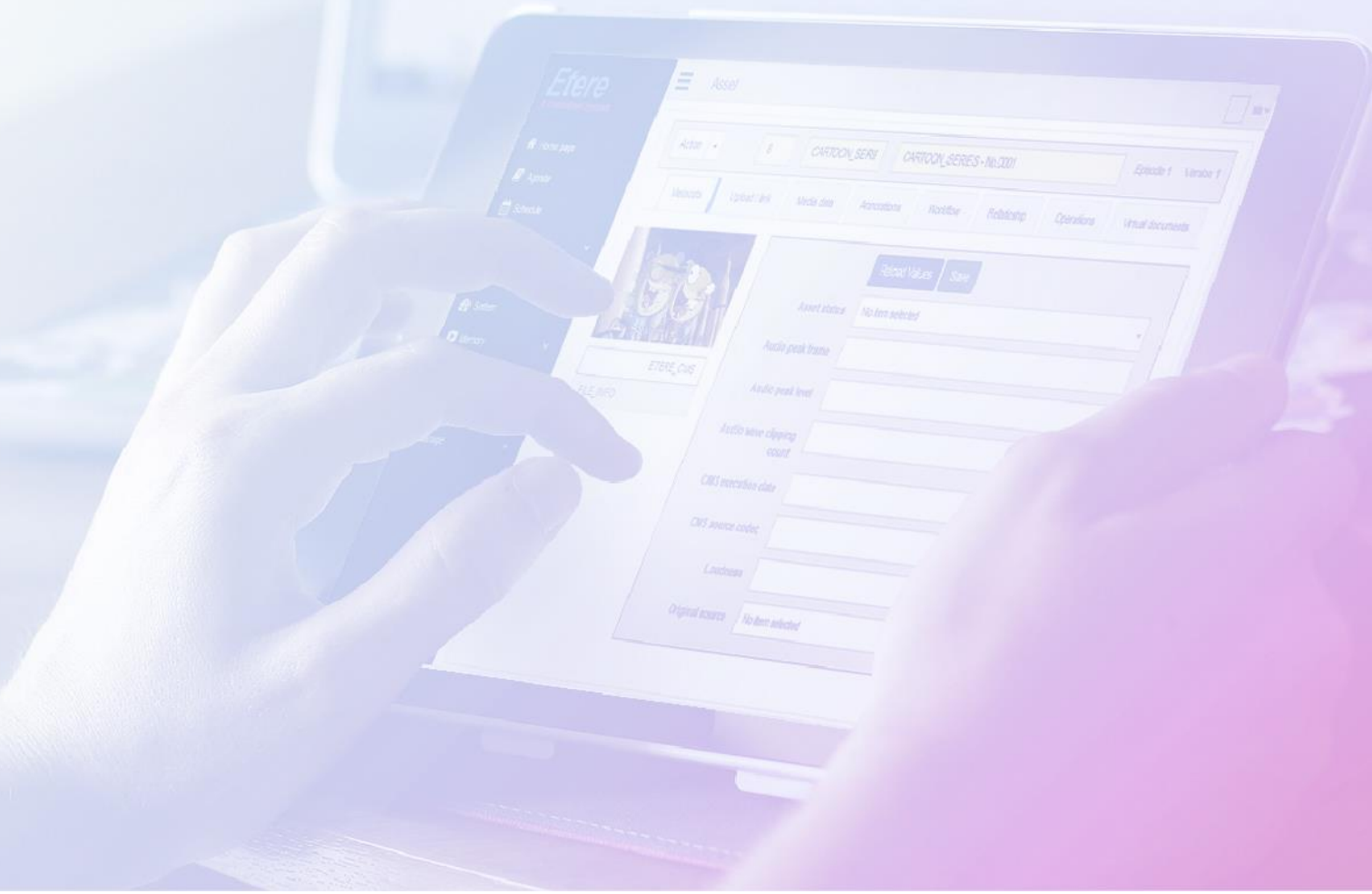


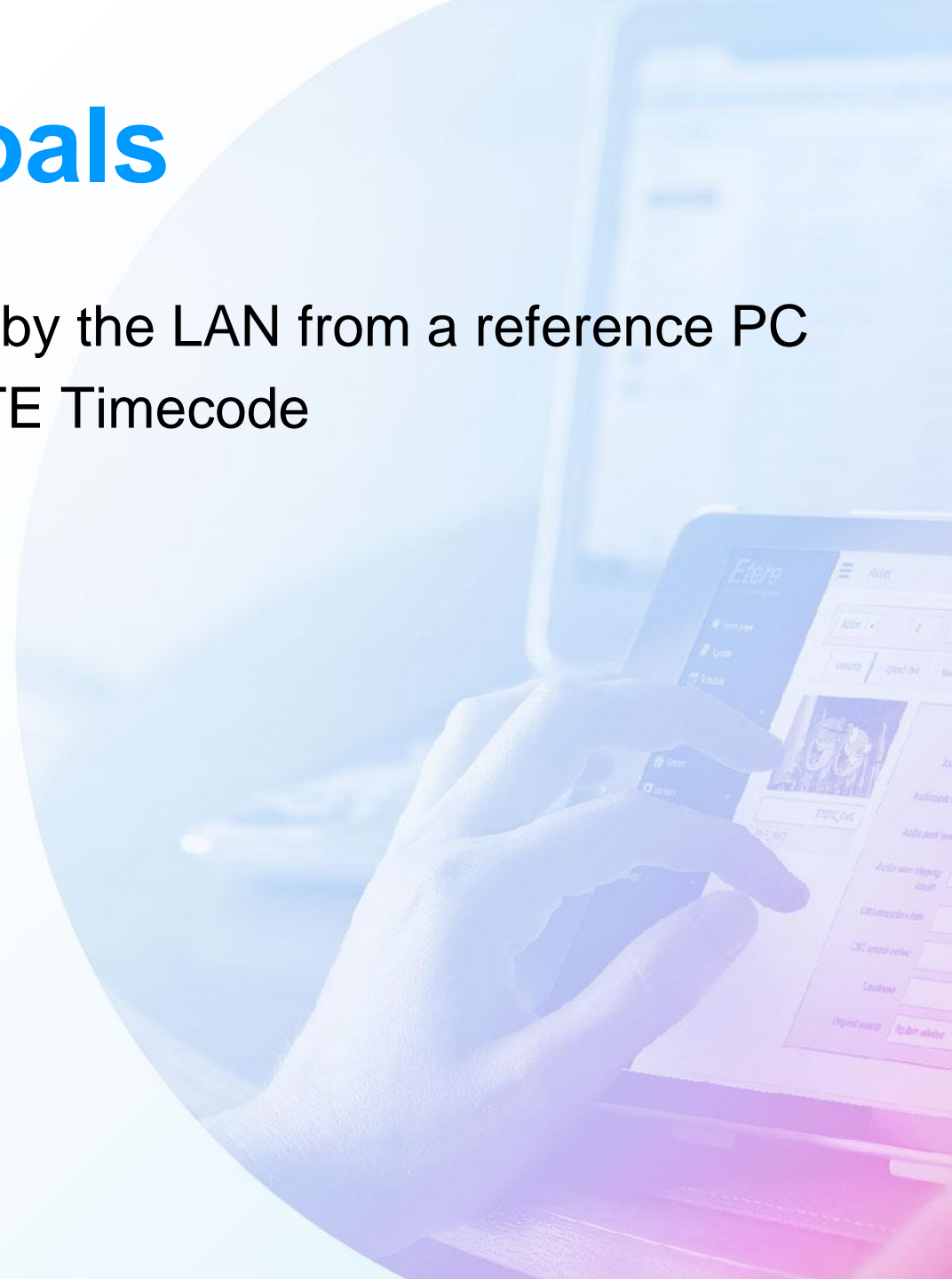
Time Synchronization

Etere Time Flooder &
Time Receiver



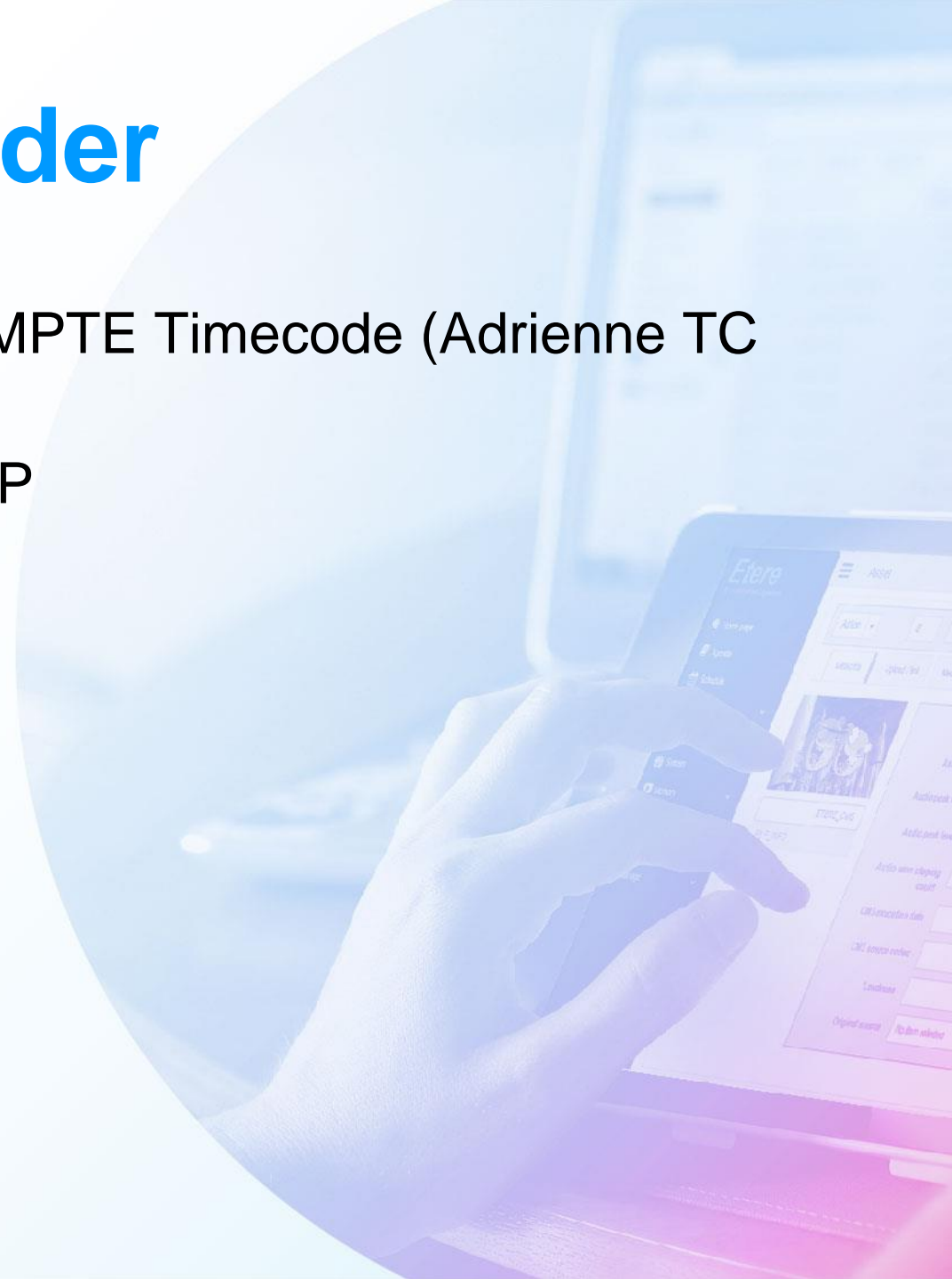
Project Goals

- Synchronize the time of any PC connected by the LAN from a reference PC
