digital advantages, disadvantages against films are improving."

The special AR coating of the 15MsP display offers improved properties of noise, focus, and contrast, achieving film-like black.

Dr. Kawashima

It has taken a very long time for digital imaging to catch up with the quality of film. Totoku's ISD technology has brought us that much closer for confident softcopy reads. As previously mentioned, image quality can reach optimal levels when not only the display, but also the entire PACS system is also upgraded.

Kanazawa University Hospital

The central hospital of Hokuriku Medical District has 150 years of history and tradition that started when the Kaga Domain established the Vaccination Center in Kanazawa Hidoso in 1862. It's based on a basic philosophy of fostering medical care for people with a rich sense of humanity as well as providing the finest medical care.

1,485 staff members (71 teachers of graduate school of medicine doubling as university hospital and others)
385 doctors, 173 medical engineers, 775 nurses, 136 administrative staff
832 beds, 31 diagnostic and treatment departments



Case study

Mr. Yamamoto

I agree Dr. Kawashima. In addition to the overall efficiency that digitalization brought us, the image quality is now nearly comparable to film.

Thank you very much. We, as a manufacturer, are very glad to hear that. Considering the increase in image data, what is your opinion about the display speed of the 15MsP display?

Dr. Kawashima

Display speed has significantly improved. For example, it took much longer for the old workstations to display two different images on one screen at the same time. However, because of hardware and software improvement the display speed is much faster on the 15MsP display. Subsequently, it takes less time to interpret images. The amount of time it frees up is immeasurable and positive for increased workflow.

Advantages of super high-resolution displays

"Panning and zooming to find micro-calcifications can be intense and stressful. Totoku's 15MsP display alleviates that stress."

How exactly are you interpreting the image?

Dr. Kawashima

Basically, I use two displays, dividing the two screens lengthwise to display four images. When I first open an image, I prefer to display it a bit smaller than fit-screen.

Prior to having the 15MsP, I had to display the image at the same pixel size to detect small micro calcifications. Now with my new 15MsP, most of the micro-calcifications can be detected on the initial screen.

Furthermore, in instances where the modality captured a poor images, we can still detect the micro-calcifications without zooming.

General speaking, would you say that our 15MsP system has exceeded your expectations?

Dr. Kawashima

Yes, I think so. Actually, I have no complaints.

Do you use the Zoom function at all with the 15MsP?

Dr. Kawashima

I zoom up the image later after all, but it is good that we are free from the stress that we have to magnify the image to find micro calcifications. I don't use the zoom function of viewer software application as I always lose where I'm viewing. In order to see the detailed image, I magnify the entire image and slide it to look at the entire image. This is much faster and makes fewer errors by virtue of oversight in my opinion.

You mean that you display MLO/CC images on divided four screens using two displays, and then use the pan function to look at the image displayed on the divided screen. We think that it is perfect for the 15MsP display because it has less image degradation.

Dr. Kawashima

Oh, I see. That's right.

Future issues

"It is important to pursue the further improvement and introduce the new technology. I hope manufacturers can work more closely in a standardized way."

Dr. Kawashima

As I said before, at first, we were unable to obtain the high quality image when we just introduced FPD. However, as we work with the manufacturer, improvements have been made. Of course, we believe there is always room for improvement. It is important to continue development of new technology.

Mr. Yamamoto

Digitalization has been deployed in most of the major facilities with success. Seamless integration among hardware and software systems is critical for that success. It is my hope that manufacturers work together to remove the barriers and strive for standardization.

Thank you very much for your time.



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