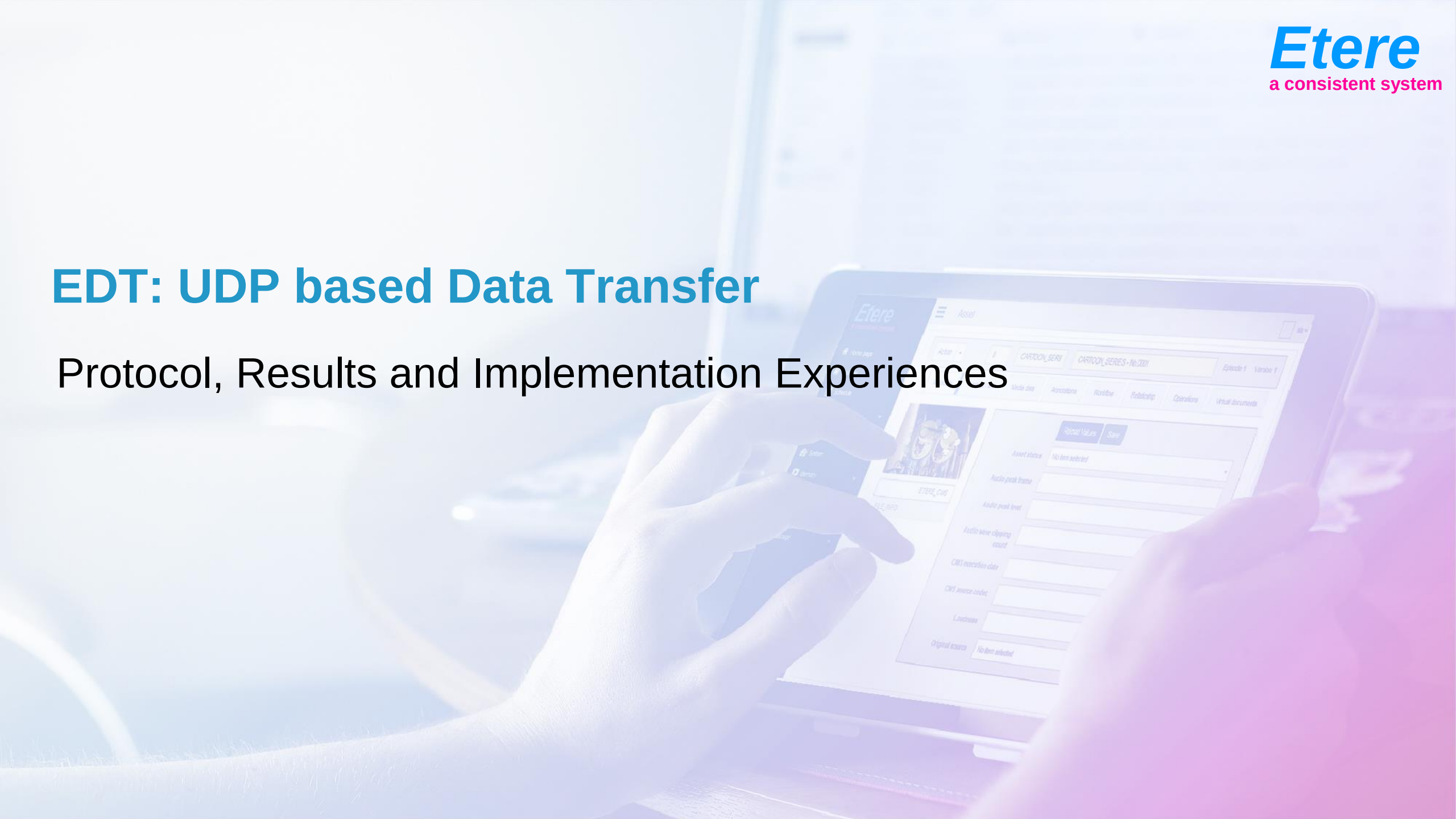
Etere
a consistent system

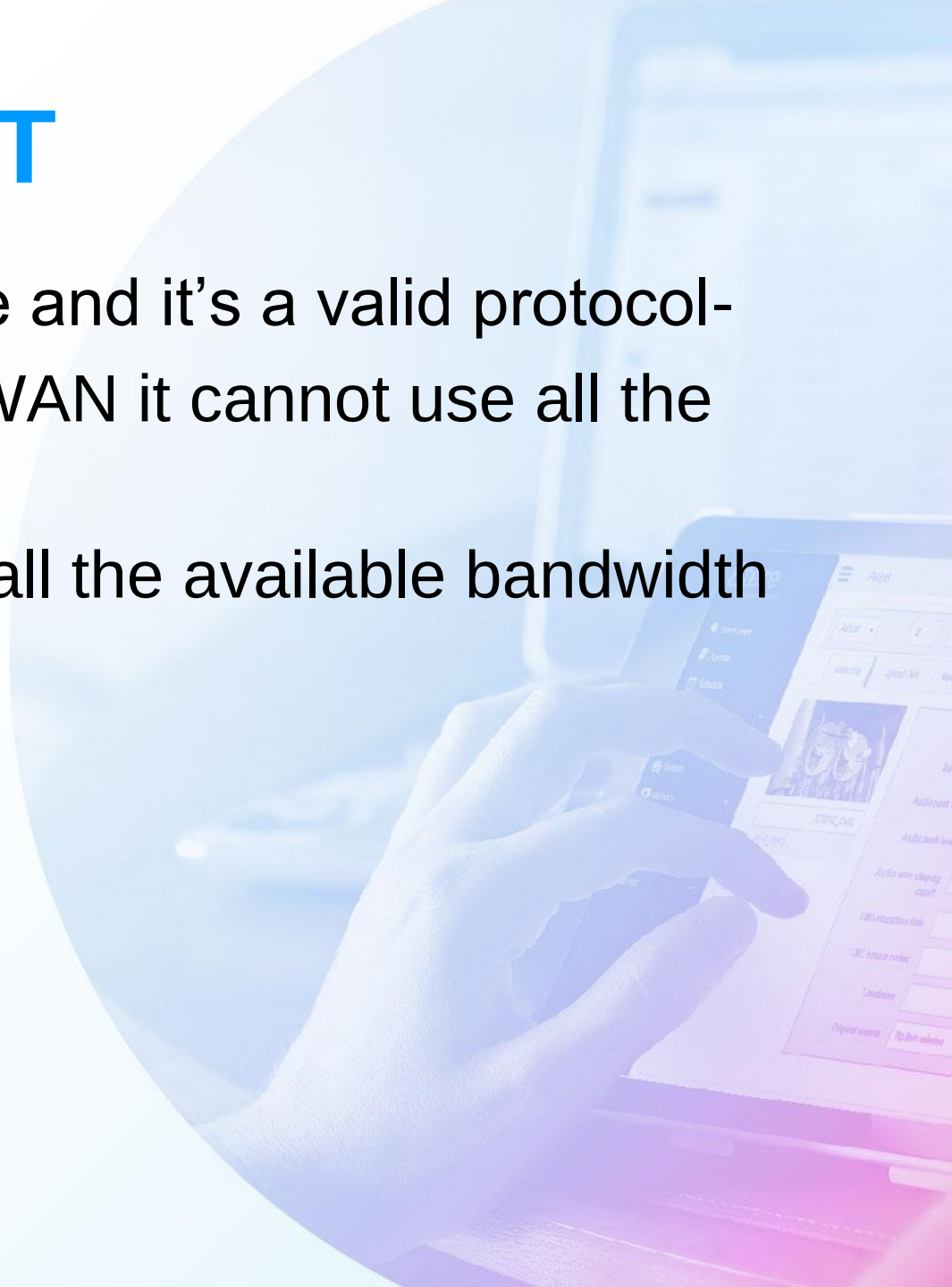
EDT: UDP based Data Transfer

