Circumstances related to considered tasks are characterized by a number of characteristics

a) Software, used by professional, is unavailable for other users usually.

b) In most cases, the initial data (ID) for motion prediction, generated in ballistic centers, are unavailable for wide range of consumers as well.

c) There is the only source of ID about large number of various satellites. That is the catalogue of the American Space Surveillance System (SSS). These ID in the form of so-called "Two Line Elements" (TLE) are available in the Internet (sites http://www.space-track.org, http://celestrack.com and others).

c) It is found that the best accuracy is achieved under certain conditions:

- the same motion model is applied for prediction of motion and during processing of measurements for ID determination;
- the motion model is sufficiently advanced.

In most cases listed conditions are not met.

d) The correct application of TLE as ID requires some professionalism. Many consumers are not aware about this. The point is that these elements of orbit are averaged. The short- and long- periodic disturbances, caused by the influence of the flattening of the Earth, have been filtered in TLE.

e) American software for prediction of satellites motion, adapted to use TLE as ID (SGP4), as well as its detail description are available. These materials can be found at site of T. Kelso (http://celestrack.com).

f) The analytical motion model SGP4 was developed in the late 1960s. It takes account the small number of parameters of the gravitational field of the Earth (3 basic zonal harmonics) and simplistic model of atmosphere density. Therefore, in many cases the results of its application do not meet the increased requirements to accuracy of prediction.

g) The classic least squares technique (LST), widely used for determine an ID, ignores errors due to the influence of disturbing factors, that does not allow to use facilities for improve accuracy.