WiPics: Wireless and beyond

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A WiPics transmitter allows wireless transfer of images from the camera to the computer as the photos are being shot. This article describes this novel technological approach and its application in orthodontic imaging. (Am J Orthod Dentofacial Orthop 2010;137:147-9)

With instant results becoming the norm, the old adage “time is money” never sounded more true. Innovations that can simplify and organize our increasingly hectic workplaces are valuable. One such modern invention is wireless computer networking technology, or WiFi. How does WiFi blend with digital cameras? A wireless digital camera allows you to connect to a network without using cables. This makes it possible to download and save photos directly to a computer as you shoot them, or even connect to a cellular network and share photos, just as you would with a camera phone.1

Migrating to a wireless camera is not just a matter of spending money on new equipment; only a handful of wireless cameras are available. One cannot sacrifice the need for essential features—e.g., a macro lens—for the sake of freedom from wires. It is more rational to use a wireless transmitter that is compatible with your existing image acquisition armamentarium. This objective is well accomplished by using a WiPics transmitter (WiPics, United Imaging Solutions, Medina, NY). Other wireless image transmitters are also available, including models by Canon and Nikon, but they are compatible with only specific camera models from the same manufacturer.

The WiPics transmitter was the brainchild of Dave Rea, a student at Rochester Institute of Technology, Rochester, New York; he devised it as part of his thesis project in 2003.2 It consists of a dummy compact flash card (camera interface card) connected to a belt-mounted unit (Fig 1). The belt-mounted unit has additional slots for a conventional memory card and a hard disk drive. The dummy flash card is inserted directly into the memory slot of the camera, which directs the shot images to the belt-mounted unit. The images are then saved on the memory card or the hard drive, or transmitted wirelessly to a computer via 802.11 g or its Ethernet port.3 For different configuration possibilities of WiPics, see the Table.

Any digital camera that can accept type II compact flash cards will work with the WiPics transmitter. However, to best use the hard drive option, the camera should have FAT32 (a type of computer file system architecture: file allocation table) support. Otherwise, you will not be able to access all of the available hard-drive capacity.4

The WiPics transmitter easily configures with existing or new wireless networks. Two configurations are possible: (1) via the small liquid crystal display on its top plate and (2) via an integrated web server. When the integrated web server is used, the transmitter is connected to the user's network (usually via Ethernet), and settings can be dialed in by the agency of commonly used web browsers such as Internet Explorer and Mozilla Firefox. Alternately, products such as Image Transfer Protocol, a software program (Pixagent Workflow Systems, Kleinburg, Ontario, Canada), can dial in these settings automatically.5

Fig 1. The WiPics transmitter: 1, digital camera; 2, WiPics belt-mounted unit; 3, camera interface card or dummy card (reproduced with permission from United Imaging Solutions, Medina, NY).
Table. Configuration possibilities of WiPics

<table>
<thead>
<tr>
<th>WiPics configuration type</th>
<th>Components</th>
<th>Function</th>
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<tbody>
<tr>
<td>1. WiPics base unit</td>
<td>2 flash card slots, maximum 64 MB compatible</td>
<td>Flash card 1, storage of original camera file; Flash card 2, storage of data associated file*</td>
</tr>
<tr>
<td>2. WiPics with hard drive</td>
<td>1 hard disk drive, 20 GB, partitioned into 2 drives of 10 GB each</td>
<td>Drive 1, storage of original camera file; Drive 2, storage of data associated file*</td>
</tr>
<tr>
<td>3. WiPics with bar-code scanner</td>
<td>Same as base unit and integrated bar-code scanner</td>
<td>Both flash card slots used to enable data association*</td>
</tr>
<tr>
<td>4. WiPics with bar-code scanner and hard drive</td>
<td>Same as WiPics with hard drive and integrated bar-code scanner</td>
<td>Data association enabled by partitioning the hard drive into 2 drives of 10 GB each</td>
</tr>
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</table>

*Data association means enabling the association of the data from the bar-code scan so that the images are renamed automatically and meaningfully. In the first 2 configurations, an external bar-code scanner must be used; in the WiPics with bar-code scanner, the scanner is built into the base unit.

The power supply to the belt-mounted unit is through a lithium ion rechargeable battery that has power backup of up to 5 hours. The unit can also be run on a 110 to 240 v wall power adapter provided with the unit; it also acts as a charger for the battery. Because the WiPics does not derive power from the camera, there is no deterioration of camera function.

WiPics has the following advantages: (1) images can be sent securely and wirelessly; (2) time is saved; (3) there are no issues with “memory card full” messages; (4) there are no risks of photograph being deleted, formatted, or lost from the memory card; (5) it has live image review and analysis capability: real-time visualization of the images on a larger computer screen for blemishes that cannot be seen on the smaller camera display unit; (6) it can back up images at the time of capture; and (7) it has a batch-renaming feature: it can scan unique bar codes to identify your images and rename them accordingly.3

Batch renaming allows you to change cryptic file names generated by the camera into a more legible format in a simple and transparent manner. You can scan a bar code containing information about the patient, such as name and stage of the photographs. The images after a bar code scan are renamed automatically according to the bar code guideline (called “preshot data association”). The images are stored in separate directories generated on the basis of the bar code, thus allowing automatic organization as soon as the images are received by the computer. This makes future searches a matter of few clicks. Patient data association can also be accomplished by performing a bar code scan after a set of images is taken (called “postshot data association”). Also, bar code scanning makes WiPics a candidate for standard DICOM applications.

However, if the wireless network fails, the images are not lost because a backup image is always stored in the compact flash card or additional hard drive in the belt-mounted unit.

Newer developments in wireless image transmission are the Eye-Fi (Mountain View, Calif) secure digital (SD) wireless card and WiPics mobile. Eye-Fi is a wireless-enabled SD card that can be inserted into the memory slot of the camera. It directly transmits images from the camera to the computer via any configured wireless network. It works without additional wires and cables. However, it draws power from the camera and might result in deteriorated camera performance.6 Because the wireless signals are generated from the card inside the camera, the image transfer range is limited.6 And there is no way to automatically rename images according to patient data with a bar code scan.

The WiPics Mobile is a miniaturized version of the WiPics that is being developed now. It will be smaller and faster, mounted under the camera (without a belt mounting), connect to the camera via the USB port, and have even more options to apply data association to all images.

CONCLUSIONS

Armed with wireless technology, digital imaging is breaking new ground. WiPics and other wireless devices can eliminate the step of transferring images from a camera-based storage card to the computer by direct wireless transfer, thus eliminating camera-to-computer tether, such as network cables. With WiPics, you can have more than just wireless, as already discussed. Thus, we can say that this technology strides truly beyond wireless.

Note: We want to clarify that all information mentioned in this article was taken from the websites mentioned in the references. We do not have personal, firsthand experience with any of these devices.

REFERENCES


