

Will Remote Image Diagnosis on the iPad Pro reform work for Radiologists?

Irimoto Medical | Masahiro Irimoto

Irimoto Medical Co. Ltd. would like to share their Initial experience with the Remote Image Diagnosis System, which was newly introduced to Japan this year in April.

Use of NOTE PC in the Remote Image Diagnosis System Terminal

Firstly, this is about the Remote Image Diagnosis System Terminal where the "Rad@" system (developed by a manufacturer from Taiwan called EBM Technologies) is used. Rad@ is software that can display an image viewer operating on a Windows PC or NOTE PC, on the iPad Pro in DICOM part 14 gradation at maximum 3M size.

This is a system where a Windows 10 Note PC (NEC Lavie 13.3 inch, Core i7) and 12.9 inch iPad Pro are connected and the application is installed on the Note PC. A dongle is connected to the HDMI terminal for processing. The system can be set by downloading a special application from the Apple store on the iPad. (Figure 1a & 1b, Figure 2).

This system can be carried in the Software Case that is used for the Note PC, it has a 12.9 inch two dimensional structure model weighting 2.5 kilos including the PC, and a one dimensional

structure model weighting 1.6 kilos. Both are easy to carry. It can be carried in a Business Bag. (Figure 3), the one dimensional model can be carried along with ease for a one day business trip even though you are carrying a change of clothes in a bag.

Though the writer carries out Remote Image Diagnosis in the office, generally he does not use it outside the office.

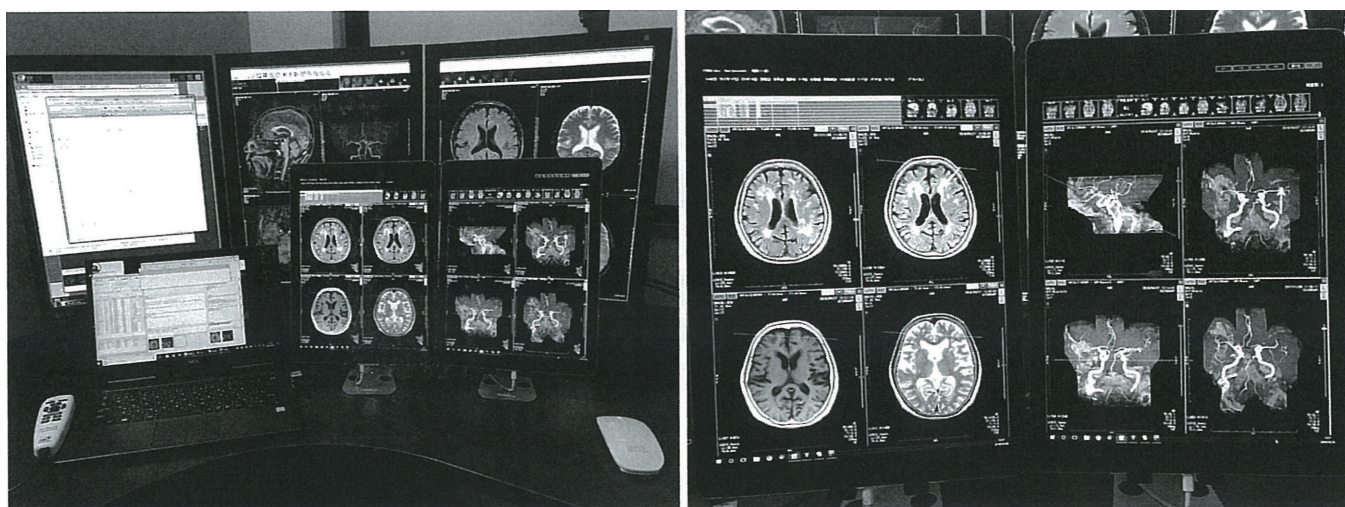


Figure 1a On the front side is the remote image diagnosis system on a 12.9 inch iPad Pro using Rad@ software. The image is displayed on a two dimensional iPad Pro on the Right side and a report is created on the Note PC on the Left hand side. On the back side is the remote image diagnosis system on a conventional 21 inch monitor used for medical purposes.

1b You get accustomed to the smaller image immediately. Since it is displayed in 2M or 3M DICOM gradation, remote image diagnosis can be performed easily with good image quality.