- Synchronize the reference PC with a SMPTE Timecode



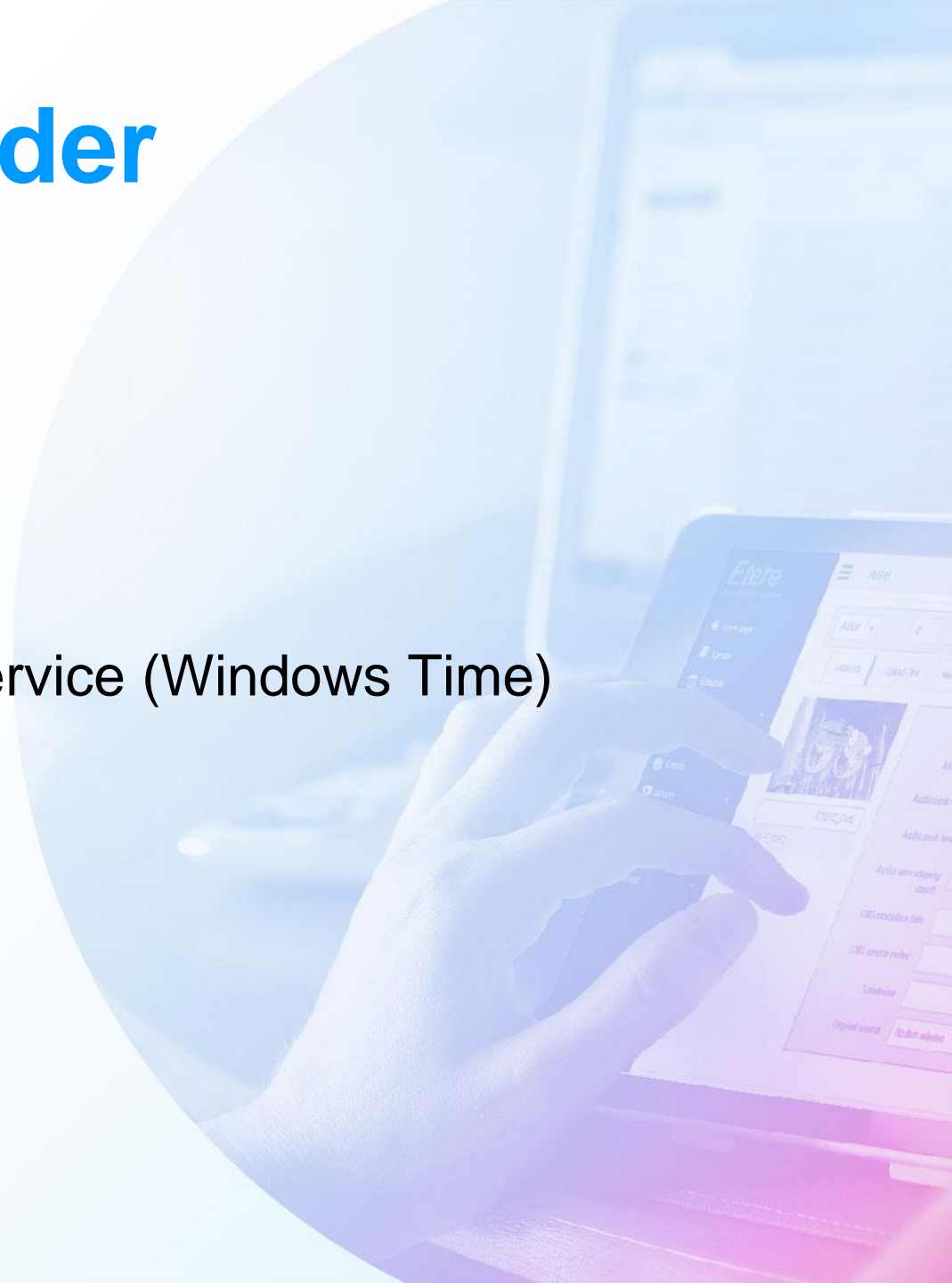
Time Flooder

- Synchronize the reference PC time with a SMPTE Timecode (Adrienne TC reader)
- Broadcast the TC over the LAN by using UDP