Protocol, Results and Implementation Experiences



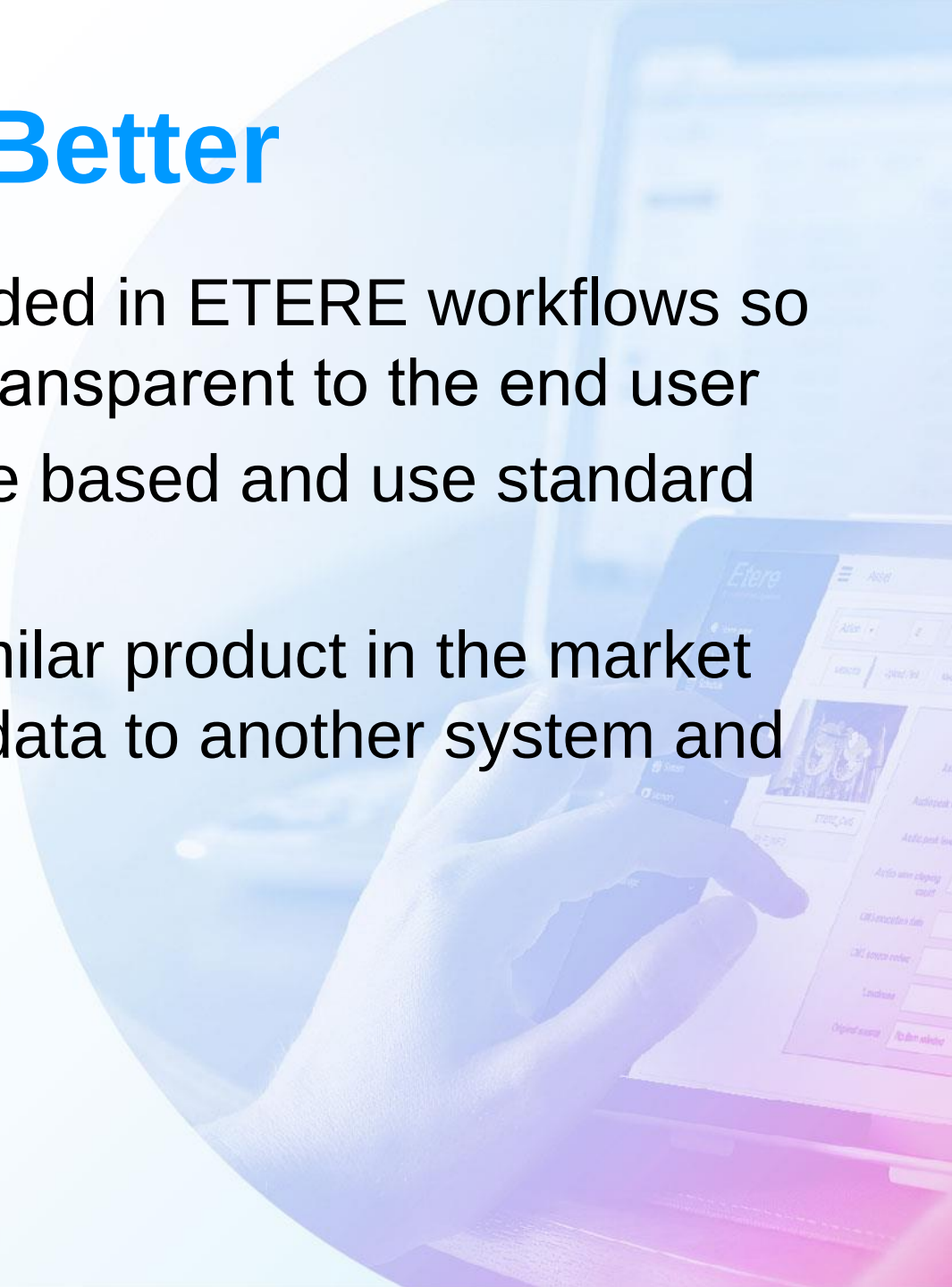
Why EDT

- FTP data transfer is used everywhere and it’s a valid protocol-
- But on network with long latency as WAN it cannot use all the bandwidth
- EDT use a different algorithm to use all the available bandwidth and it’s considerably faster than FTP



