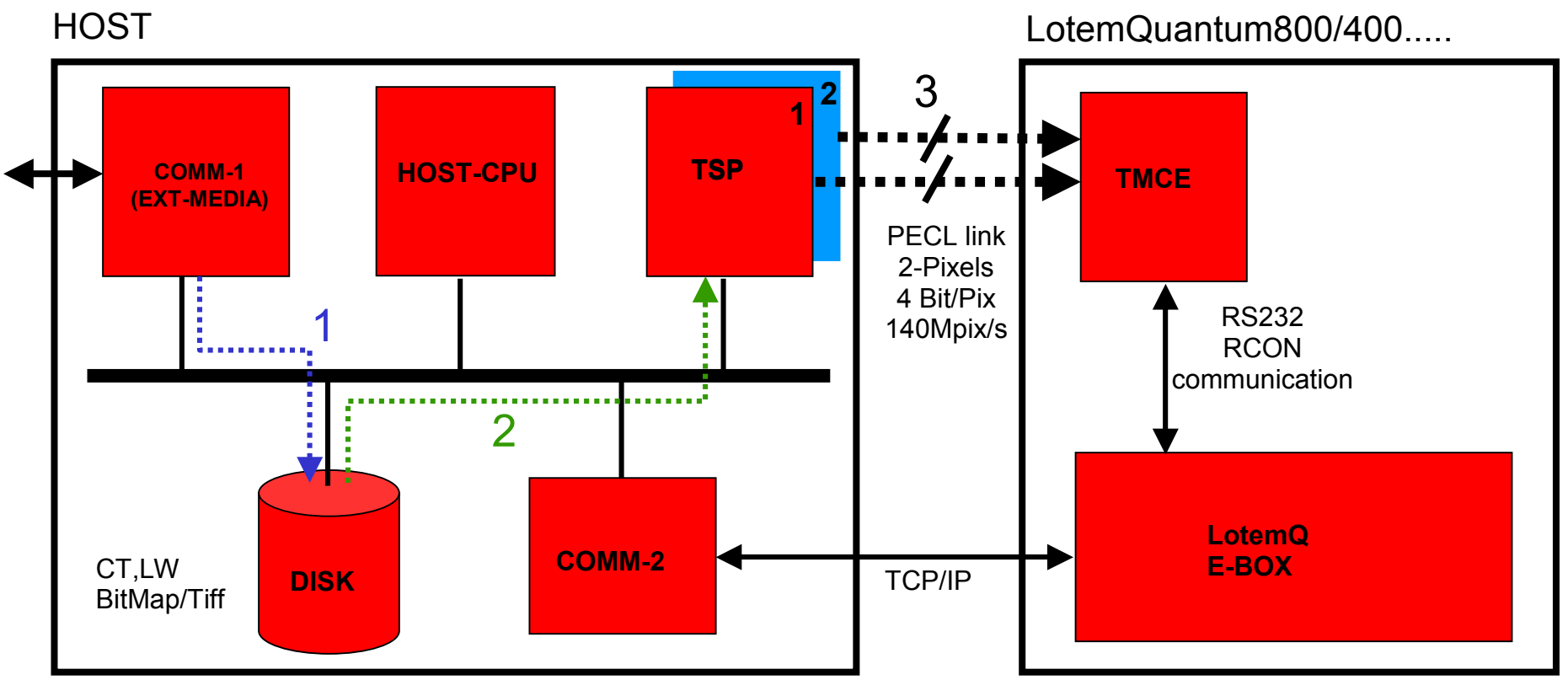
Brisque/TSP <=> Lotem Quantum / TMCE connection