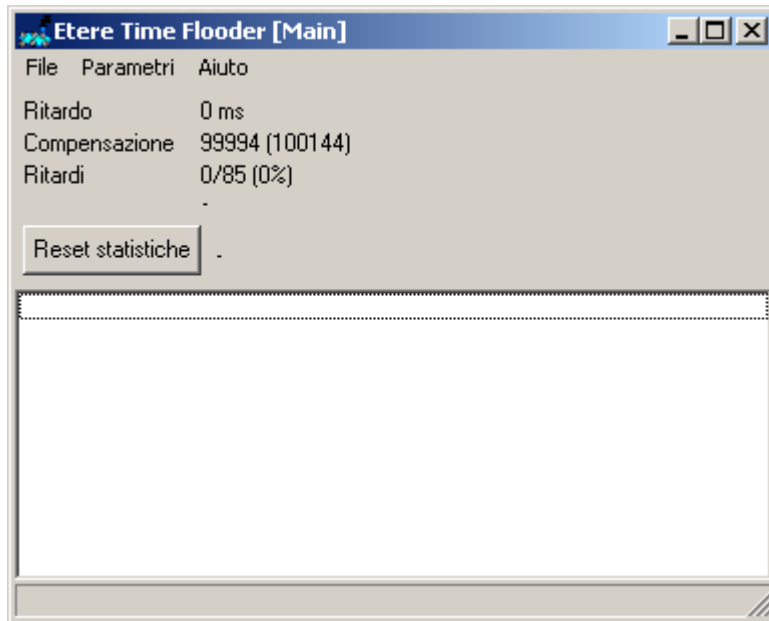


Time Flooder

- EtTmFlood.exe
- EtKernel.dll: file to set the time
- EtSysClock.dll: time settings manager
- Aec_nttc.dll: Adrienne TC reader manager
- If using win 2000 disable the Time sync service (Windows Time)



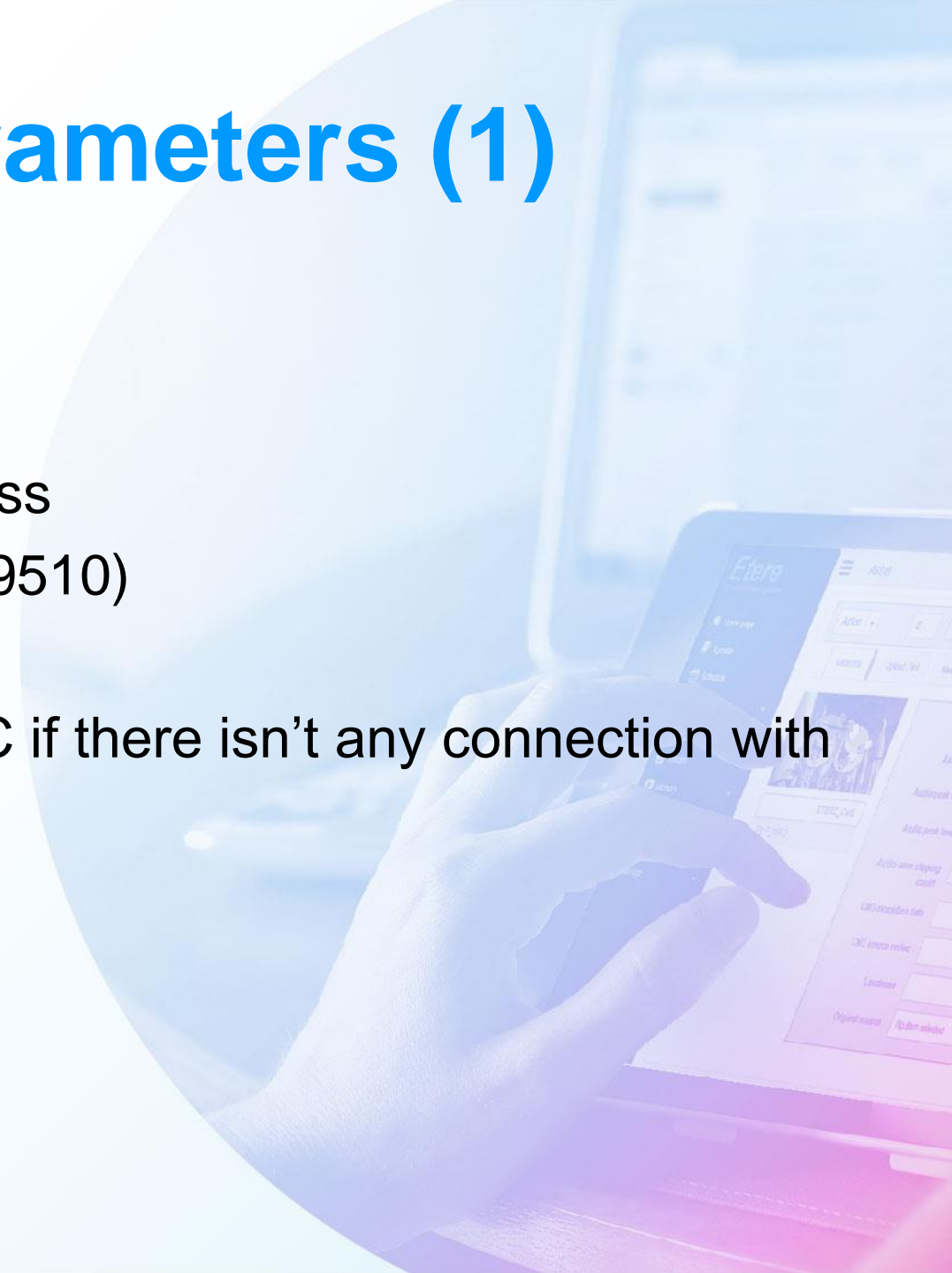
Time Flooder: Startup



- After the startup, the software is reduced to Try Icon, double click to open it
- At 1st startup you need to setup the parameters

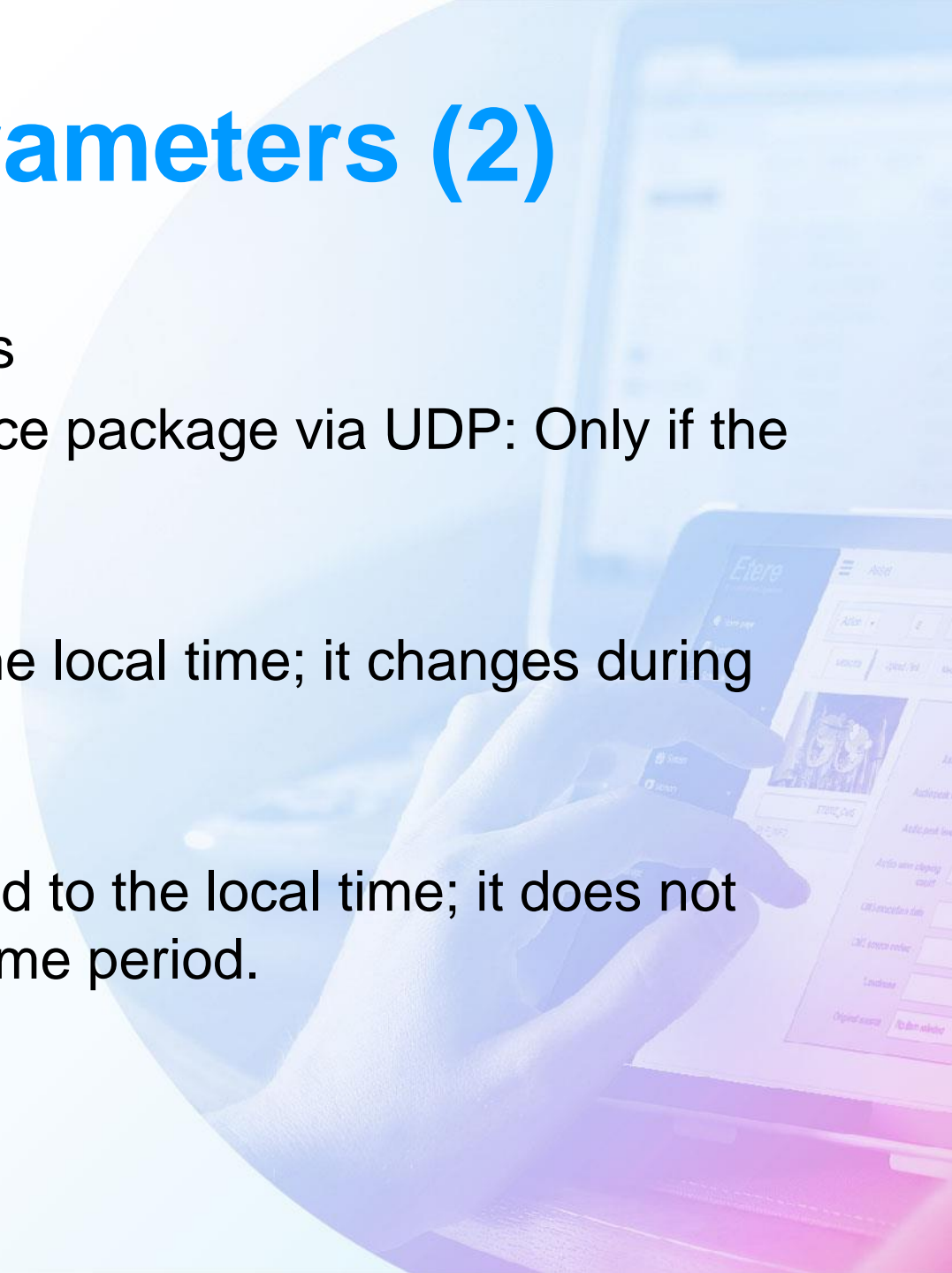
Time Flooder: Parameters (1)