Why EDT is Better

- Etere implementation of EDT is included in ETERE workflows so it use the same framework and it’s transparent to the end user
- The implementation is 100% software based and use standard windows hardware
- It offers better performances than similar product in the market but without the overhead to transfer data to another system and than back
- One single control interface

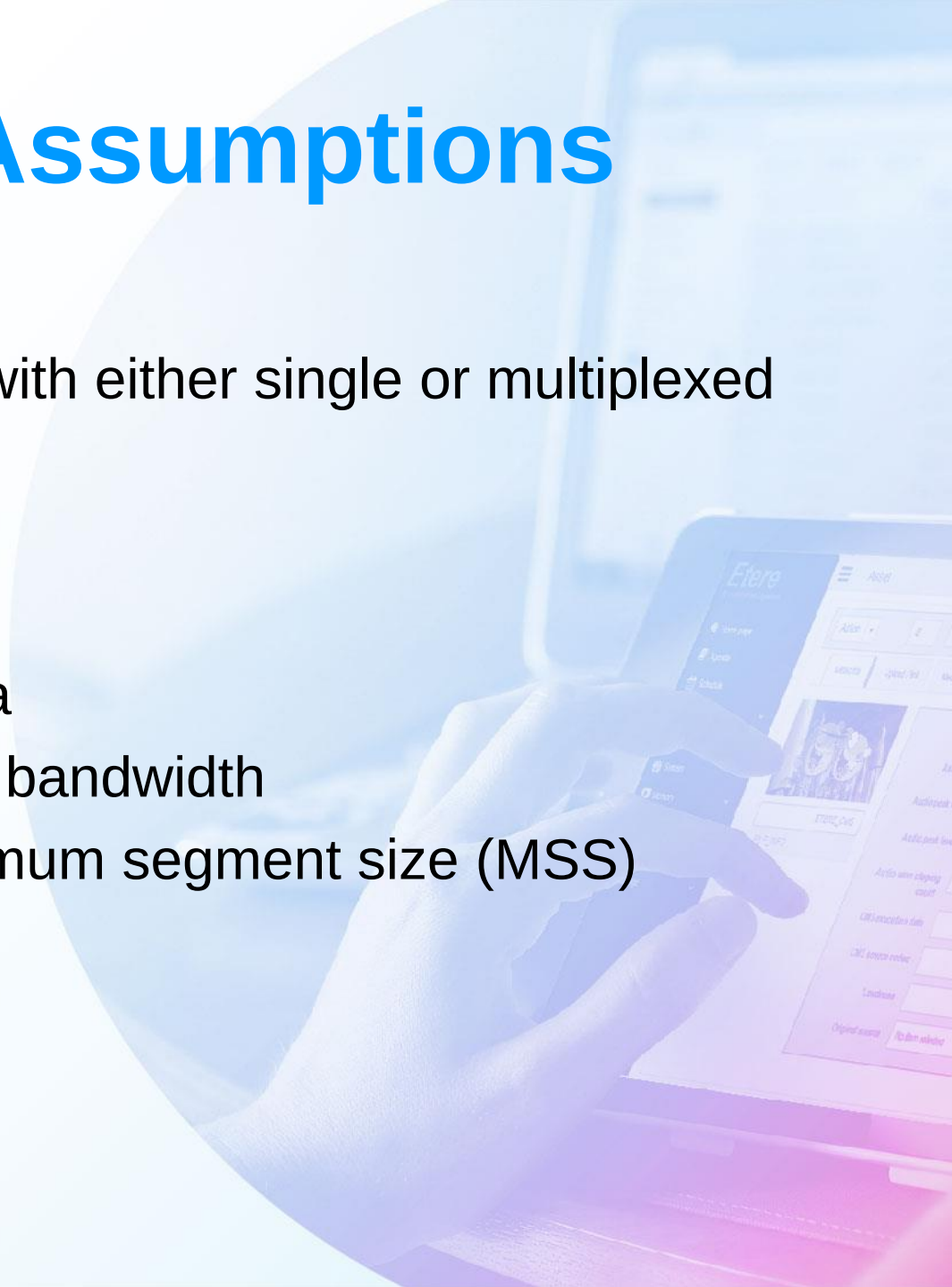


Outline

- EDT Protocol
- EDT Congestion Control
- Implementation/Simulation Results
- Implementation Experiences at ETERE