In case of an emergency, the Note PC can be connected to a remote image diagnosis system from the office and can be carried. Though it can be used only for urgent image verification, regular remote diagnosis reports cannot be created.

We have seen people using this system conveniently in the hotel where we stayed for the 77th Annual meeting of the Japan Radiological Society in Yokohama using both demo and tests in combination.

They set up this system in a few minutes by placing it on the table of the hotel. (Figure 4).

The appearance of the screen is similar to a remote image diagnosis terminal from the Radiology room at the office. The Right side

two dimensional screens are high precision screens and 2 x 2 images can be displayed. Nowadays, we perform remote image diagnosis on an XTREC-Lucid connecting it to the eSite healthcare system used for usual remote image diagnosis in our company.

Though the screen is smaller than the usual 21 inch monitor, we got accustomed to it immediately. It is similar to the remote image diagnosis terminal from the Radiology room of the office and since the report screen appears on the Note PC placed on the Left hand side, remote image diagnosis can be done comfortably in the same way as it is done in the radiology room without any obstruction to the image viewer. It is advisable to carry a one dimensional system for

usual business travel and since it is CT, it becomes easy to perform remote image diagnosis.

Further, recently we have seen the combination of this system with one more new system. Usually, I use AmiVoice, which is a Speech understanding system for remote image diagnosis report writing. However, if we perform remote image diagnosis with a system using this iPad, we need to carry a mic system. Recently the MLx system, which uses the iPhone as a mic, was released by Advanced Media Inc. of AmiVoice.

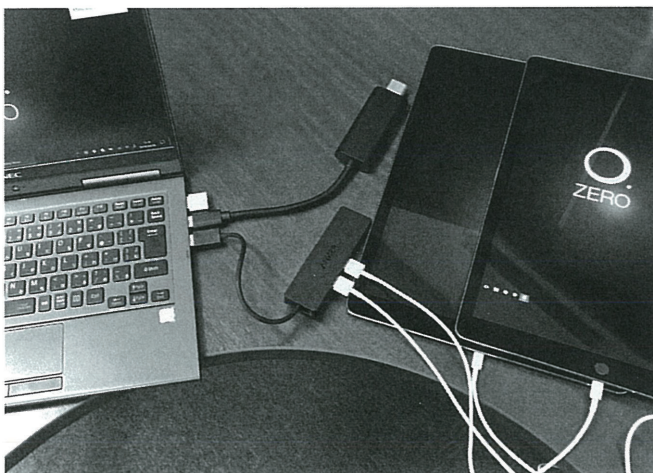


Figure 2 Connection from Note PC port to iPad

We need a Dongle that connects each iPad's HDMI terminal. In case of a two dimensional system and in case of being short of HDMI terminals, we connect by fitting the Adapter to the USB port. Setup can be concluded by connecting the Lightning Cable of the iPad Pro to the USB port.



Figure 3 You can also place it easily in a Business bag and carry it with you.

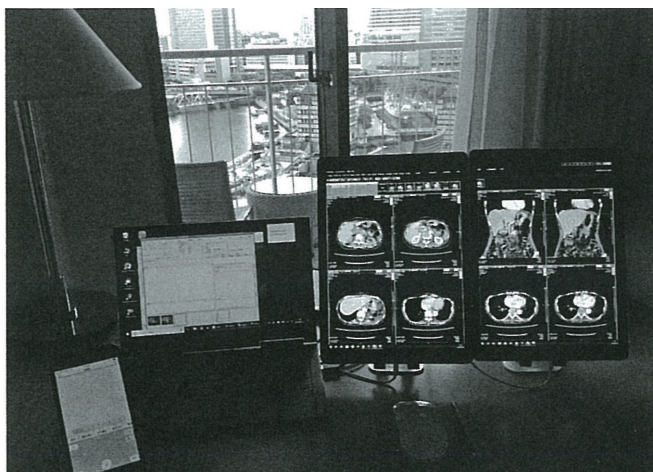


Figure 4 Entire set up in the Yokohama hotel, which we visited at the time of the Annual meeting of the Japan Radiological Society.

On the left side there is an iPhone7 plus/AmiVoice® MLx used as the AmiVoice® mic.