- Net: LAN Parameters
 - You need to set the reference PC
 - TCP/IP address: Broadcast LAN Address
 - Port: UDP receiver port (from 9501 to 9510)
- Options:
 - Timeout, Backup becomes the Main PC if there isn't any connection with the Timeout



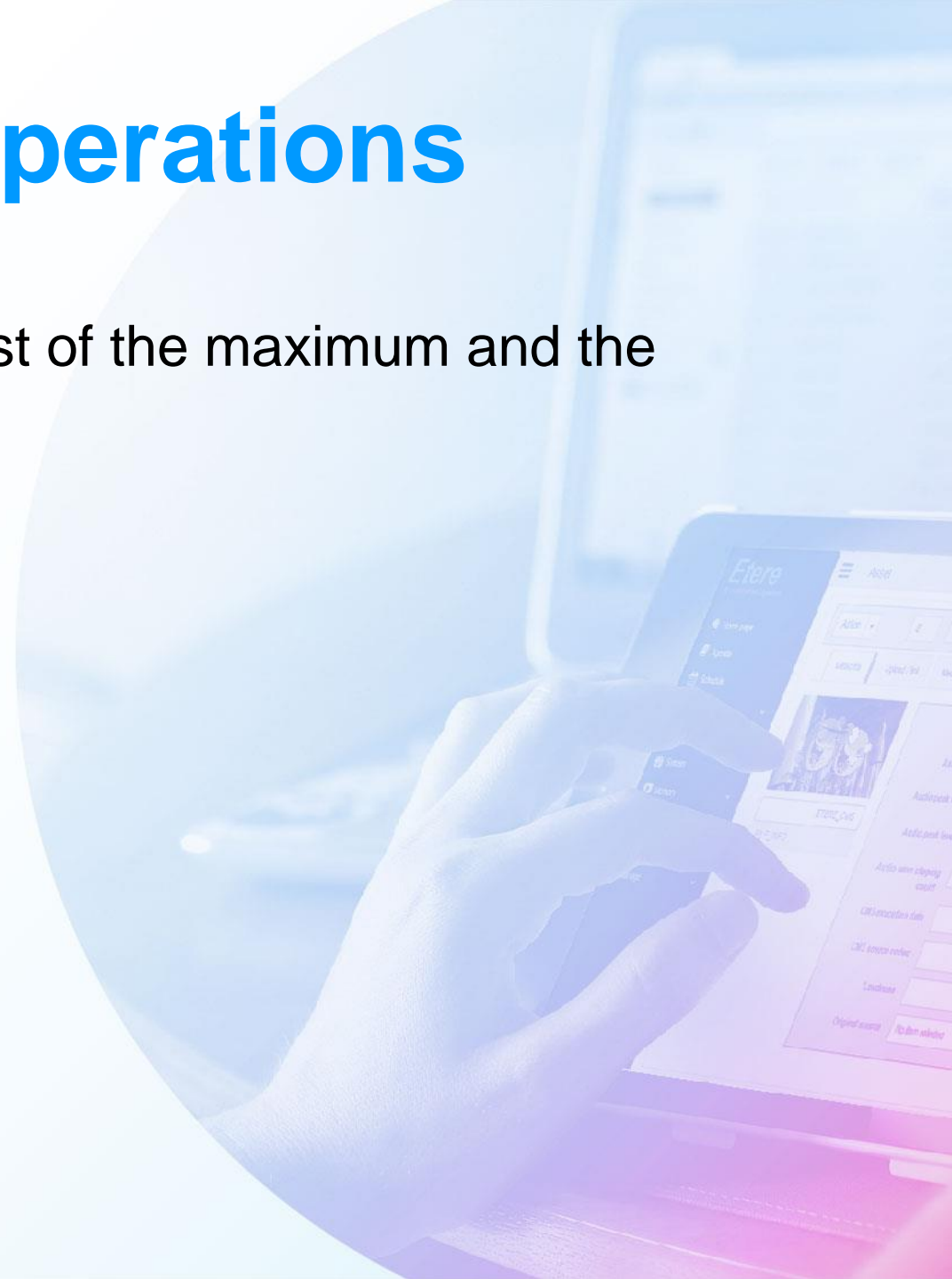
Time Flooder: Parameters (2)

- Time:
 - Reference: Adrienne, otherwise Windows
 - Time to sense: interval to send a reference package via UDP: Only if the PC is Reference
 - Type:
 - Local: TC connected to Adrienne is the local time; it changes during the summer-daylight time period
 - UTC: TC is UTC
 - UTC translated: UTC time is translated to the local time; it does not change during the summer-daylight time period.
 - TV system : PAL/NTSC



