# A review about local ties and eccentricity vectors: strategies, results, potentials and open issues

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The IERS meeting held in Matera, in October 2003, has created an important opportunity for focusing on the issues associated with the measurement and computation of local ties. Some critical aspects were pointed out, and have since been carefully investigated. Nevertheless, site dependent inconsistencies arise when local ties are used in the combination of different sets of individual space geodetic products. Such inconsistencies usually places doubt on the quality of the stimated local ties, but they also motivate the investigation other issues which may also explain the apparent differences. Efforts have been made to demonstrate the accuracy of modern indirect methods used for the determination of the local tie and its full variance-covariance matrix. It is technically feasible that accurate local ties (i.e. meeting all user requirements) at a well defined epoch at each co-location site can be observed. However, numerous problems still remain unsolved and complicate a straightforward realization and implementation of sets of homogeneous ties in the combination of geodetic observations. A review of the most recent and relevant results achieved in local tie computation will be presented along with a description of the limiting factors and the open issues that must be resolved for the optimal production of tie-related information for use in ITRF computation, GGOS realization and geodetic parameter estimation.