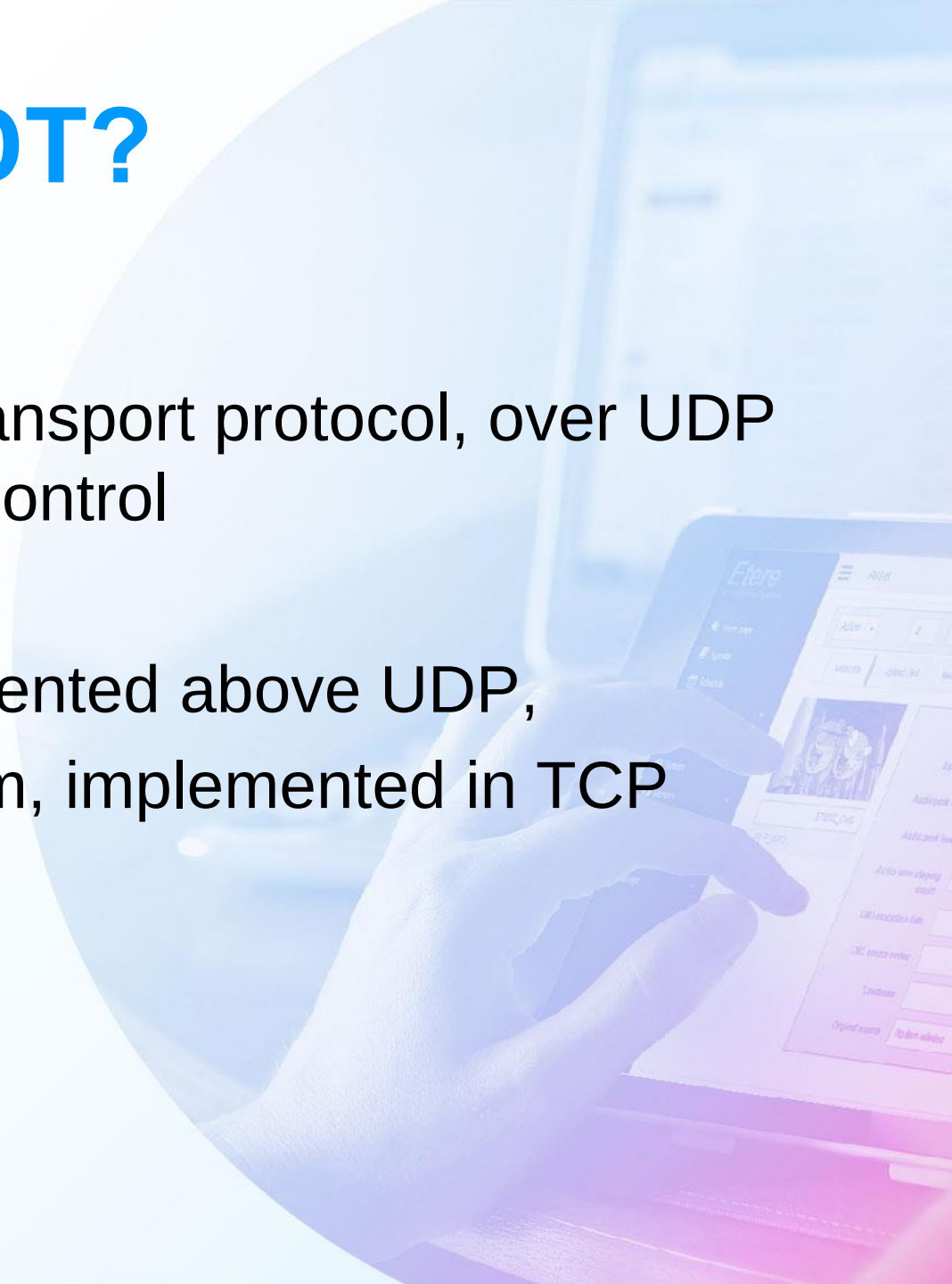
Design Goals and Assumptions

- Fast, Fair, Friendly
- High utilization of the abundant bandwidth with either single or multiplexed connections
- Intra-protocol fairness, RTT independence
- TCP compatibility
- Low concurrency, high bandwidth, bulk data
- A small number of sources share abundant bandwidth
- Most of the packets can be packed in maximum segment size (MSS)