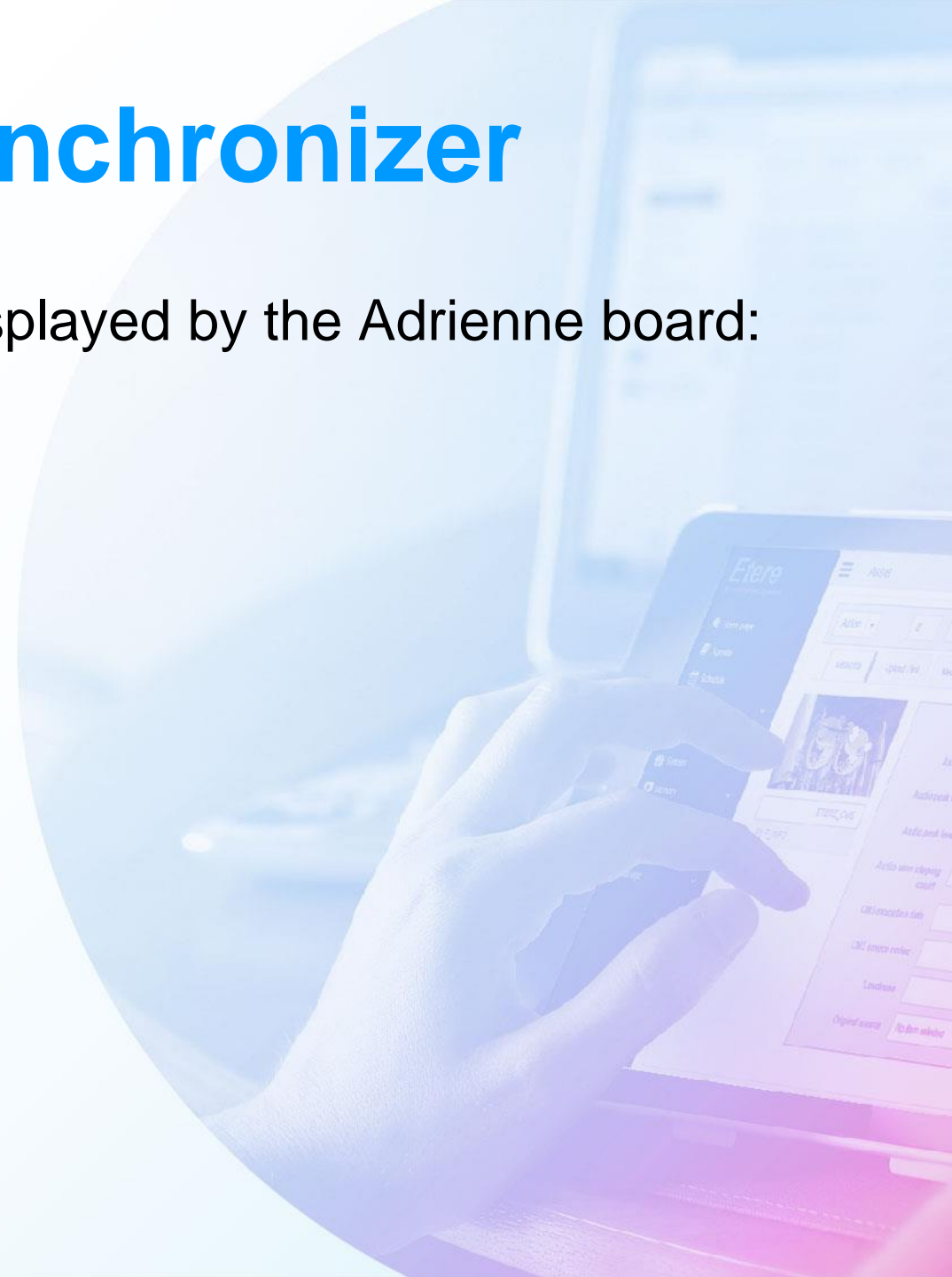
Time Flooder: Operations

- Statistics reset: reset the delay list and the list of the maximum and the minimum delay



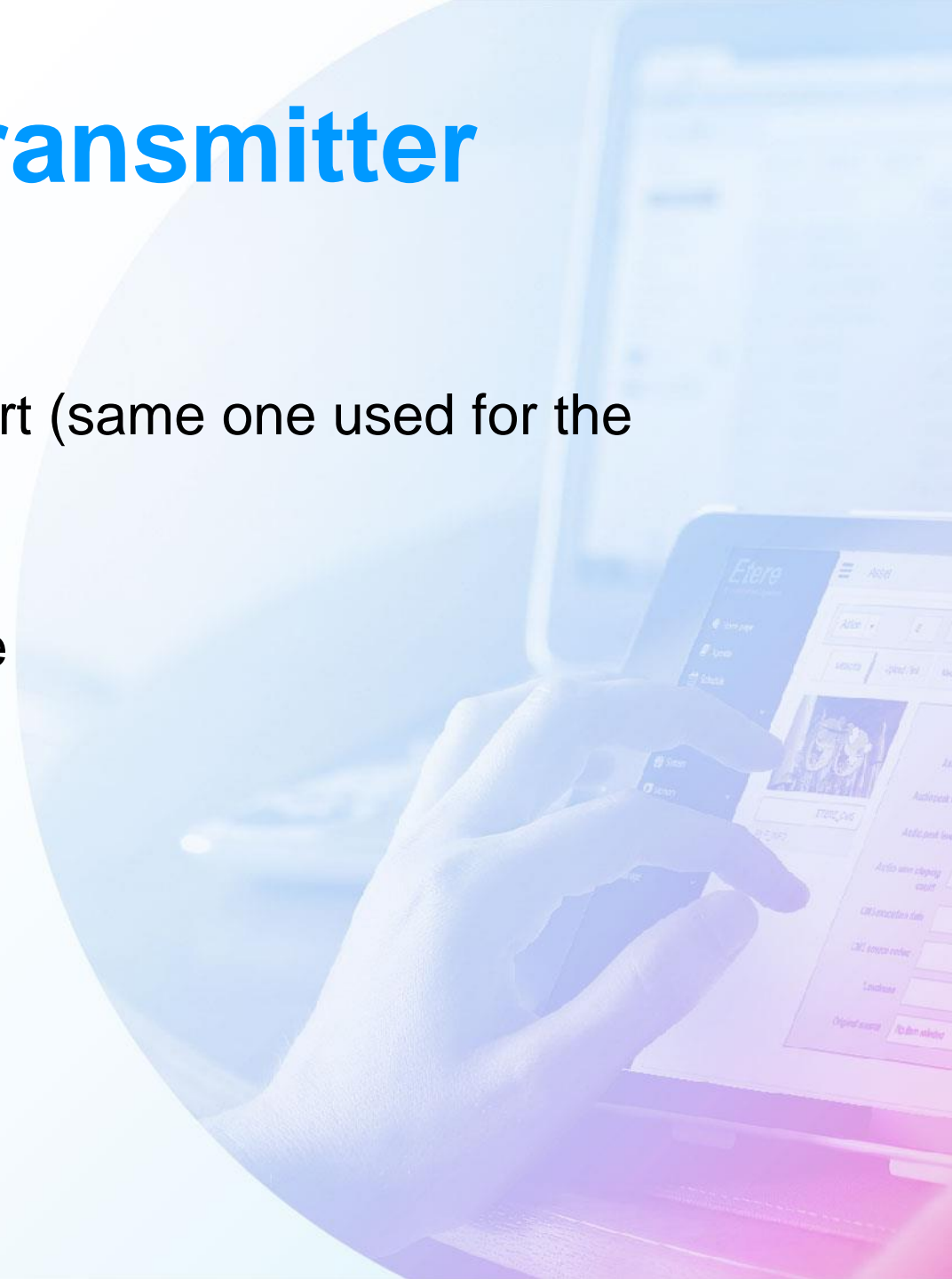
Time Flooder: Synchronizer

- To synchronize the PC time with the one displayed by the Adrienne board:
 - Set “Adrienne Board” as reference
 - Select Type of Timecode
 - Select the TV System



