SD Association

A New Method of
High Speed P2P File Transfer
using SD Card and TransferJet
Technology

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Conditions for publication

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1. Executive Summary

The size of user generated content such as photos and videos is becoming larger and larger these days due to the increase in the total number of shots taken as well as the advent of super high resolution video formats such as 4K video, using consumer devices such as digital still cameras, camcorders and smartphones.

This global market trend naturally generates a need for high-speed peer-to-peer file transfer without requiring any special knowledge or skills in network configuration, but designed with the ultimate in ease of use.

The iSDIO TransferJet Addendum was developed to address these market requirements by utilizing TransferJet, which is a close proximity, high speed wireless data transfer technology.

TransferJet has various unique properties, including 1) advanced ease of use, 2) physical security, and 3) robust data transmission. More detailed information about the TransferJet Technology can be found at:

http://www.transferjet.org/tj/tj_overview.html

The iSDIO TransferJet Addendum enables the creation of TransferJet-equipped iSDIO cards, which allow data stored in the cards to be transferred to other TransferJet-equipped devices by means of simple, high-level instructions.

This will also dramatically reduce the implementation efforts needed for the iSDIO host devices.

2. Introduction

2.1   Overview

The iSDIO TransferJet card is an intelligent SDIO combo card that incorporates a TransferJet communication module and a flash memory module. Both modules in the card are able to communicate with each other using simple instructions from an iSDIO host. As an example, data recorded in the iSDIO TransferJet card inserted in an SD host device can be sent to another TransferJet enabled device such as a PC, a smartphone, a printer or other iSDIO TransferJet card using the TransferJet communication channel.

2.2   Use Cases

The iSDIO TransferJet card will provide value-added features to SD cards for the following two use cases, 1) OBEX Peer-to-Peer File Transfer, and 2) SCSI Mass Storage Class Drives. Note that OBEX means OBject EXchange, a protocol of data transmission.

2.2.1   OBEX Peer-to-Peer File Transfer

The OBEX Peer-to-Peer File Transfer is a mandatory function within the set of TransferJet protocols.

In this use case, an OBEX Sender card sends file(s) to another OBEX Receiver card. These cards may reside inside a PC, smartphone, network attached storage (NAS), printer or kiosk terminal, where at least one of the two devices is an OBEX Sender or OBEX Receiver.

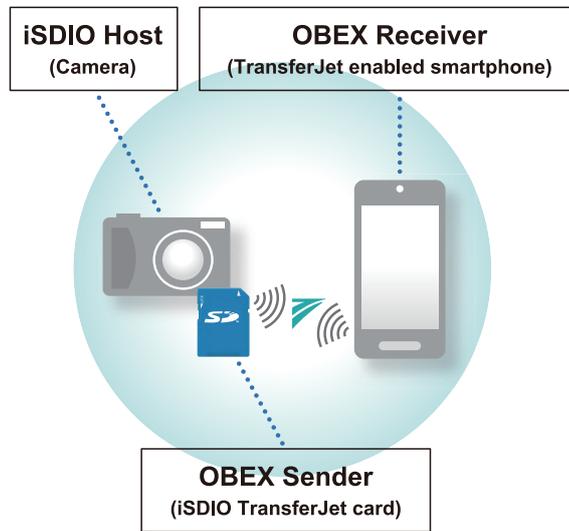Figure 2-1 shows the outline of this use case.

iSDIO Host
(Camera)

OBEX Receiver
(TransferJet enabled smartphone)

OBEX Sender
(iSDIO TransferJet card)

Figure 2-1: OBEX Peer-to-Peer File Transfer

2.2.2   SCSI Mass Storage Class Drive

The SCSI Mass Storage Class Drive is an optional implementation of the TransferJet protocols.
In this case, a SCSI Target card is mounted on the File System of a SCSI Initiator device.
Actual user scenarios will depend on the application of the SCSI Initiator but the SCSI Target card will in general simply behave as an external storage device connected to the SCSI Initiator device.
The SCSI Initiator may be a PC or printer, but is not limited to these devices.
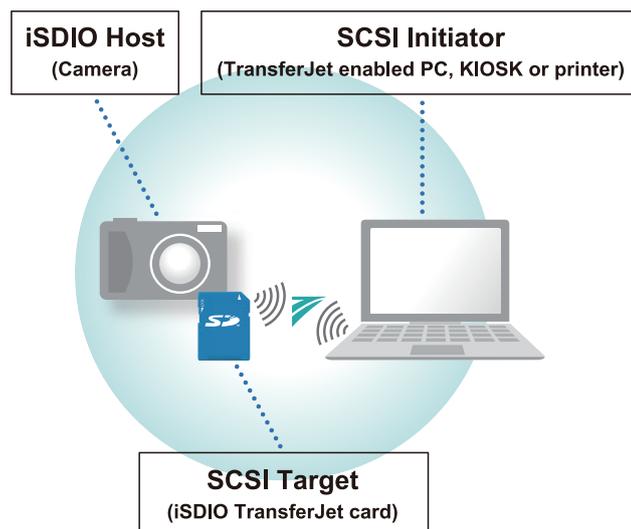
Figure 2-2 shows the outline of this use case.

iSDIO Host
(Camera)

SCSI Initiator
(TransferJet enabled PC, KIOSK or printer)

SCSI Target
(iSDIO TransferJet card)

Figure 2-2: SCSI Mass Storage Class Drive

3.   iSDIO TransferJet System Model and Functions

3.1   iSDIO TransferJet Interface Model

Figure 3-1 shows the "iSDIO TransferJet Card Interface and Network Interface" between a card and host device. The highlighted blocks are defined within the iSDIO TransferJet Addendum.

