

IMPLEMENTATION OF LEGAL DIGITAL CADASTRE IN ISRAEL

Dr. Gershon STEINBERG, Israel

ABSTRACT

The Survey of Israel (SOI), Israel's national surveying and mapping agency, plans to implement full legal digital cadastre (LDC) in Israel by 2010. By LDC we mean definition of the cadastral boundaries by coordinates in a homogenous and accurate geodetic control network. The ultimate goal is to achieve an accuracy of 5 cm. The modern Israeli cadastre was established in 1920 by the British mandate in Palestine, and was based on Torrens principles. The accuracy in which the boundaries are defined is quite heterogeneous as a result of the survey methods and equipment that were used. The Survey Ordinance for the triangulation and especially for its densification by traverses that was in use until 1987 was too liberal. The cadastre was based mainly on the measurement of boundary marks and other objects, most of which were destroyed with the fast development of the state of Israel. Until the early seventies, cadastral mapping in Israel was based on tape (and/or chain) measurements using the orthogonal (offset) method. It was plotted without computing the coordinates. Since the introducing of EDM in the early seventies, the coordinates of new cadastral boundaries are computed. Those are "islands" of high local accuracy, but they suffer from the distortions of the old geodetic network. In order to achieve homogenous positional accuracy of 5 cm, we have to reconstruct and measure most of the boundaries that were already measured in the past. That is an enormous task, the economic importance of which is doubtful, and the probability of its implementation is poor. On the other hand, the present situation in which we do not have digital legal definition of the cadastral boundaries is not reasonable and is not proper for a modern state in the new millennium. A reasonable substitute to the desired ultimate goal (which will cost less than 2\$ per capita for the next 10 years) will be done by the combination of four ideas:

1. Ongoing new cadastral projects.
2. Legalizing the digitized cadastral registration block sheets of state lands, managed by the Israeli Land Administration.
3. Growing skeleton of LDC by the surveys connected to every-day building activity.
4. Approximate LDC based on re-measurement of 5% to 10% of the cadastral boundaries, followed by a sophisticated least square adjustment of a combination of old and new measurements.

The estimated cost of the project is in the range of 50 to 100 million \$.

The paper discusses the major problems of the Israeli cadastre and provides implementation details of the proposed LCD in Israel.

CONTACT

Dr. Gershon Steinberg
Deputy Director for Geodesy and Cadastral Surveys
Survey of Israel
P.O. Box 14171
61141 Tel Aviv
ISRAEL
Tel. + 972 3 561 5708
Fax + 972 3 623 1806
E-mail: gershon_steinberg@hotmail.com or forrai@soi.gov.il

BIOGRAPHICAL NOTE

Dr. Gershon Steinberg, Survey of Israel

Since 1995 Deputy Director General for Geodesy and Cadastral Surveys
1993–1995 Head, Division of Cadastral Surveys and Geodetic Computations
1988–1993 Head, Division of Cadastral Surveys
1972–1988 Head, Division of Horizontal and Vertical Geodetic Field Control
Since 1993 Adjacent senior lecturer in the Technion, Israel Institute of Technology,
Haifa, Israel

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