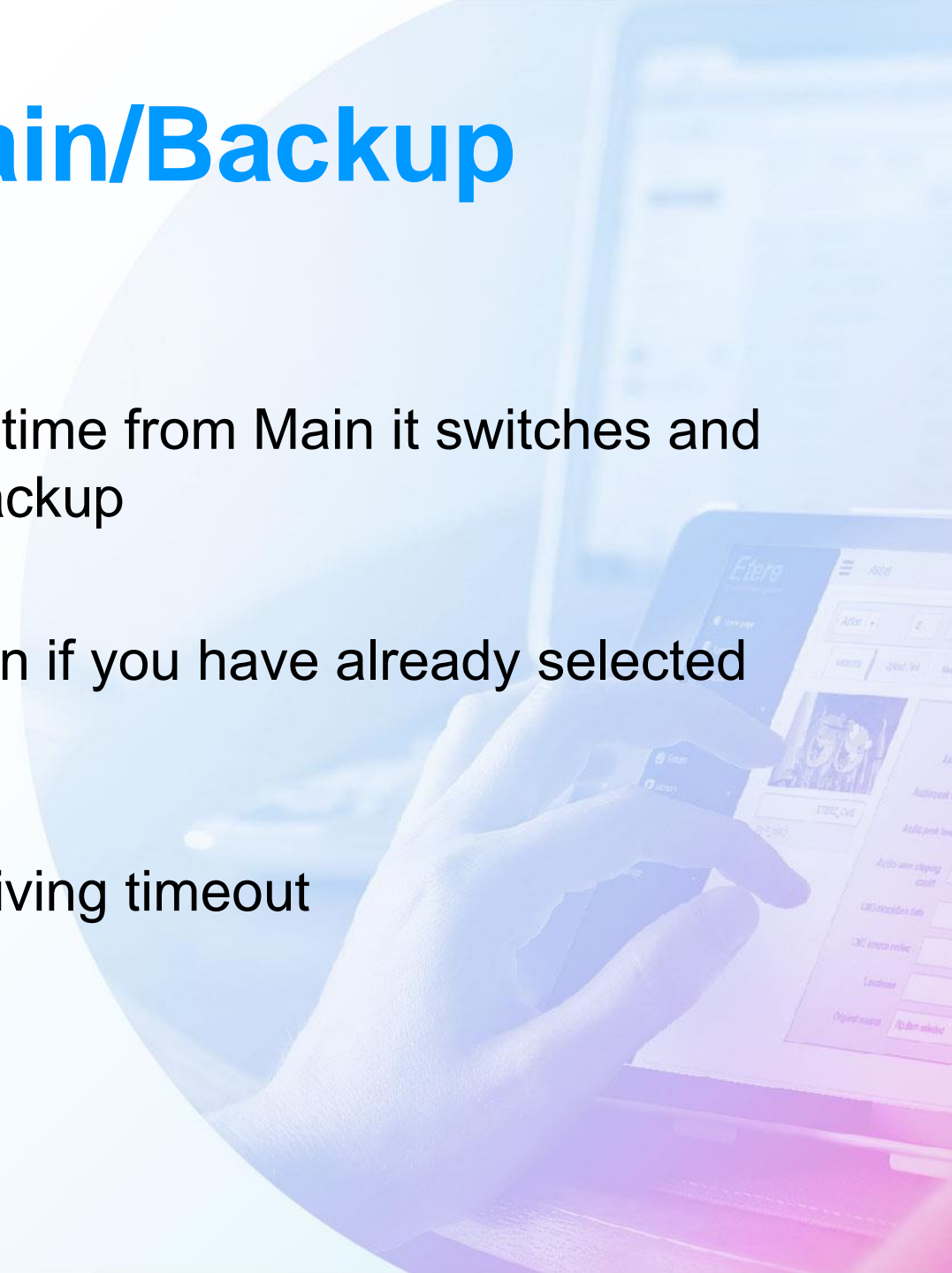
Time Flooder: Transmitter

- To send the PC time to the Time receiver:
 - Set broadcast address and the UDP port (same one used for the receivers)
 - Select “Send through UDP”
- Only one transmitter must be always active



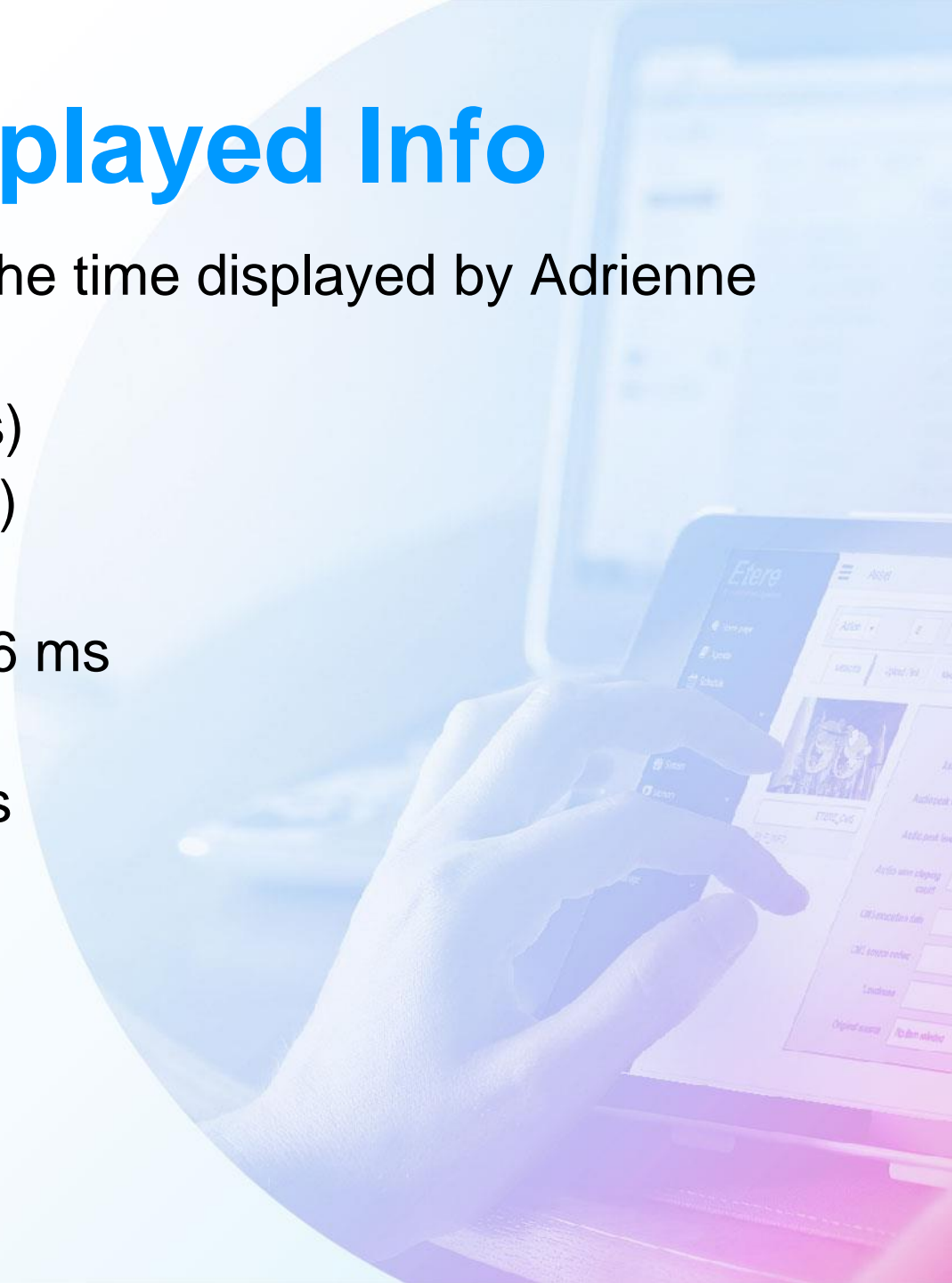
Time Flooder: Main/Backup

- Startup
 - Starts as backup
 - If after 5 seconds it doesn't receive the time from Main it switches and becomes Main, otherwise it remains Backup
- Backup:
 - Doesn't send time to the broadcast even if you have already selected "Send through UDP"
 - Reads time sent by Main
 - Becomes Main in case of the time receiving timeout
- Main:
 - Transmits PC time to the broadcast