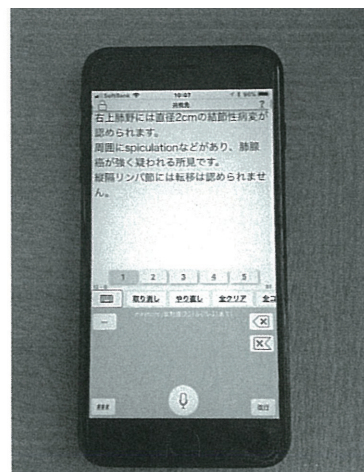


Figure 5 Edit screen of AmiVoice MLx iPhone used as AmiVoice mic

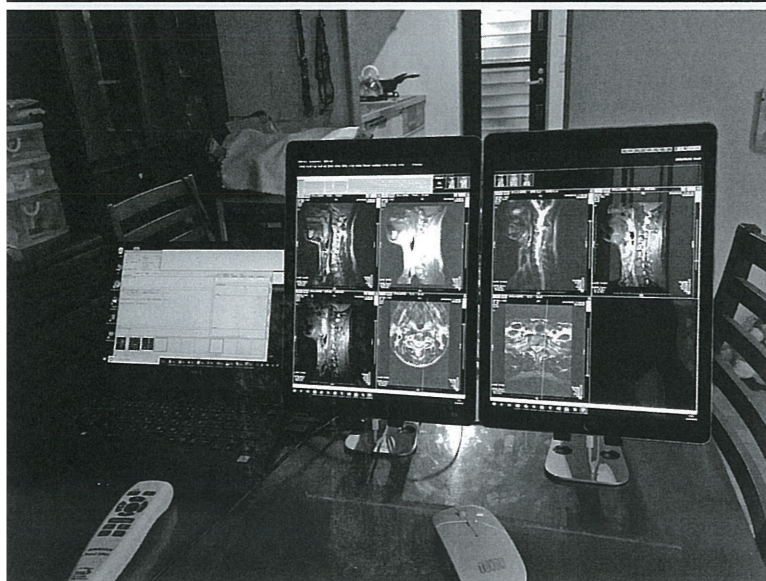
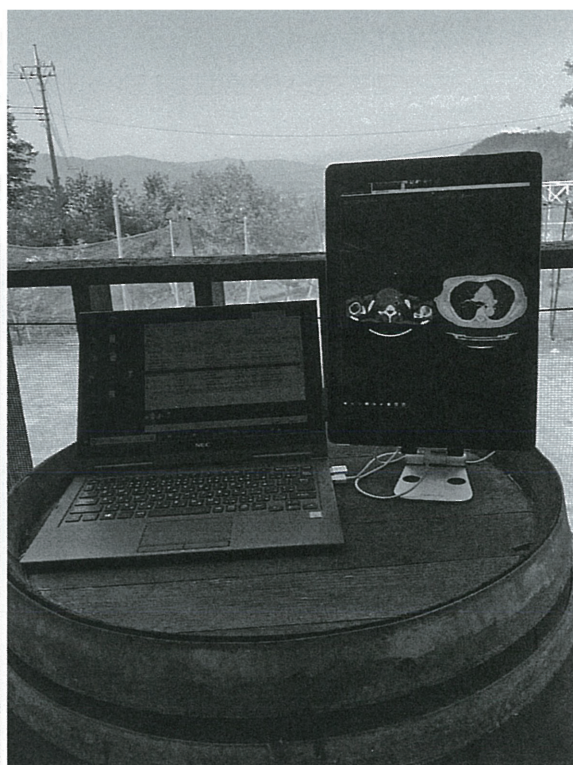
Since the edit screen can be operated by hand, it becomes convenient for Long-sighted users as compared to reading small characters on the Note PC.

The iPhone writer is bigger than the 7 plus, but it is a little difficult to operate the keys with one hand, waiting for the iPhoneX report. It will become easy to use if key operations are improved.

