

On the remote operation of a Transmission Electron Microscope

PROJECT AIMS

TECHNICAL GOALS

Allow full control of a transmission electron microscope by a remote user connected by internet in order to:

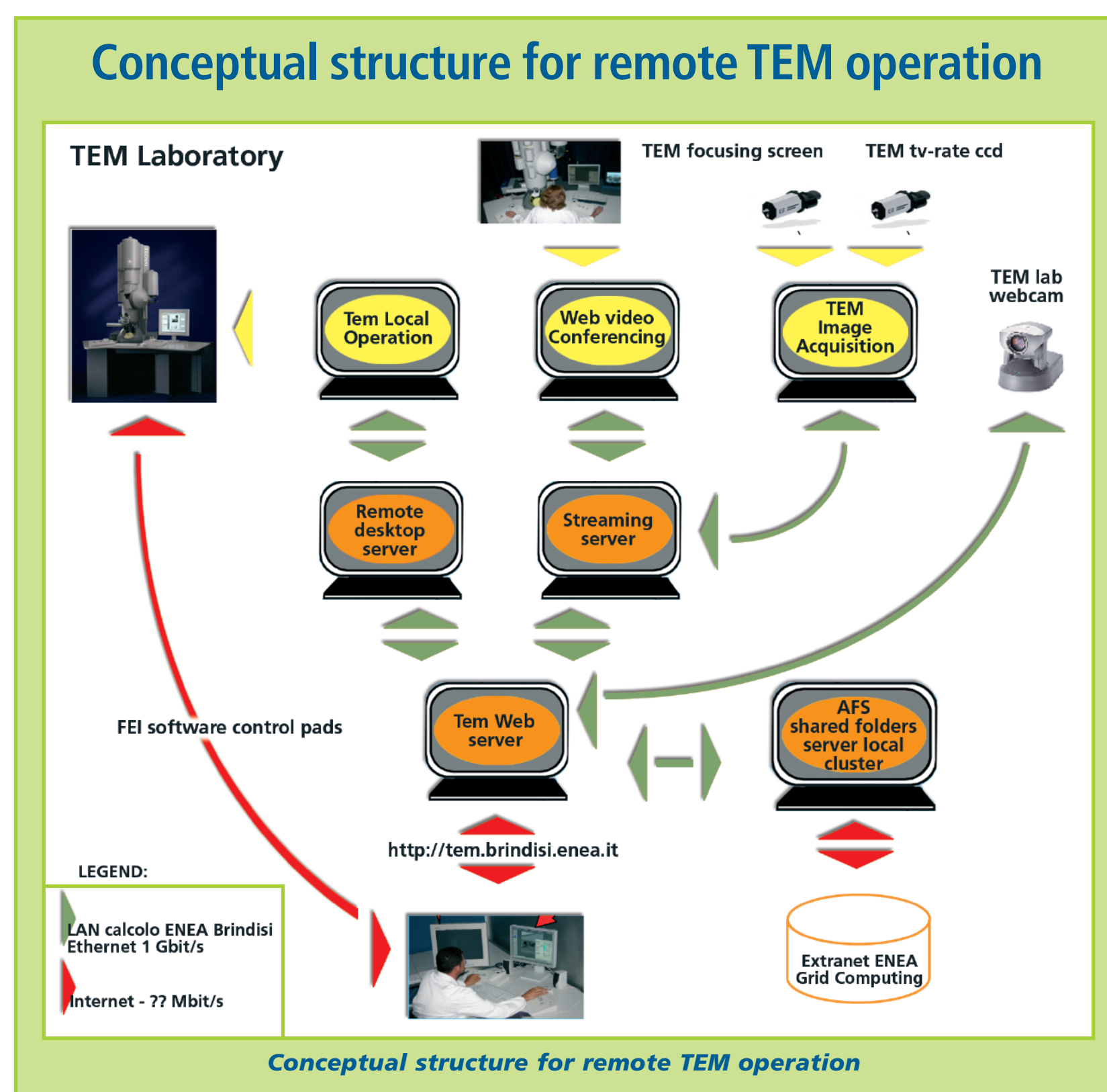
- set up collaboratory research
- provide microscope time to trained users in ENEA and in research institutions
- training new microscope operators by e-learning
- classroom teaching

IN THIS WAY IT WILL BE POSSIBLE

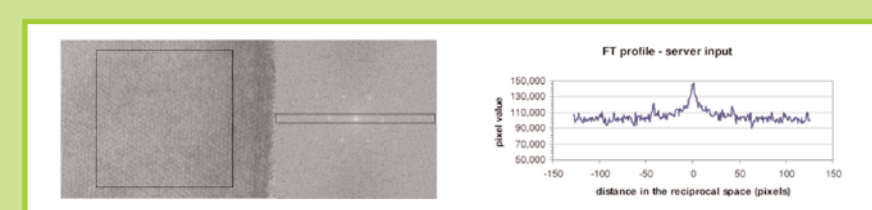
- to share the TEM (Transmission Electron Microscope) with other groups setting up scientific cooperations
- to optimize the capital investment and share a fraction of the running costs

FROM THE OPERATIVE POINT OF VIEW

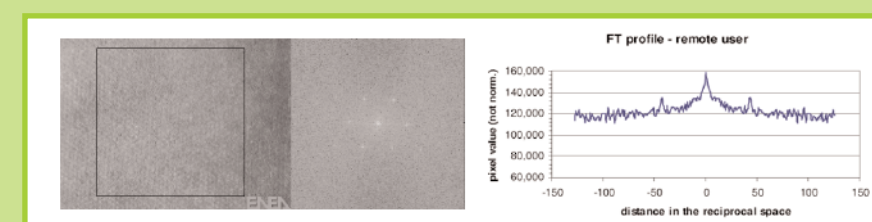
- integration of the transmission electron microscope as a node of the ENEA-GRID
- use of state of the art software tools for the fast transfer of data and images
- experimental testing to adapt the configuration to the available bandwidth



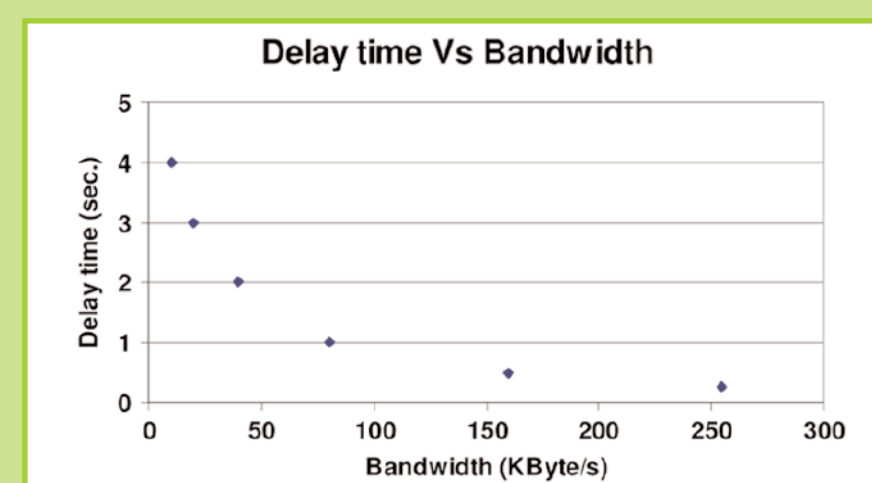
Quantitative test of the loss of data and delay time during the transmission process in different conditions



High resolution images of a (110) oriented Si sample captured at the microscope



The same captured by the remote user. Notice the negligible loss of information



Frame refreshing time versus the available bandwidth