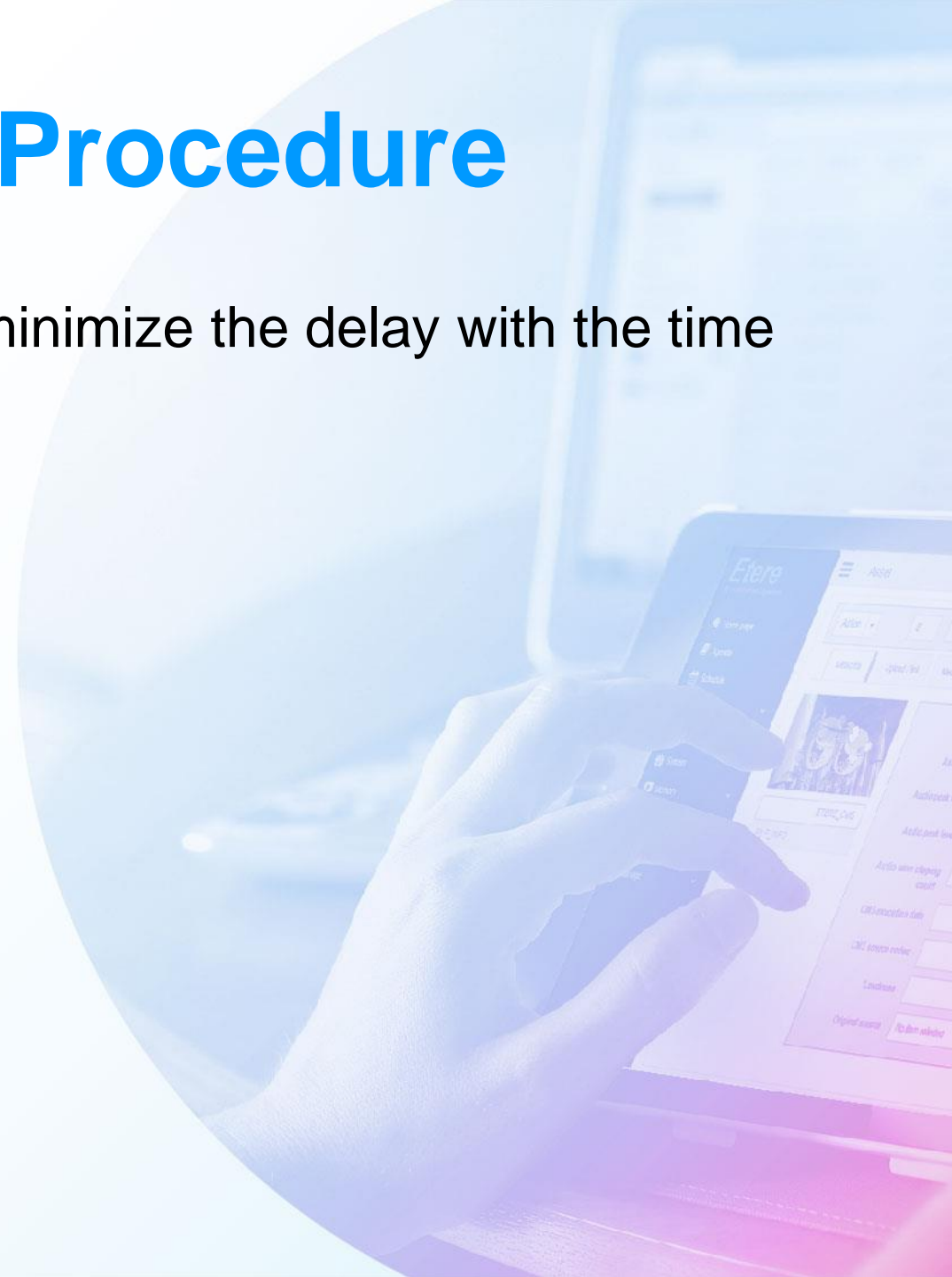
Time Flooder: Displayed Info

- Delay: difference between the PC time and the time displayed by Adrienne
- Compensation x/y
 - x : current clock break length (unit: 100 ns)
 - y : default clock break length (unit: 100 ns)
- Delays: x/y (n%)
 - x : n° of times when delay is major than 16 ms
 - y : n° of sending to the broadcast
 - n : percentage of delays major than 16 ms
 - Maximum delay and anticipation
- List of delays major than 16 ms



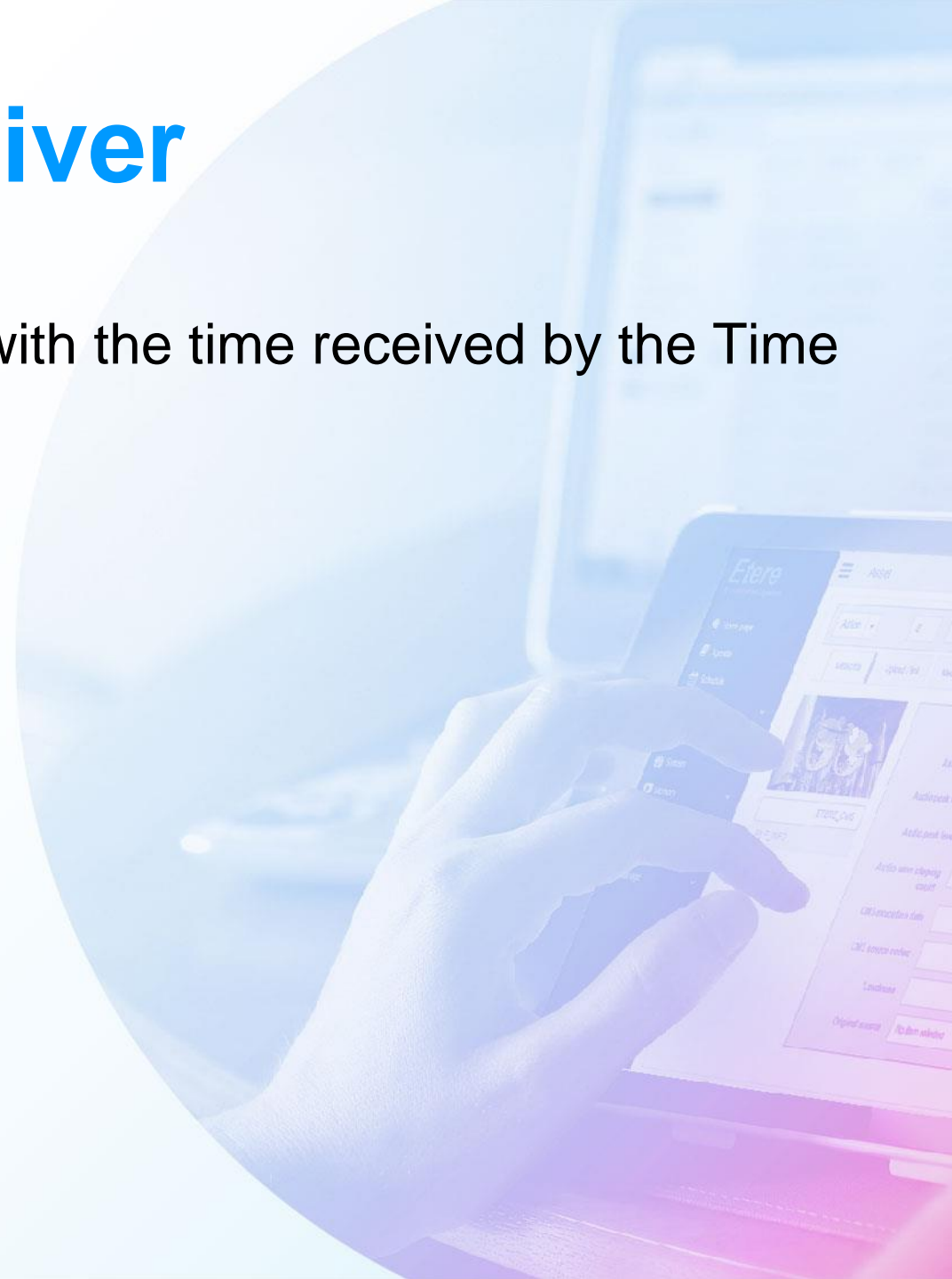
Synchronization Procedure

- PC time is speeding up or slowing down to minimize the delay with the time read by the board
- This way time is always increasing