1. System Configuration



1-next exposure

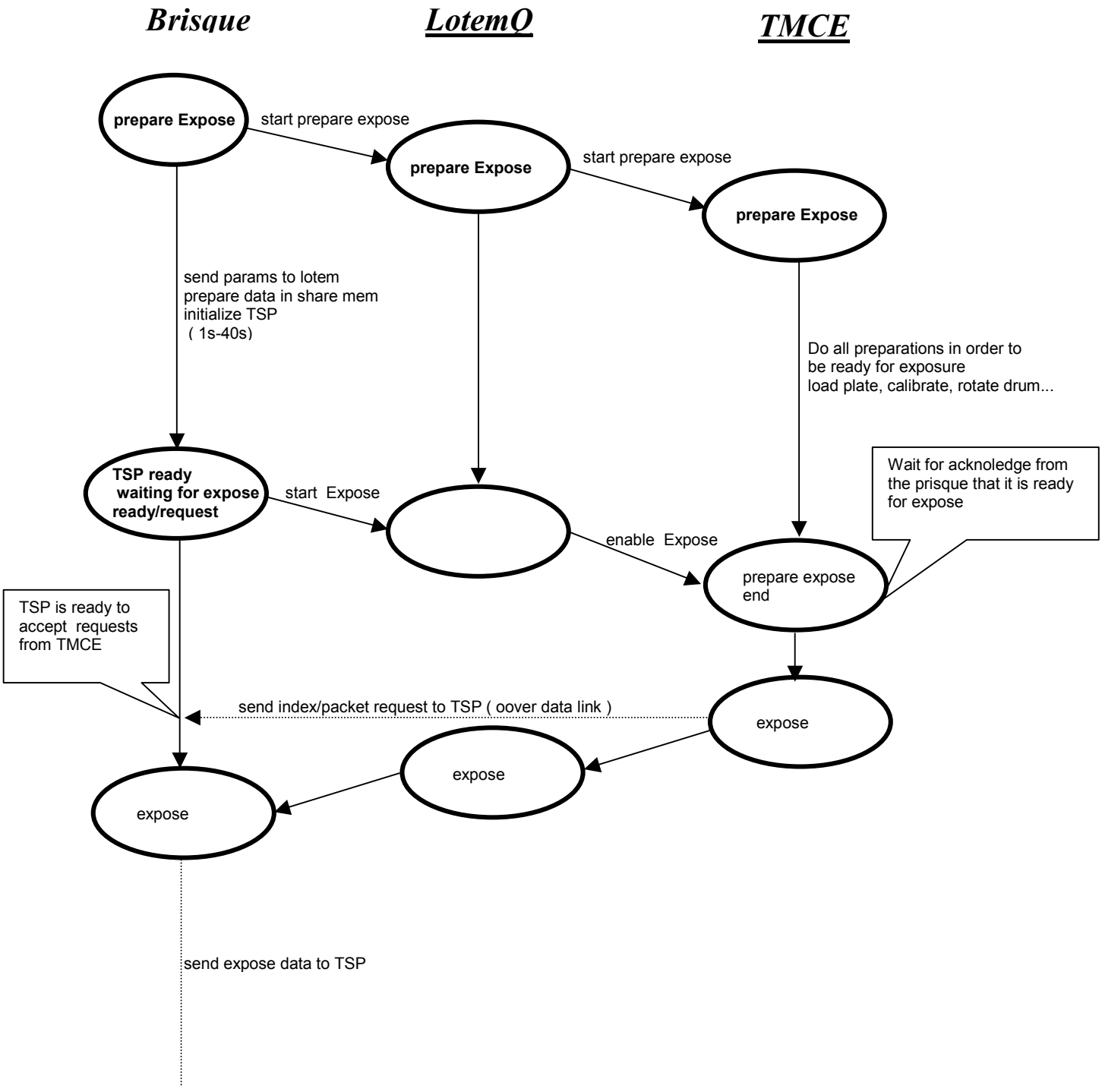
2- current exposure data

3- screened data

2. TMCE<=>TSP protocol

Attached diagram of the protocol between the Brisque and LotemQ (LotemPC+TMCE)
This diagram describes the protocol between the 3 systems.

A job is initiated by the brisque. The brisque sends the device a command to start and prepare the expose. Mean while the brisque itself does the needed preperations. The lotem PC which accepts this command begins his own prepreations and also send to the TMCE command to start and prepare for the exposure. Once all system finished there prepare expose stage they wait for an indication from the brisque to actually start the exposure. Once this sign is on the TMCE starts pulling out data from the TSP one line at a time from each TSP. At the end of exposure (after unloading if needed) all systems go to a state of waiting to the next exposure.


Brisque
LotemQ
TMCE
prepare Expose
start prepare expose
prepare Expose
start prepare expose
prepare Expose
send params to lotem
prepare data in share mem
initialize TSP
(1s-40s)
Do all preparations in order to
be ready for exposure
load plate, calibrate, rotate drum...
TSP ready
waiting for expose
ready/request
start Expose
Wait for acknoledge from
the prisque that it is ready
for expose
enable Expose
prepare expose
end
TSP is ready to
accept requests
from TMCE
send index/packet request to TSP (oover data link)
expose
expose
expose
send expose data to TSP