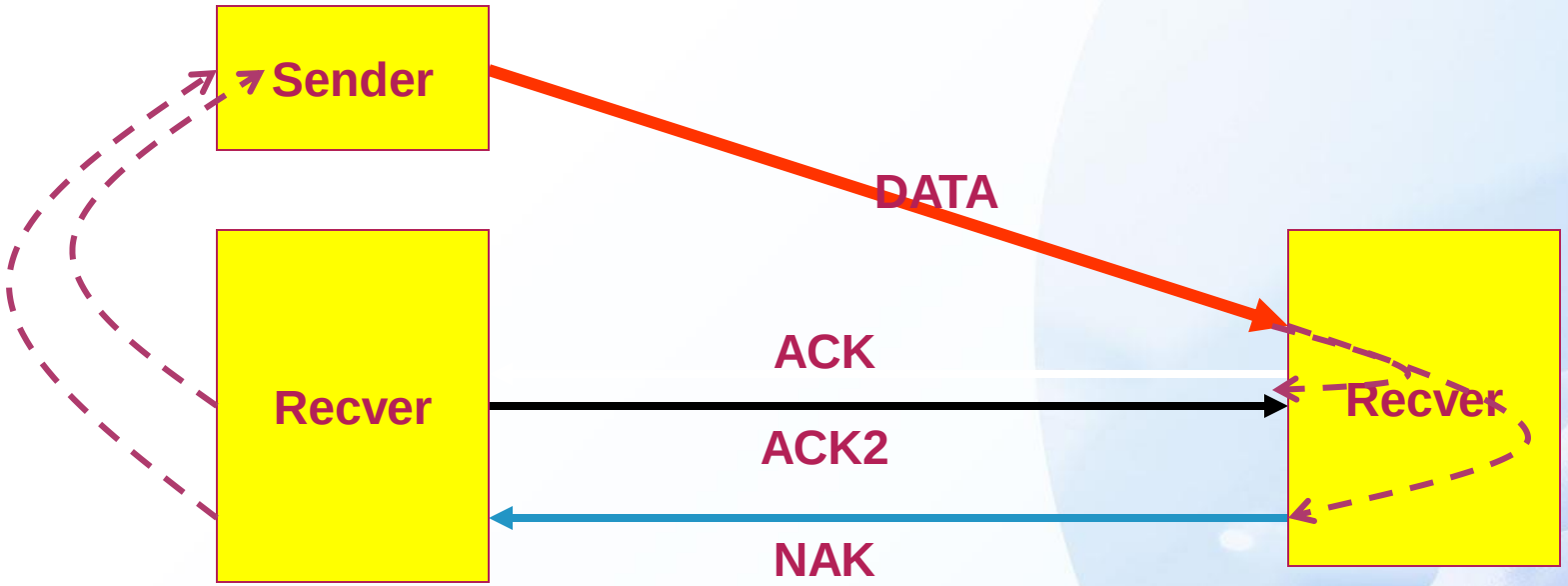


What’s EDT?

- EDT: UDP based Data Transfer
- Reliable, application level, duplex, transport protocol, over UDP with reliability, congestion, and flow control
- Two orthogonal parts
- The EDT protocol framework implemented above UDP,
- The EDT congestion control algorithm, implemented in TCP