We tried using it on the Cloud version of AmiVoice CLx after installing it. This system can use on the iPhone (at present it is tested on the iPhone 8, X is not tested yet) as the AmiVoice mic. Moreover, sentences can be edited on the iPhone (Figure 5) and it becomes possible to transfer it to a PC where the reporting system is developed using Bluetooth. Though it does not operate the same as the radiography room from the office,

reports can be created easily without typing on the keyboard of a PC. Specially, the report screen characters of the recently purchased Note PC are much smaller (at this point, characters cannot be enlarged in Windows function) and it becomes difficult for long sighted users. Since the entire text can be created on the iPhone and it can be transferred to a PC after corrections, it may become easier instead of using the usual mic.

Although, there can be another user who may not be able to handle it adequately, they can use the iPad Pro remote image diagnosis system and AmiVoice CLx/MLx in the various remote image diagnosis scenes in the near future, (Figure 6 a, b, c) and hence it is believed that the remote image diagnosis system of the iPad Pro may reform the work of Radiologists.



a | c
b |

Figure 6 a, b, c Remote image diagnosis system where the iPad Pro is used as a monitor using Rad@ in various scenes.

It is expected that the remote image diagnosis system on the iPad Pro along with AmiVoice CLx/MLx will reform the work of Radiologists.

- a. The one dimensional iPad Pro system used at the Airport lounge. Since it is a one dimensional system and the remote image diagnosis system set up can be set only by connecting the Lightning cable, it becomes easy for urgent remote image diagnosis.
- b. A remote image diagnosis system that can be easily placed on a dining table in our homes and hence setting up, placing or removing the system becomes easy, remote image diagnosis can be carried out easily without any special table for the system. Thus users can comfortably carry out remote image diagnosis sitting anywhere at one's home. In the Figure, a mic placed on the left hand side in the front is a "Option Mic AmiVoice Front SP01" from AmiVoice. This mic is much lighter and smaller than the usual mic manufactured by Philips and hence it is very convenient for female users too.
- c. This system is so convenient and simple to use that remote image diagnosis can be carried out even sitting at a Resort while on holiday. However we do not recommend doing this as it won't be a holiday any longer.

For Inquiries

Rad@ : AIIM JAPAN Co. Ltd. Tel : 03-6273-4035

AmiVoice CLx/MLx : Advanced Media Co. Ltd.

<https://www.advanced-media.co.jp/contact/medical>

Flat panel detector for Mammography “Rose M”

High precision remote image diagnosis monitor software for iPad Pro “Rad@”

AIIM JAPAN | **Makoto Fuabio**

POINT

AIIM JAPAN Co Ltd. (Chiyoda district) presented a Flat panel detector (FPD) “Rose M” with the same size as a Mammography cassette and Software called “Rad@” where the iPad Pro can be used as a high precision remote image diagnosis monitor at the “2018 International Medical Imaging General Exhibition”.

“Rose M” where an Analog Mammography Device is made Digital

Currently, there are many innovations in the Mammography equipment market like the introduction of Full Digital Mammography Equipment, and Analog Mammography Equipment. However, many establishments could not use these updated pieces of equipment due to the introductory cost of Digital Mammography Equipment or the long service life of Analog Mammography equipment. Instead of these they are using CR in Analog Mammography equipment for analysis.

Rose M is new type of Digital product where the currently used Analog Mammography Equipment is made digital without replacing the original product. (Figure 1). Rose M is noteworthy product in all available new digital products. It is Full Digital Equipment that provides good image quality.

Further, since the indirect FPD method used in Rose M is resistant to temperature changes, the Mammography equipment can be made digital without changing the existing Air conditioner and it also contributes to reducing the equipment's introductory cost. Thus, the introduction of a medical checkup Bus that requires 24 hour air conditioning can be done easily now which was considered difficult before.

Now we are receiving surprising comments from establishments who have introduced Rose M in their Medical checkup Bus such as:

“We have digitized our equipment with the use of Rose M very easily”,

“It was very easy to digitize our equipment without disturbing our business flow and even switching over to digital equipment was also smooth”,

“We were able to digitize our equipment without disturbing our regular medical checkup bus operations.”