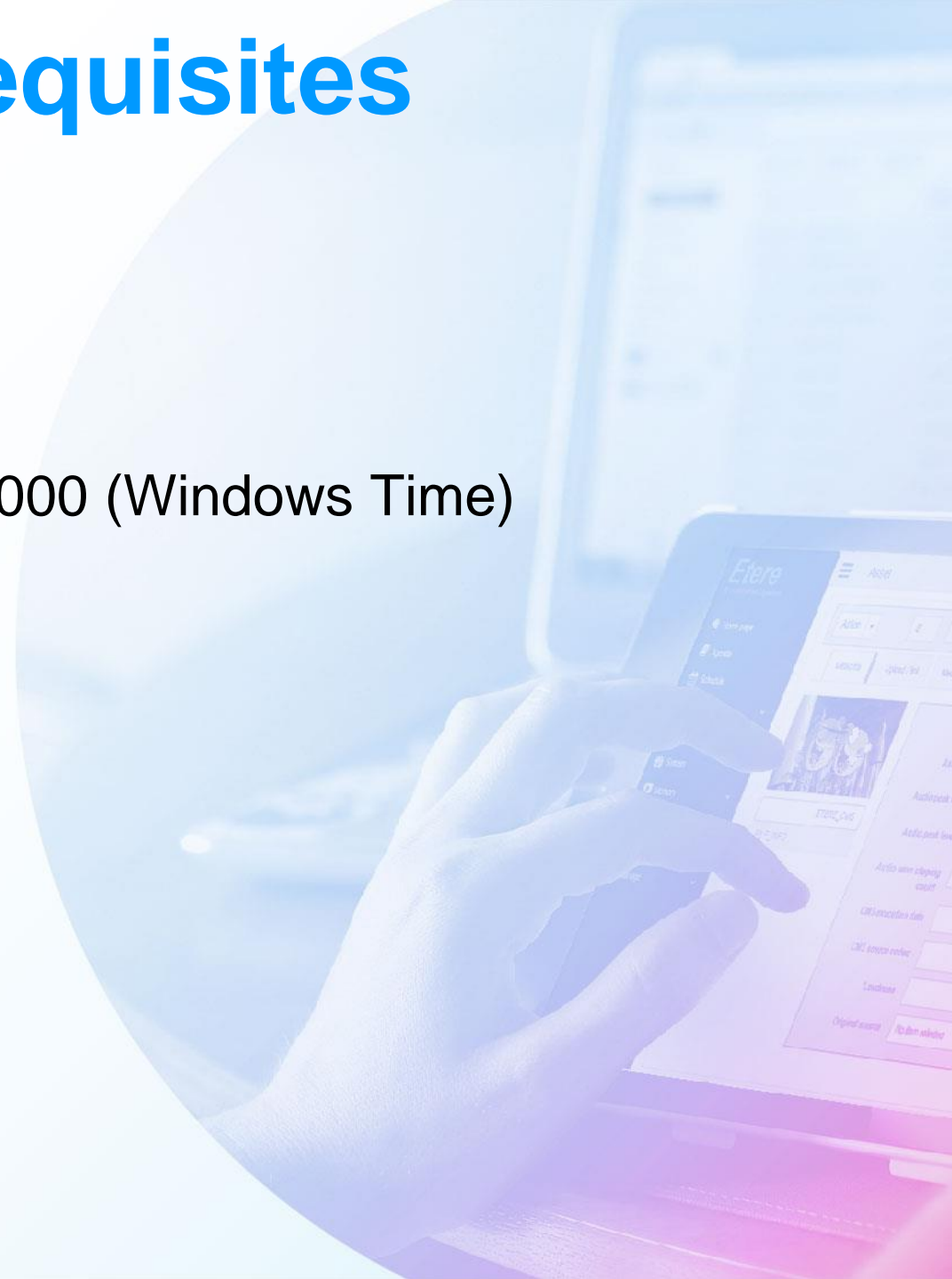
Time Receiver

- Synchronizes PC time where it is running with the time received by the Time flooder on a UDP port

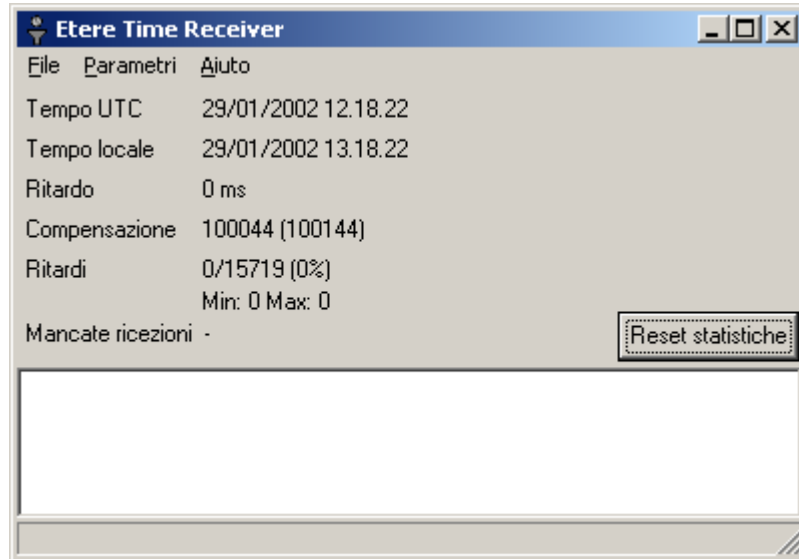


Time Receiver: Requisites

- EtTmRcvr.exe
- EtKernel.dll: file to set the time
- Disable the W32Time service on Windows 2000 (Windows Time)



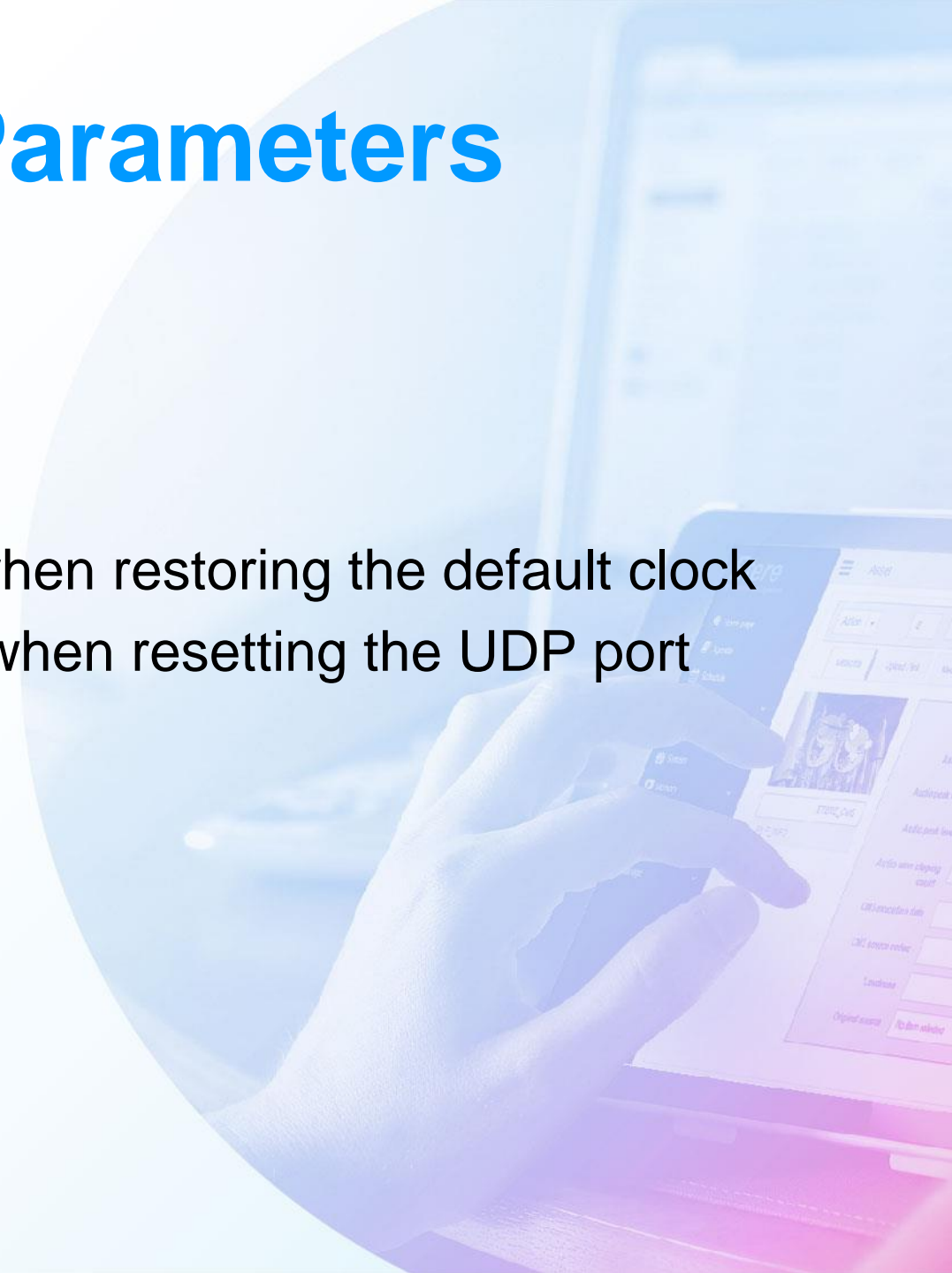
Time Receiver: Startup



- Right after the startup the program is reduced to a tray icon. Use “Open” from the menu or double click to view it
- On the 1° startup the program doesn't work. You need to set the parameters on Parameters menu

Time Receiver: Parameters

- Net: LAN parameters
 - Port: Reception UDP port
- Options
 - UDP Timeout: time reception timeout when restoring the default clock
 - Timeout UDP reset: reception timeout when resetting the UDP port



Time Receiver: Displayed Info

- UTC/Local time
- Delay: difference between the PC time and the time received by the Time flooder
- Compensation x (y)
 - x: current clock break length (unit: 100 ns)
 - y: default clock break length (unit: 100 ns)
- Delays: x/y (n%)
 - x: n° of times when delay is major than 16 ms
 - y: n° of sending to the broadcast
 - n: percentage of delays major than 16 ms
 - Maximum delay and anticipation
- List of delays major than 16 ms

Time Receiver: Operations

- Statistics reset: Statistics reset: reset the delay list and the list of the maximum and the minimum delay and the number of missed receptions