See also the TransferJet Overview, available at: http://www.transferjet.org/tj/transferjet_overview.pdf
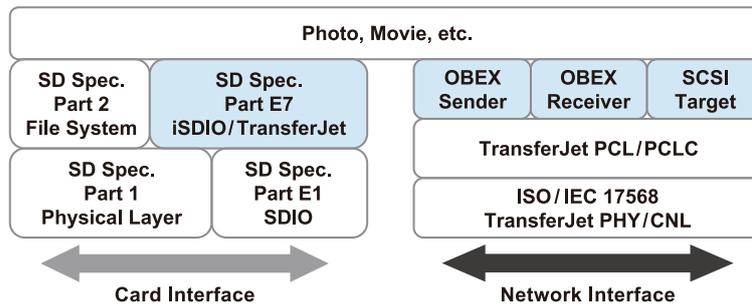

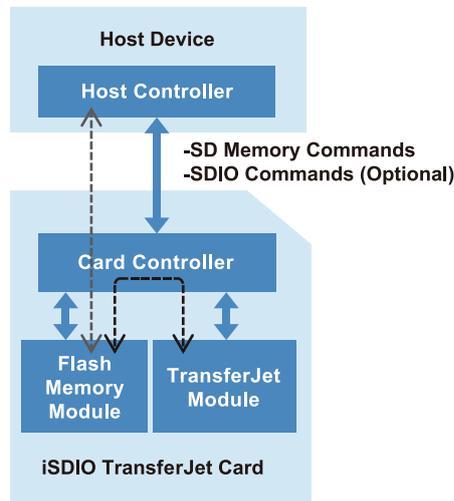*Figure 3-1: iSDIO TransferJet Card Interface and Network Interface*

Figure 3-2: iSDIO TransferJet Card Interface and Card System Model

3.2 Directory and File Structure

The iSDIO TransferJet Addendum defines the directory and file structures necessary to maintain interoperability and data transfer.

Figure 3-3 shows an example of the directory and file structures in the iSDIO TransferJet card.

CONFIG FILE stores certain parameters which may be used when a TransferJet connection or an application is started, if the card provides the CONFIG FILE features.

In the OBEX Peer-to-Peer File Transfer, the OBEX Sender host creates a list of files to be sent to the OBEX Receiver card, and stores the list in the designated directory.

Then the OBEX Sender card will send the FILELIST file followed by data in the file(s) to be sent to the OBEX Receiver card. The FILELIST file may be used by the OBEX Receiver host to calculate/display the transmission progress. The FILELIST file may also be used by the OBEX Sender/Receiver hosts to determine the resume point of disrupted transaction in the event of transmission disruption occurred.
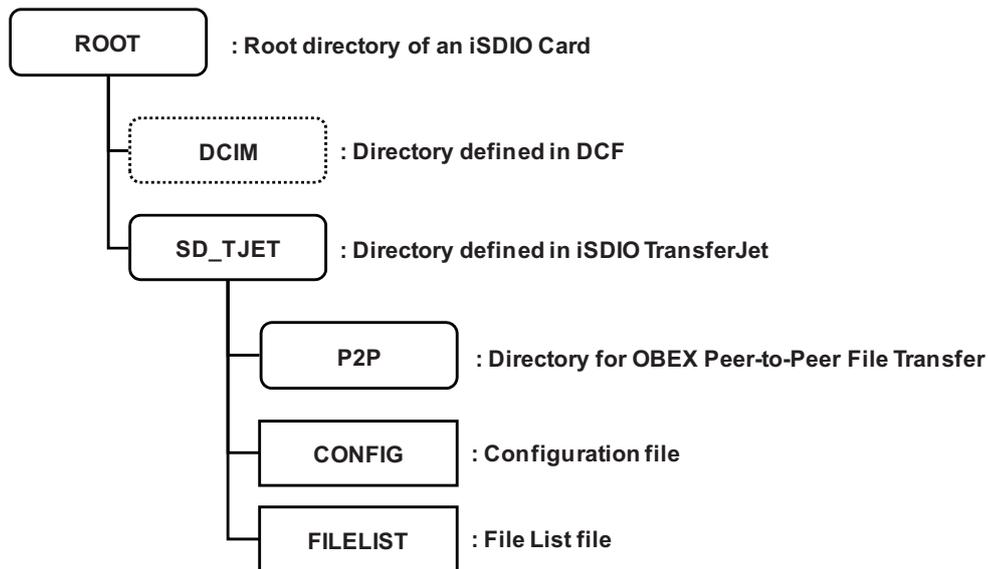
```
ROOT           : Root directory of an iSDIO Card
  │
  ├── DCIM       : Directory defined in DCF
  │
  └── SD_TJET    : Directory defined in iSDIO TransferJet
        │
        ├── P2P        : Directory for OBEX Peer-to-Peer File Transfer
        │
        ├── CONFIG     : Configuration file
        │
        └── FILELIST   : File List file
```

Figure 3-3: Example of Directory and File Structure

4. Conclusion

The iSDIO TransferJet Addendum will provide another option of wireless communication technologies for consumers. The advanced, intuitive ease of use enabled by TransferJet technology will benefit consumers who need high performance yet cannot handle complicated configuration procedures of wireless systems.

It is difficult for any single technology to satisfy all the different market requirements. The iSDIO standard is designed to expand and accommodate new and future market requirements. This TransferJet Addendum will enable the implementation of new usage models and applications based on the iSDIO standard.