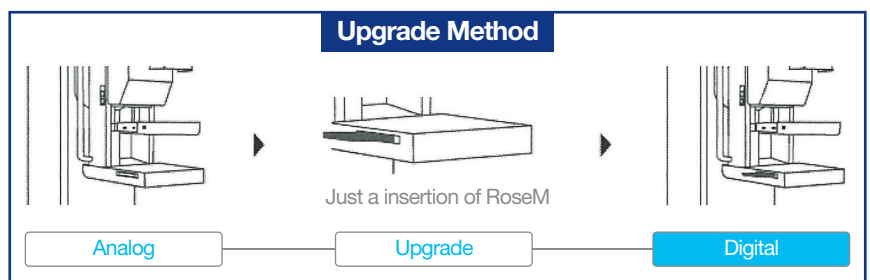
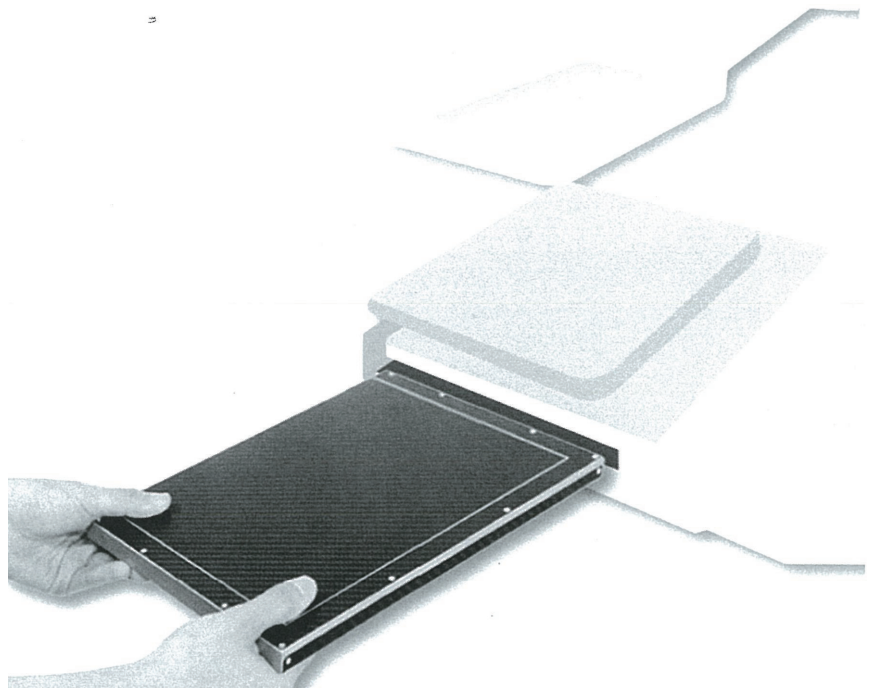


Figure 1 Rose M

Moreover, we have received the following remarks from Radiology technicians who have used Rose M.

- Cycle time was reduced
(CR takes more than 4 minutes for testing whereas Rose M takes only 2 minutes.)
- Rose M gives high image quality.
- It reduces the time between testing and image verification.
- It reduces patient's waiting time
- Simple and easy operation method
- Since the panel's weight is less than 1kg, even Female users can carry it easily.
- Since existing Mammography equipment is only used in an efficient way, the introduction cost is also cut down.

Thus, Rose M is a new Mammography Digital Solution where problems such as “Want to

make Equipment digitized at low cost” “Cassette conversion time should be reduced” “Image quality should be improved” “There is problem in Analog equipment updates” are understood well.

“Rose M” where an Analog Mammography Device is made Digital

Rad@ is software where a 5.6M pixel resolution, 12.9 inch iPad Pro displays data that can be proofread and it has a high precision display of 5M, 3M, 2M with DICOM Part 14, and gray scale harmony. Thus with the help of Rad@, it is possible to use the iPad Pro as a high precision remote image diagnosis monitor. (Figure 2).

It can operate on all types of image viewers that run on Windows PC, two iPad Pros can be connected at one PC which provides the same image quality as high precision monitors.

The operation method of Rad@ is very easy and applications can be installed on PCs and iPad Pros, whereas a Monitor dongle is connected to the PC. The iPad Pro and PC are connected, at the start of the application, the iPad Pro resolution is to be set in the PC.

It can be connected to a medical checkup room PC and can be used as a high precision monitor. Further, it can also be connected to a Note PC and can be used as a remote image diagnosis terminal sitting in remote places or any hotel on a business trip. It is expected to use this application in various settings.



Figure 2 Rad@