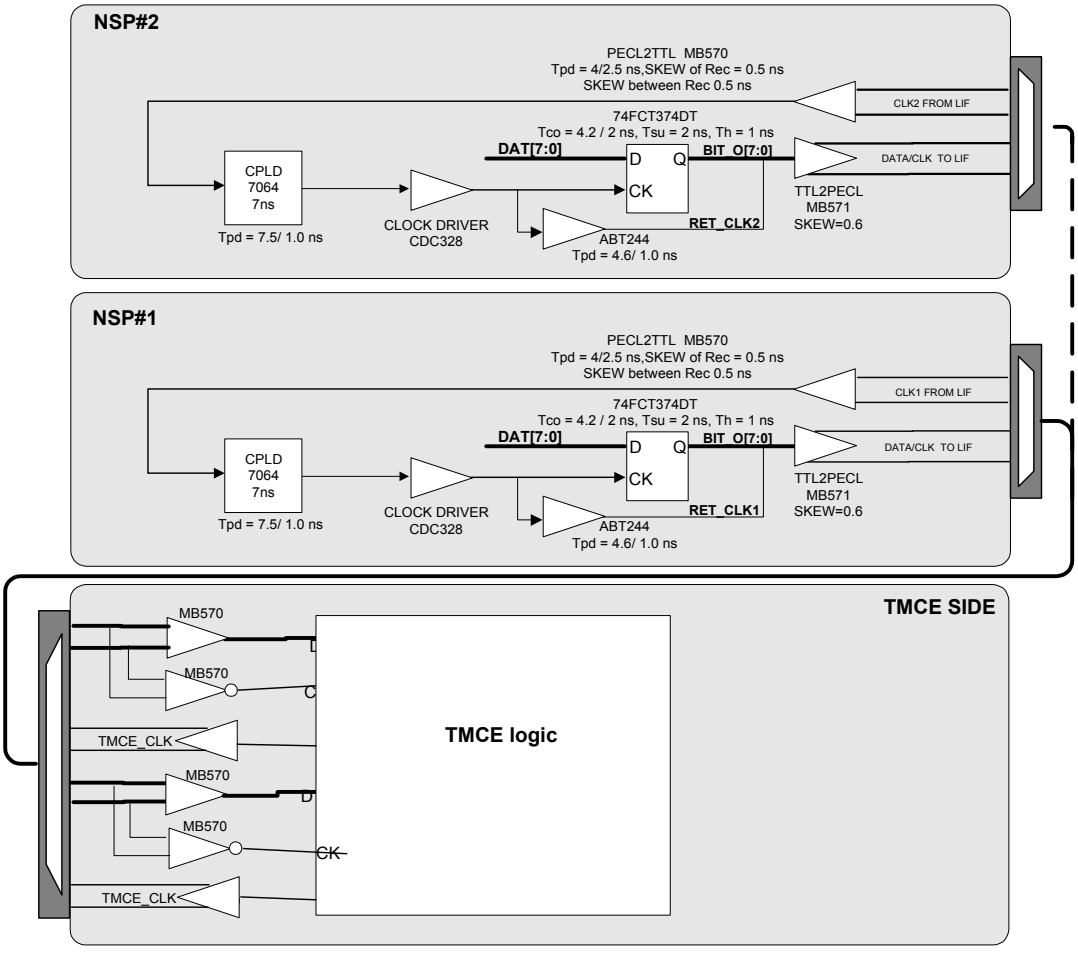
3. H/W handShake TMCE-TSP

The T-MCE is connected to the TSP via the PECL I/F.
The TSP/ T-MCE use differential high speed , PECL, transmitters and receivers (AT&T/FUJI).
On every clock cycle two/four/eight expose pixels are transferred to the T-MCE.
Depends on the working method :

- one bit/pixel => eight pixels/byte => transfer rate 256Mpix/sec
- two pixels/bit => four pixels/byte => transfer rate 128Mpix/sec
- four pixels/bit => two pixels/byte => transfer rate 64Mpix/sec

The clock rate on this interface is 32Mhz.
Since we are working with two TSP in the normal mode and since each TSP currently supports onle 70/100Mpixels/sec both TSP can work in an interleave mode and not in parallel . Hence making the design much simpler on the T-MCE side . each time a different TSP will be sending data to the T-MCE . Working in modes 2bits/pix or 4 bits/pix will cause both TSP to work in parallel .

Configuration



Each word from each TSP is 8 bits.
Transfer rate of 256Mbits/sec.

The T-MCE can not handle a continues data flow on the link from theTSP (internal design). This cause us to transfer data in packets of 512 bit each . It cannot also handle data from two lines simultaneously (odd and even), hence interleave between the TSP is needed.

At the start The TSP's will work in an interleave mode e.g. one line from each TSP at different times. This Way the T-MCE can act as if it was getting information out from the scsi I/F. As long is we work in up to 256Mpixels/sec it is not a problem. Going beyond will cause a problem.
At the beginning of each line the T-MCE will ask the specific TSP 1/2 for new line using **line-request** signal. If there is no line ready the T-MCE will get **ssprl~**. After 10 clocks he will ask again for the line. Each line request is >4 clock width of **index~** signal. When there is a line in the TSP buffer, meaning we did not get **ssprl~** in respond to **line-request**, the T-MCE will ask for packets. A packet is a 512 bits of information packed in 8 bit bytes giving total of 64 bytes. Pulse width of 1- 3 clocks indicates a **packet-request** signal. If the number of pixels in the line does not divide by 512 the TSP will pad the last packet with zero data.

After one of the TSP's has finished transferring his data the T-MCE will ask the second TSP for data. The process will repeat it self until the end of plot. Working in this mode the HOST does not have to send dummy line if the number of lines to be exposed is odd. This is not the situation when working in parallel with both TSP's.