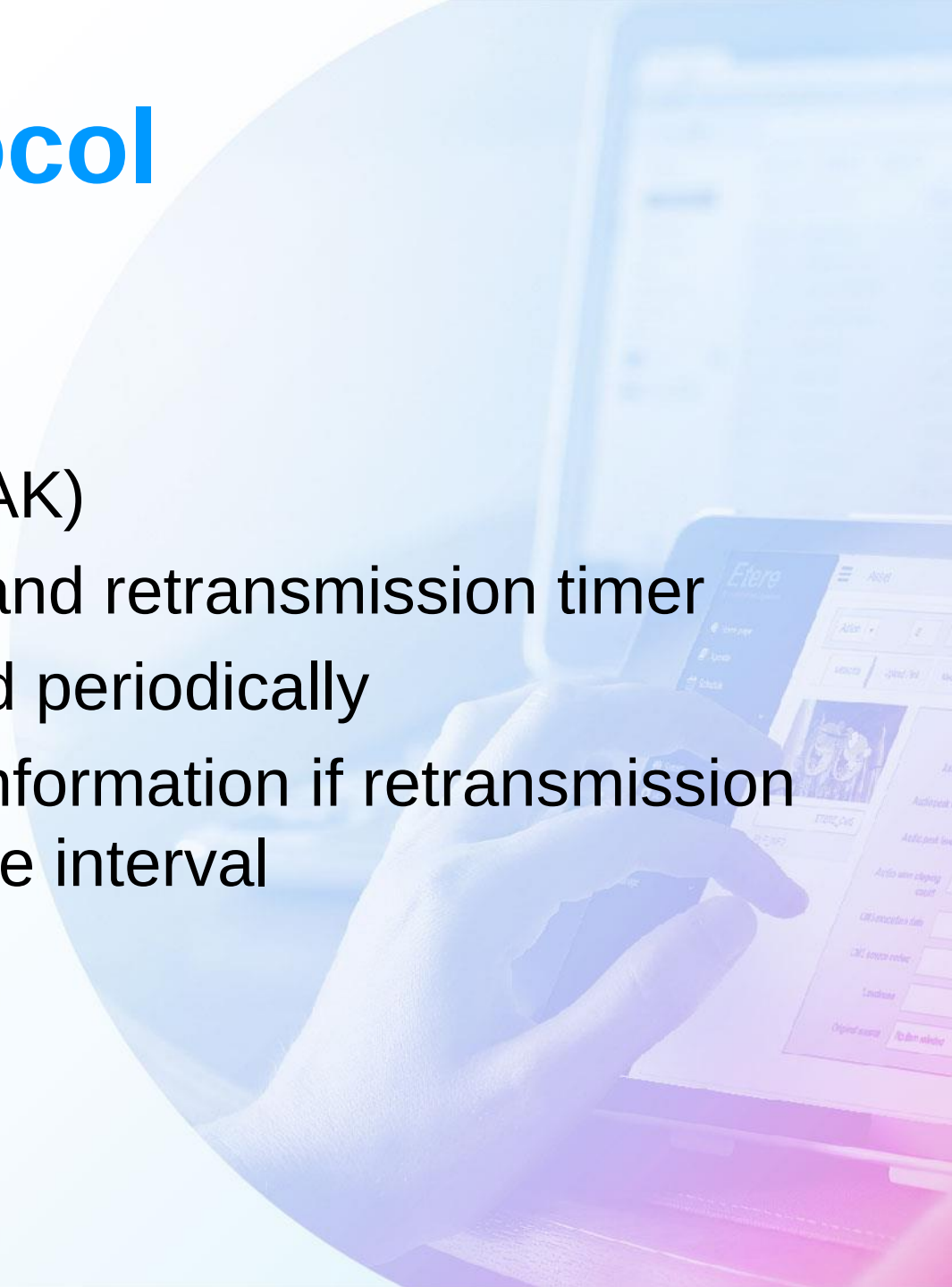


EDT Protocol



EDT Protocol

- Packet based sequencing
- ACK sub-sequencing
- Explicit loss information feedback (NAK)
- Four timers: rate control, ACK, NAK and retransmission timer
  - Rate control and ACK are triggered periodically
  - NAK timer is used to resend loss information if retransmission is not received in an increasing time interval



Performance

- Performance result on Video files
  - Average throughput of 97 MBps on a GigE LAN
  - Average throughput 4 time more than FTP on a WAN with short delay as Europe to Europe
  - Average throughput 7 time more than FTP on a WAN with long delay as Europe To Australia